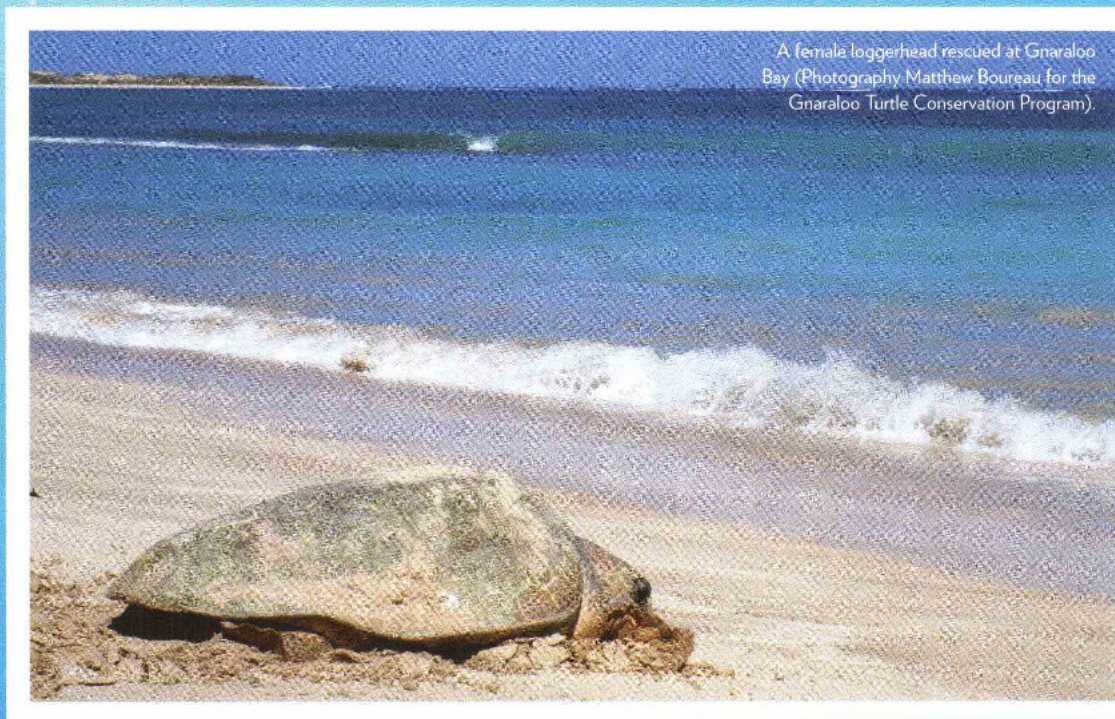




# Turtle world

Turtles are among the most majestic creatures to be found in WA's oceans... they're also among the most endangered, and simple ignorance could be helping to shrink their numbers. Here's how you can help to safeguard their existence

WORDS Rick Murphy Tanya Kay



A female loggerhead rescued at Gnaraloo Bay (Photography Matthew Bourreau for the Gnaraloo Turtle Conservation Program).

**T**urtles are long-lived, highly migratory – crossing state and country boundaries – and use various habitats throughout their life cycle, including beaches, open ocean and shallow inshore areas. Because of their complicated life cycle, which requires them to travel thousands of kilometres, fully understanding the biology of sea turtles and managing their populations is extremely challenging.

Found in all the world's oceans, except in polar regions, they play a vital role in the world's marine ecosystems. Most sea turtles, such as the green turtle, feed on sea grasses, ensuring a trimmed and healthy seabed for countless bottom-of-the-ocean creatures.

Turtles also feed on jellyfish and crustaceans, and are, in turn, prey for larger predators such as sharks, whales and, of course, humans.

Hunted for millennia, their flesh and fat is considered exotic delicacies and a basic food supply for indigenous cultures worldwide. Their meat is said to be an acquired taste; it's oily, salty and deeply pungent.

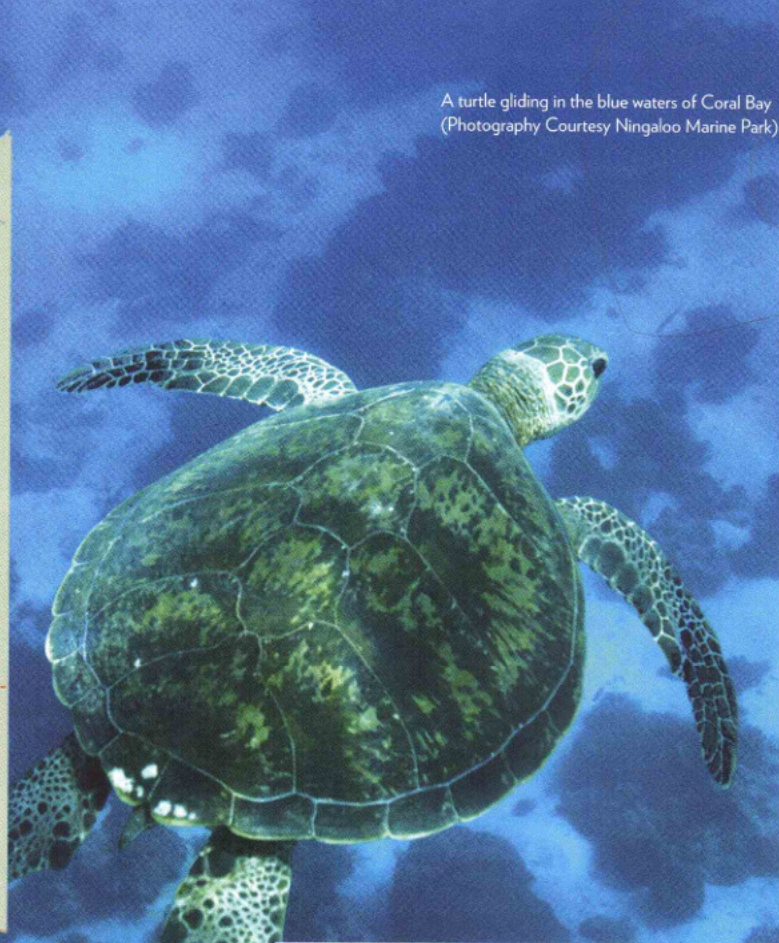
Some species remain relatively close to home, while others travel the oceans clocking up impressive mileage. One monitored turtle recently recorded a single day's journey of a staggering 300km. Turtles have a 'compass' in their brain, a natural tracking device that allows them to find their way back to the beach where they were hatched.

A turtle's sex life is all work and little play. Some sea turtles mate at sea only once every two or three years, yet females can lay numerous batches of eggs over that time. The nesting process is exhausting, and the rate of success heartbreakingly low. Nests consist of anywhere between 30-200 eggs depending on the species, with as little as one in every 10,000 hatchlings surviving to sexual maturity.

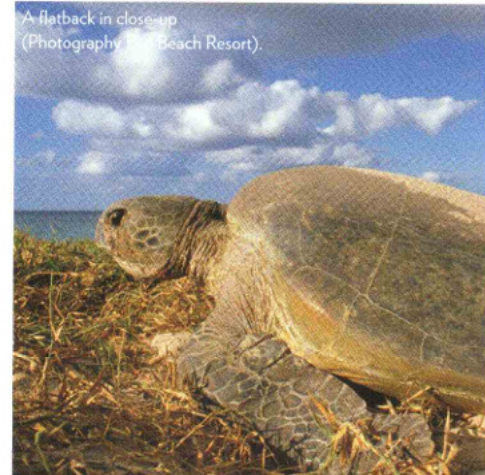
From January to March, the hatchlings emerge from the nests. Beach nests are prone to predators of all sorts (including humans, introduced animals such as foxes, and native animals such as crabs), and their nesting grounds are increasingly at risk from inappropriate coastal developments and recreational activities.



A map showing the types of sea turtles that nest in Western Australia and the start of their migration routes.



A flatback in close-up (Photography: Blue Beach Resort).



## Local attractions

Western Australia has a 20,781km coastline of mainland, islands and archipelagos, from the windswept cold southern reaches, to the sub-tropical northern beachheads.

Home to a delicately balanced and profoundly varied marine population, it plays host to six visiting species of sea turtle – out of a grand total of seven worldwide.

Most sea turtles are listed internationally as threatened (critically endangered, endangered or vulnerable).

Classifications range from the cautious (protected) to the worrisome (vulnerable) and on to the dire (critical).

There are two distinct families of sea turtles: *Dermochelyidae*, with one representative (the world's largest turtle, the leatherback); and *Cheloniidae*, which includes the green, loggerhead, hawksbill, flatback and olive ridley species.

The International Union for Conservation of Nature (IUCN) Red List now classifies the

loggerhead and green turtles as endangered species and the hawksbill turtle as critically endangered. Australian flatback turtles are classified as 'data deficient', which means not enough is known about them and their ecology to place them safely into any of the other IUCN categories.

The largest loggerhead populations in the world can be found in Oman in the Middle East, Florida in the US, Cape Verde Islands on the west coast of Africa, and Western Australia.

Top spots in WA include Dirk Hartog Island (Shark Bay), Gnarlou Bay (mainland), Cape Range National Park (mainland) and the Muiron Islands (to the north of Cape Range National Park). WA also has one of the world's largest flatback turtle populations.

Though generally found in the near-north, ante-tropical, and northern sub-tropical waters, WA's turtles are occasionally sighted south at Rottneest Island, Marmion Marine Park and in the Great Southern region. Freshwater turtles, such as the smaller longneck and

oblong varieties, can be found in lakes and swamps throughout the Perth metropolitan area and as far south as Albany.

## Leading the way

Although legislation has gone a long way to giving sea turtles a future, surprisingly little is known about their entire life cycle.

Private and government-funded research programs and new technology are crucial to helping us understand more about their mating, nesting and migration patterns.

The Department of Environment and Conservation (DEC) operates important monitoring and protection projects in the north of WA, particularly in high turtle-stock areas such as the Pilbara and Gascoyne coasts (mainly green and hawksbill turtles), and at Shark Bay south

Sea turtles plod towards the ocean. RIGHT A golden ghost crab – these crabs eat turtle eggs and hatchlings (Photography by John Michael Stuart for the Gnaraloo Turtle Conservation Program).



## Watch and learn

DEC runs volunteer programs across a range of marine study areas, with many private turtle monitoring and conservation projects also relying on volunteers to help researchers gather essential baseline data.

In 2008, Conservation Volunteers Australia (CVA) began monitoring flatback turtles that nest on Eco Beach near Broome. Flatback turtles, named after the shape of their shell, can grow to a metre long and weigh 100–125kg. Monitoring has become a full-time program designed to track turtles throughout their mating cycles and record data as to their breeding and travelling habits.

This program relies heavily on the work of volunteers, with CVA sending six to 10 to the site from October to January.

They help staff with assessing the turtles' nesting habits, exhuming nests, counting the number of eggs in each nest, cordoning off parts of the beach to visitors and recording the length and weight of some turtles before

**“Research into turtle habits is in its infancy, and volunteers are at the cutting edge of environmental discovery”** – Dr Matthias Hammer, Biosphere Expeditions founder

to the Murchison River (mainly loggerhead turtles). DEC is also responsible for balancing conservation with the rights of remote Indigenous communities. Sea turtles, particularly green turtles, have played an important role in the cultural, spiritual and economic lives of these communities for thousands of years.

South of Ningaloo Reef towards Shark Bay, there are DEC monitoring and conservation programs underway at large green, hawksbill and loggerhead turtle nesting sites.

These turtles are likely to breed and nest from October to February, when the climate is warmer and more conducive to nesting and, as such, they can be seen mating in the shallows at Shark Bay and the surrounding estuaries.

attaching monitors. Also active at Eco Beach is Biosphere Expeditions, a global non-profit environmental research program. The joint venture between Eco Beach Resort, CVA and Biosphere Expeditions collects important data on the comings and goings of the flatback turtles. Participants divide their time between resort life and environmental research.

Dr Matthias Hammer, Biosphere Expeditions' founder, says research into turtle habits is in its infancy, and those who join the team are at the cutting edge of environmental discovery. “The aim of our WA project is to determine flatback turtle nesting numbers, and how far dispersed this genetic population is along the seashore of WA.” The project's actions will go a long way towards filling in

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W: [www.jewelsofthekimberley.com.au](http://www.jewelsofthekimberley.com.au)

the baseline data gaps for this species, and its findings are keenly awaited by world experts.

Heading south, the Ningaloo Turtle Program in Exmouth is a community partnership between DEC, the Cape Conservation Group, Murdoch University and WWF Australia. The award-winning initiative attracts local, national and international volunteers learning skills such as turtle tracking, GPS use, remote camping, leadership and conservation. The Jurabi Turtle Centre, an interpretive educational facility just outside Exmouth is part of this program.

Gnaraloo Station, a wilderness tourism business and pastoral station on the Ningaloo coast between Carnarvon and Coral Bay, has (since 2005) developed and managed the scientific Gnaraloo Turtle Conservation Program (GTCP). The Gnaraloo coastline is within the newly declared Ningaloo World Heritage Area and is home to significant sea turtle rookeries, with loggerhead, green and hawksbill turtles nesting there from November to April annually.

With training by DEC, engagement of Australian and international scientific volunteers, and the community, plus the specialised Gnaraloo Fox Control Program, Gnaraloo is monitoring turtle breeding activities along its coastline. This research is aided by cutting-edge ArcGIS geographic information system technology provided by Esri Australia.

The GTCP is making valuable contributions to the limited amount of baseline data and information on sea turtles along the Ningaloo coast, establishing that the Gnaraloo Bay Rookery is one of the two most significant

mainland rookeries for loggerheads in WA, and that the Gnaraloo loggerheads are part of the third largest loggerhead population in the world.

## For the love of turtles

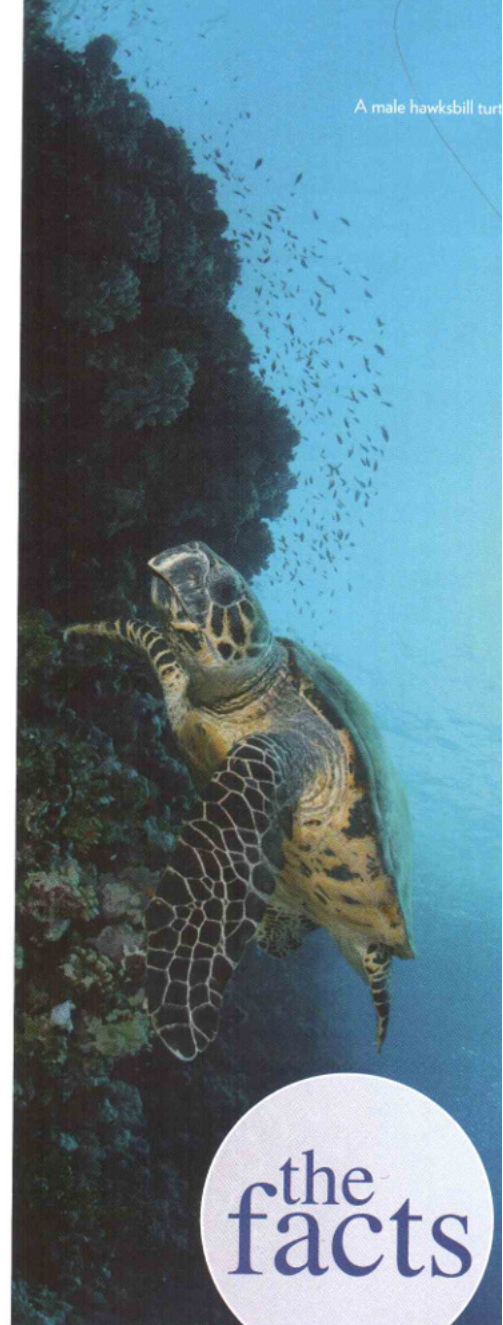
Environmental scientist Karen Hattingh is the GTCP Project Manager. To avoid impacting the Gnaraloo turtles, until the rookeries are better understood, the GTCP is only monitoring and interpreting tracks, not having contact with the turtles, she says. "People always ask how they can help the turtles. The first thing to do is to leave them undisturbed by enjoying and using the coast responsibly."

The less obvious examples pose the greatest long-term dangers, she adds. Noise, light and vehicle movements from housing and tourism developments near critically important breeding beaches, and torchlight from people walking in such areas, can scare off nesting females, disorientate hatchlings trying to reach the water and play havoc with the turtles' navigation system.

This is, of course, not a perfect world, and humans are not the only problem.

Nature also intervenes, as recently seen when five juvenile turtles washed up on Perth beaches, hundreds of kilometres from their native territory.

It is believed the turtles – three loggerheads, a green and one flatback – were pushed south by the strong Leeuwin current. Fortunately, DEC officers were able to release the young castaways back into their natural environment at Exmouth. **ST**



A male hawksbill turtle

the facts

## Dig deep and tread softly

If, like most people, you love turtles and want to help, donate to a research or conservation program, and enquire about becoming a volunteer.

Suggest that the curriculum at your local school incorporates turtle conservation and that children participate in field excursions and conservation programs. Petition your local member of parliament for better funding programs for turtle research.

**You don't have to be a hardcore research scientist to make a difference. Turtle conservation is as much about what to do right, as about what not to do.**

- Don't go dune bugging and quad biking in known turtle nesting areas.
- Don't disturb aggregations of mating turtles in the water or force resting turtles back into the water prematurely.
- Don't go turtle watching armed with bright torches, or noisily walk along nesting beaches.
- Don't handle hatchlings and always adhere to advice about responsible turtle watching. It's also important, as a community, to be very careful how and where we build our coastal environments.

To secure the future for one of the world's most beloved creatures, it will take co-operative efforts between governments, industry (mining, fishing, tourism), private land holders, community groups, Indigenous groups and individuals.

### For more information on how to help, go to:

*Gnaraloo Turtle Conservation Program on Facebook; [www.biosphere-expeditions.org](http://www.biosphere-expeditions.org); [www.dec.wa.gov.au/volunteerprograms](http://www.dec.wa.gov.au/volunteerprograms); [www.ecobeach.com.au](http://www.ecobeach.com.au); [www.conservationvolunteers.com.au](http://www.conservationvolunteers.com.au); [www.aftcra.org.au](http://www.aftcra.org.au); [www.ningalooturtles.org.au](http://www.ningalooturtles.org.au); [www.turtleconservationfund.org](http://www.turtleconservationfund.org); [www.uwa.edu.au](http://www.uwa.edu.au); [www.wwf.org.au](http://www.wwf.org.au); [www.naragebup.org.au](http://www.naragebup.org.au).*

- Sea turtles are reptiles and share common traits. They generally live for a long time and are slow to reach sexual maturity (it can take between 10 and 50 years for a turtle to begin to breed).
- The only time they leave the ocean is when the adult females lay their eggs on beaches, and occasionally to bask during the nesting season.
- The shell is known as a carapace
- Turtles must come to the surface to breathe
- They use their hard beaks to tear, crush and chop their prey
- They have an acute sense of smell and well-developed eyes with good colour vision, but a poor sense of taste
- Specialised salt-excretion glands located in their eyes help to remove excess salt ingested while drinking seawater
- Hearing is restricted to low frequencies
- A breeding ground or colony of turtles is referred to as a rookery
- A gathering of mating turtles is known as an aggregation