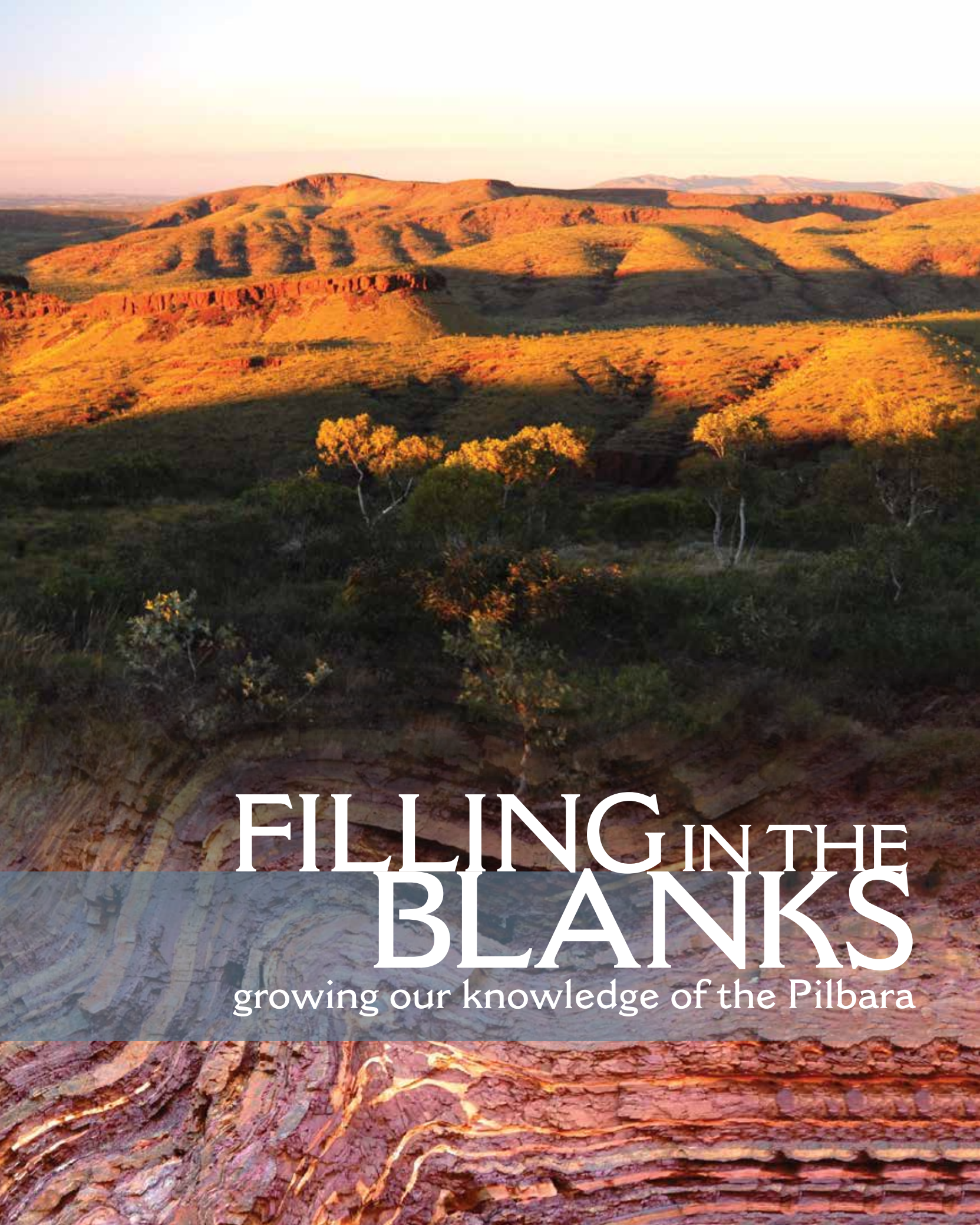




Western Australia's magnificent Pilbara region is home to a number of threatened animals. It is also becoming increasingly popular among holiday makers and those who journey there for work. These people can play an important role in 'citizen science' if they keep their eyes peeled for some of the area's most precious species and report these sightings, helping us bolster our understanding of this special environment.

BY KELLY RAYNER, FIONA CARPENTER AND DAVID PEARSON





FILLING IN THE BLANKS

growing our knowledge of the Pilbara



Previous page

Main View from Mt Sheila.

Photo – David Pearson/Parks and Wildlife

Inset Rock face in Hamersley Gorge, Karijini National Park.

Above Tracks, such as those of a quoll, provide important clues into species distribution.

Left A northern quoll captured on Dolphin Island.

Photos – Kelly Rayner/Parks and Wildlife.

The Pilbara contains some of Western Australia's most diverse and ancient landscapes. Once sparsely populated only by traditional owners and hardy pastoralists, this region has rapidly developed in recent decades to be a major resource hub for the country. Those who have watched these changes over time have seen outstations become industrial areas, mountains transformed into vast open cut mines and small towns grow into major regional centres. Long-operating ports that once shipped sheep and asbestos have been surpassed by those created to ship cattle, iron ore, salt and gas.

The development of the Pilbara has also made it easier for the broader community to visit and stay in the area. In the early part of the 20th century it took travellers several weeks on a ship from Fremantle to the Pilbara to get there. As time passed, this became a five-day drive on gravel roads, but now frequent commercial flights travel to a number of Pilbara centres most days of the week. These days it is not out of the question to have a weekend getaway 'up north' with

the family. In particular, it has become a popular destination for 'grey nomads' during the cooler winter months, and it is common to come across travellers who are on their third or fourth visit to the region with their camper or caravan because there was so much they didn't see during their last visit. Calling the Pilbara 'a vast landscape' is an understatement and, given it is more than double the size of the state of Victoria, it is a huge achievement to see and appreciate even a small portion of the region.

HOME TO THREATENED SPECIES

The expansive Pilbara region is home to a raft of unique plants and animals. In particular, the area is an important stronghold for four threatened native species – the northern quoll (*Dasyurus hallucatus*), the greater bilby (*Macrotis lagotis*), the Pilbara leaf-nosed bat (*Rhinonicteris aurantia* Pilbara form) and the Pilbara olive python (*Liasis olivaceus barroni*). These species face threats resulting from the increased accessibility of the Pilbara, such as

habitat alteration from development and pastoralism, predation and competition from introduced animals and changed fire regimes. Cane toads (*Rhinella marina*) are also likely to be a threat to quolls and pythons in the future (see also 'Island battlefield: Toads versus native fauna' on page 42). One of the most important steps in recognising how threatening processes may impact these species is determining where these animals currently occur, and where they formerly existed, so informed decisions can be made for their future management.

Parks and Wildlife, with support from the oil and gas and mining industries, and environmental consultants, has carried out a range of projects to locate these animals through trapping surveys or sightings, and through observations of evidence such as scats, tracks, shed skins, remains, burrows, dens and diggings. However, given the great size of the Pilbara, collecting this information can be challenging. Some of the most important records, particularly historical information, have come from anecdotal accounts of these animals



“The burrows and diggings of reptiles, particularly goannas, can often be confused with those of bilbies. Bilbies, however, create uniquely shaped burrows that have a high domed entrance and large spoil heap.”

from pastoralists, traditional owners, community members and visitors to the region. These records are extremely valuable and the tales that come with such unique sightings are often as interesting as the records themselves. Information from members of the public can continue to add to our knowledge of the area.

QUOLL SPOTTING

One of the more charismatic and well-known animals of the Pilbara is the northern quoll. The smallest of the four quoll species in Australia, the northern quoll is the only one of these carnivorous marsupials found in the region.

In the Pilbara, northern quolls are generally associated with rocky areas, waterholes and creek lines, sheltering in crevices or hollow logs during the day. However, many reports from pastoralists tell of animals in the roofs of homesteads, particularly during the breeding season when females may give birth and nurture litters of up to eight young. Mining staff occasionally come across animals denning under dongas or in machinery. One particular animal living in Karratha was found to be the culprit behind the destruction of top shelf liquor in the local bottle shop. Like many animals, northern quolls can wind up in some unusual places in their search for food and shelter.

Quolls are easily identifiable by the white spots on their brown coat, a feature that helps them blend in with the dappled light at night when they are active. They are relatively small (less than one kilogram) and will quickly seek shelter in crevices among rocks if disturbed. Their distinctive elongated corkscrew scats are deposited in obvious places, such as on top of rocks and in bare patches of ground, and will contain hair, bone and insect exoskeleton. Finding tracks from quolls can be difficult as there are typically few areas of soft substrate in their rock habitats, but once recognised their tracks are readily identified.

DIGGING UP BILBY RECORDS

Australia’s Easter icon, the greater bilby, can be found sparsely across the Pilbara, Kimberley and desert regions of WA. Historically known as the dalgyte or rabbit-eared bandicoot and traditionally by Aboriginal people by other names such as ninu, walpajirri, mankarr or ahert, the bilby is listed as ‘vulnerable’ and is now restricted to less than 20 per cent of its former distribution across Australia.

Bilbies are usually found in areas with sandy or loamy soils which enable them to build their deep, spiralled burrows. They can be found in a variety of environments including sand plains and dunes, *Acacia* shrublands, woodlands and thickets,

Above Bilbies build long, spiralled burrows.

Above left Bilbies can be found in areas rich in witchetty grubs, termites and ants.

Top left Bilbies have distinctive tracks due to their unusual gait and prominent front claw markings.

Photos – Martin Dzimirski/Parks and Wildlife

tussock and hummock grasslands and around drainage lines. Bilby activity is often observed where they are foraging for witchetty grubs living in the roots of different *Acacia* species or targeting termites, ants, trapdoor spiders and bulbs.

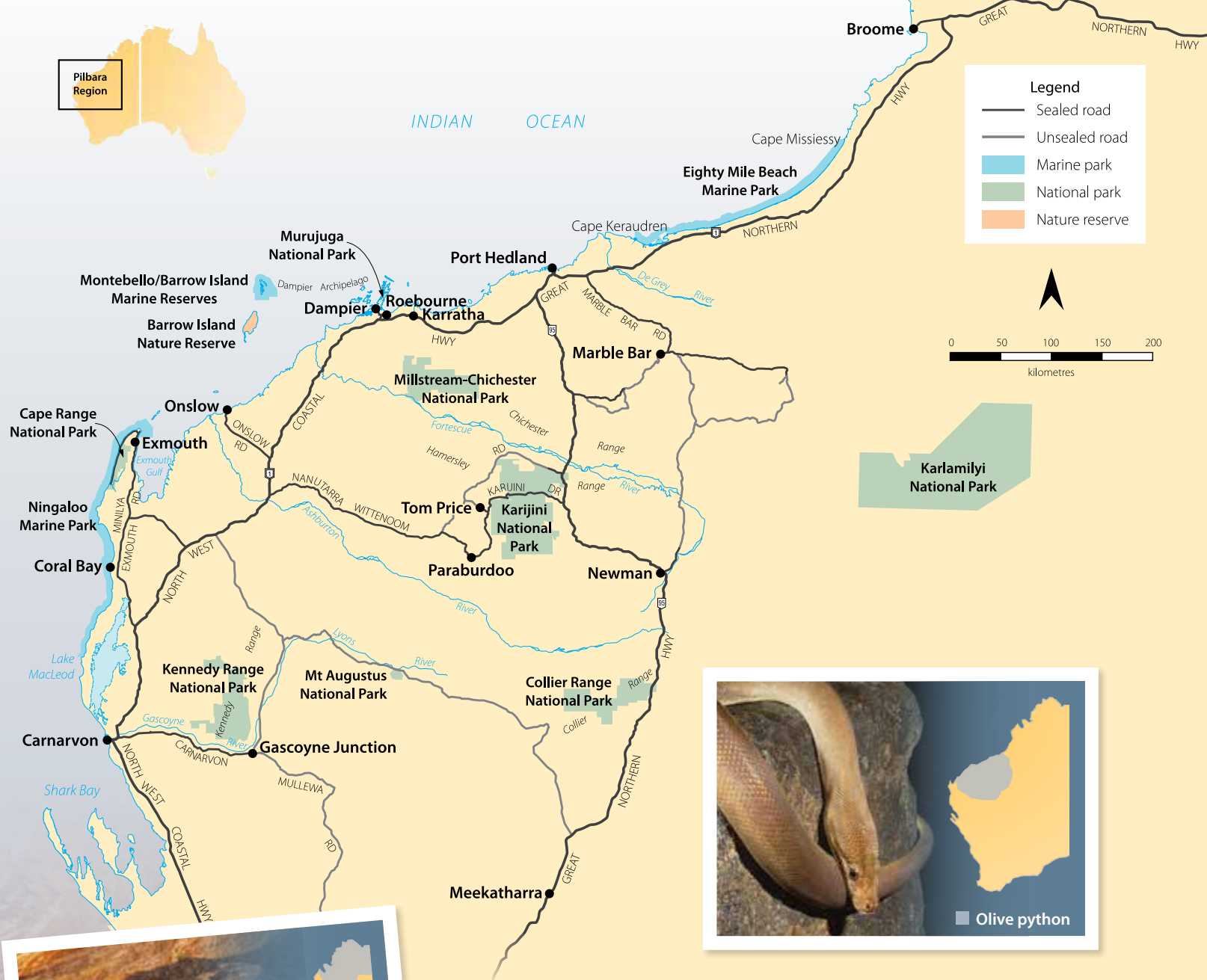
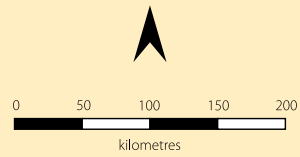
The burrows and diggings of reptiles, particularly goannas, can often be confused with those of bilbies. Bilbies, however, create uniquely shaped burrows that have a high domed entrance and large spoil heap. They can also be located through their unique cylindrical scat pellets, that are often found around, or within the spoil of, their diggings. Their unique tracks with the offset front feet creating three distinct parallel line marks from their three claws and adjacent hind feet, which sometimes show a drag mark of their large toe, are also distinctive when the soil conditions are right to maintain prints.

Pilbara Region

INDIAN OCEAN

Legend

- Sealed road
- Unsealed road
- Marine park
- National park
- Nature reserve



".. please keep an eye out for evidence of these threatened species of the Pilbara."





Exploring the Pilbara

The Pilbara is a beautiful place to explore, full of stunning locations for everyone to enjoy. However, it is important to travel responsibly, both for your safety and the safety of others. Plan your travel and let someone know your intended route, take plenty of spare food and water, pack a first aid kit and carry a form of emergency communication as many areas are not covered by mobile phone reception. Your vehicle (and especially its tyres) needs to be in

good condition as dirt roads are rocky and often corrugated. Be patient on the roads and enjoy your journey. Look out for road trains, particularly on dirt roads when thick dust will restrict your vision. Avoid driving at night in the bush as collisions with kangaroos and other animals or even threatened species are particular risks. Campgrounds in Karijini and Millstream-Chichester national parks are available to tourists, as well as a veterans' retreat at the Meentheena Proposed Conservation Park. Some pastoral stations also operate small campgrounds and welcome visitors for a small fee. Make sure you research your destinations, take note of current conditions and please keep an eye out for evidence of these threatened species of the Pilbara.



Opposite page

Clockwise from far left Photos – David Pearson/Parks and Wildlife, Marie Lochman, Mark Cowan/Parks and Wildlife, Jiri Lochman
Map distribution data courtesy of Department of Environment and Energy

Above Millstream-Chichester National Park.
Photo – Tourism WA

Above right Pilbara olive pythons can grow to more than four metres.
Photo – David Pearson/Parks and Wildlife

The bilby has blue-grey and fawn fur, and a black tail with a white tip. Their large ears and pointed snout make them a unique and well-adapted marsupial for the arid and semi-arid habitats of northern Australia. Lucky travellers and people living in northern WA may have sighted a bilby ambling across roads and tracks, but recorded sightings are few due to the bilby's nocturnal and elusive nature. Non-invasive survey and monitoring techniques, primarily using signs of bilbies in the field and genetic research, are currently being undertaken by Parks and Wildlife, with funding from Fortescue Metals Group and Millenium Minerals, in order to establish a better understanding of the status of bilbies across the Pilbara.

A GIANT PREDATOR

The Pilbara olive python is a little-known species that occurs across the Pilbara and northern parts of the adjoining

Gascoyne region. Despite the large size reached by adults (in excess of four metres in length), they are difficult to locate because of their nocturnal and cryptic habits and probable low densities. In the cooler months, Pilbara olive pythons spend much of the day concealed in rocky crevices, logs or under flood debris. The high Pilbara summer temperatures result in a concentration of potential prey at water points, and these pythons can be observed in ambush positions submerged on the edge of waterholes or in reed beds. Their diet is varied, with rock-wallabies, northern quolls and fruit bats being major mammal prey, while birds such as ducks, corellas and pigeons are also eaten.

The first detailed information on the biology of this magnificent predator came from a radio-tracking project conducted by Parks and Wildlife with the assistance of Pilbara community volunteers who followed pythons at study sites on the Burrup Peninsula (near Karratha), Tom Price, the Robe River near Pannawonica and at Millstream Chichester National Park. Pilbara olive pythons were found to occupy discrete home ranges, returning to favourite shelter sites and ambush sites frequently. The cooler dry season is the time for mating, with a break from hunting for the adults. Females appear to attract suitors with a 'perfume' (pheromone) trail and the males may stay and mate with a female over a number of days. Females coil around their eggs to protect

and incubate them and the bootlace-thin hatchlings emerge from nest sites around January each year.

Pilbara olive pythons are easy to recognise; the entire body is a uniform olive or red-brown colour with a distinct neck and wide head. On the top and bottom lips of the mouth are a number of indents with heat-sensitive pits used in hunting. Pilbara olive pythons are generally slow-moving and deliberate in their movements, but if harassed or frightened, they can arc their body off the ground and curl their neck into an 'S'-shape ready to strike. If encountered on a bush track or around a waterhole, stay a safe distance away and you may be rewarded with an opportunity to observe their bulk and graceful rippling movements.

BAT CALLS IN THE NIGHT

The Pilbara leaf-nosed bat is the region's form of the orange leaf-nosed bat, a species that is found across northern Australia within the Kimberley, Northern Territory and Queensland. The Pilbara form is found only in the Pilbara and Upper Gascoyne bioregions and is currently listed as 'vulnerable' with few known roost sites across its distribution. Due to its selective and precise habitat requirements, this microbat is highly susceptible to both the direct and indirect impacts of activities, such as mining, that disturb their caves and foraging habitat.



Above Pilbara leaf-nosed bat.
Photo – Mark Cowan/Parks and Wildlife

Left Wildlife research centre manager John Augus recording northern quoll habitat on Dolphin Island.
Photo – Kelly Rayner/Parks and Wildlife

Pilbara leaf-nosed bats use warm, humid caves and gorge crevices as roost sites. They also take advantage of old mine shafts and adits to roost due to the dark and humid environment caused by seeping groundwater. Researchers most often detect the presence of these bats through recordings of their echolocation calls. But it is possible to see these agile and darting flyers along with many other bat species while they are out foraging for insects at night over waterholes or pools in gorges, or when they exit their roosts for the night.

The Pilbara leaf-nosed bat is distinguished by its diamond-shaped nose leaf and usually brightly coloured orange fur, although there is variability in the colour of this species with paler fawn, silver or golden individuals having been recorded. These animals are small, with adults reaching a maximum body length of only 43 millimetres. They make calls that cannot be heard by humans and live in unstable cave and mine systems that are typically not safe for people to enter. The combination of these factors makes sighting this species very unlikely but an event that any lucky observer should value highly.

GATHERING CITIZEN SCIENCE

If you are fortunate enough to encounter one of these threatened species, your information is valuable for increasing

understanding of their distribution. You don't need to be an ecologist to contribute information, thanks to Parks and Wildlife's Pilbara Threatened Fauna Project theme, which can be accessed through the department's online web portal NatureMap (<https://naturemap.dpaw.wa.gov.au/>). The portal has been designed to enable people to check observations against photographs and descriptions of the Pilbara's threatened species. Users can also access information about work currently being conducted by Parks and Wildlife to conserve and manage these species. The website also provides links to further information for those who would like to learn more about these threatened species. Importantly, the portal provides contact information so people can share their observations to help increase our knowledge of these species and contribute to their conservation.

Contributions do not have to be recent sightings; all records are important, including those that may have occurred in the past. The most essential part of collecting species records is making sure the information is as accurate as possible. Information required for any sightings and/or signs of species presence includes the location, date, type of record collected and the observer's contact details, in case the department requires further clarification of the information

provided. Photos of what you have found and the type of habitat at the location are extremely useful and can also be forwarded with the record to threatenedfauna@dpaw.wa.gov.au. Photographs are an important tool for researchers to verify your information and a great way for you to keep a personal record of your encounter with a threatened species. The extensive use of smartphones these days enables observers to record both GPS coordinates and digital photos of observations. All the information gathered helps to build knowledge about the fascinating plants and animals that occur throughout the Pilbara, and indeed the state, aiding their conservation.

Kelly Rayner is a Parks and Wildlife technical officer based at Woodvale Research Centre. She can be contacted on (08) 9405 5142 or by email (kelly.rayner@dpaw.wa.gov.au).

Fiona Carpenter is a Parks and Wildlife technical officer based at Woodvale Research Centre. She can be contacted on (08) 9405 5121 or by email (fiona.carpenter@dpaw.wa.gov.au).

David Pearson is a Parks and Wildlife principal research scientist. He can be contacted on (08) 9405 5112 or by email (david.pearson@dpaw.wa.gov.au).