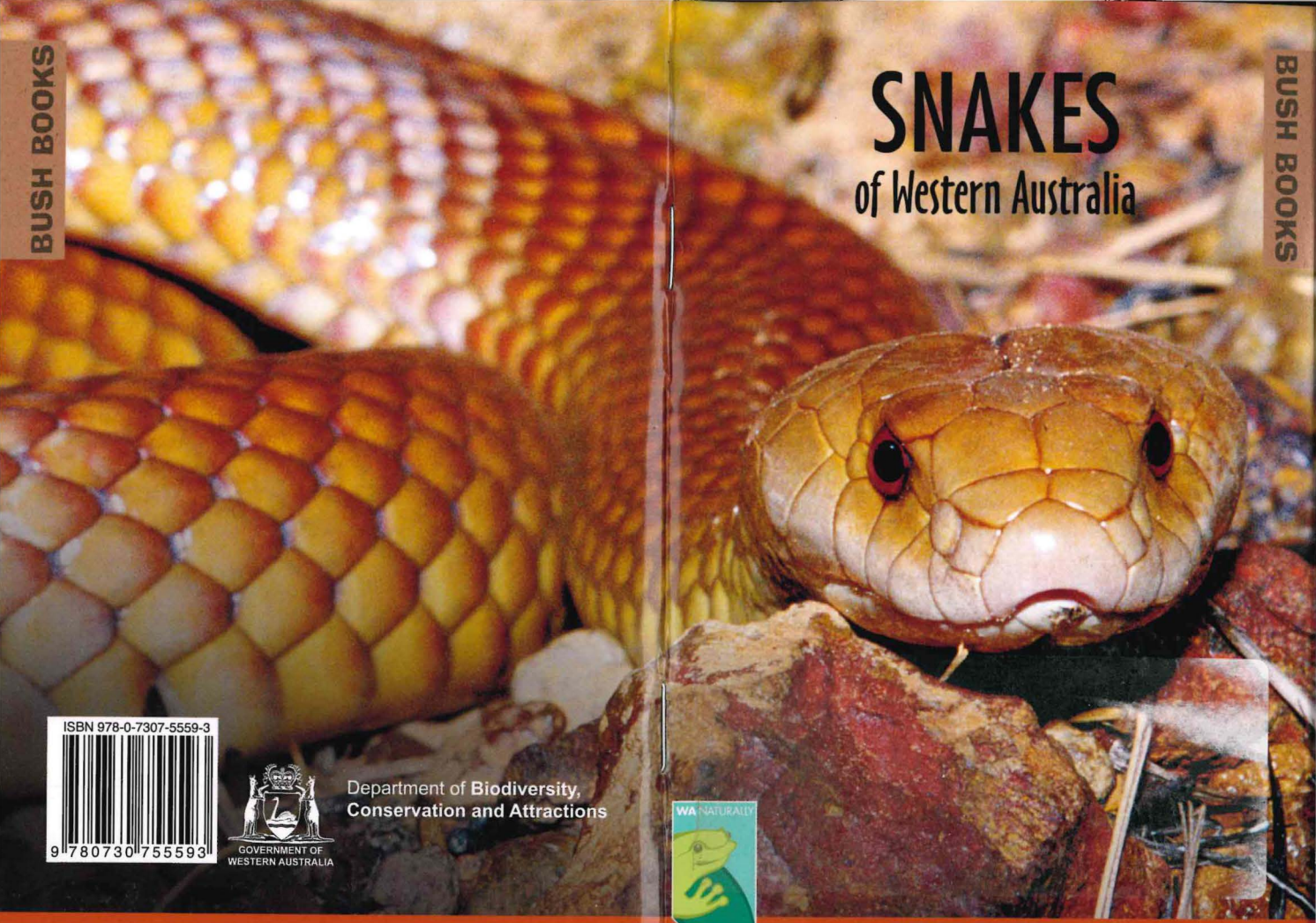
BUSH BOOKS

SNAKES
of Western Australia



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GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

WA NATURALLY

What snake is that?

BUSH BOOKS

Bush Books are a series of practical field guides to help you learn about and discover WA's unique plants, animals and special features, region by region.

ABOUT THE AUTHOR

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FRONT COVER Mulga snake. Photo – Jiri Lochman.

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SNAKES
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INTRODUCTION

For many people, the word 'snake' invokes an extreme response. Understanding how they can cope without limbs to catch and manipulate food, or to chase prey and escape from predators, or why some species give birth to live young while others lay eggs, are just some of the many fascinating aspects of snakes.

Regardless of how you feel about snakes, hopefully this book will help you to appreciate them. Their physical appearance and biology are the remarkable result of millions of years of evolution, as their ancestors abandoned the use of limbs for a life of sliding on their bellies. Along the way, their elongated shape has required all sorts of compromises and solutions to a range of problems. They even had the audacity to invade aquatic environments and speciate rapidly to create the diverse assemblage of sea snakes we have today.

Western Australia is blessed with a great variety of snakes, from tiny worm-like blind snakes to olive pythons more than five metres long. Around 110 snake species occur in WA, with around 35 species confined to the State. New species are still being discovered.

WA has numerous venomous species, including some of the world's most dangerous snakes, but these should not to be feared—only treated with caution. Snakes are usually shy creatures. Snakebite occurs when snakes are fearful and take action to protect themselves. Often, people are bitten when they are attempting to kill or capture snakes. Whether you encounter a snake in the bush or in your own home, remember that the snake's primary concern is to escape unharmed. If you give it space, remain still and observe, the snake will gracefully slip away and you will both be better off for the experience.

It was not possible to cover all the snakes of WA in this book, so a selection was made of those that people are most likely to see; those that are dangerously venomous; and some others that illustrate the State's amazing snake diversity. For more detailed information on the identification and biology of WA snakes, please refer to *Snakes of Western Australia* by Storr, Smith and Johnstone (2002), *A Complete Guide to Reptiles of Australia* by Wilson and Swan (2008) and *Reptiles and Frogs in the Bush: Southwestern Australia* by Bush *et. al.* (2007).

Photo – Jiri Lochman

Above The threatened Pilbara olive python.

CONSERVATION OF SNAKES

The Pilbara olive python (*Liasis olivacea barroni*) is the only threatened terrestrial snake in WA. Two species of sea snakes are critically endangered: the short-nosed (*Aipysurus apraefrontalis*) and leaf-scaled (*A. foliosquama*) sea snakes. The rough-scaled python (*Morelia carinata*) is listed as fauna in need of special protection. In addition, a further 20 snake species are on a priority list and require surveys to determine their conservation status. Human activities pose many threats to snakes. These include clearing of habitat, the loss of prey resources and shelter sites, predation by feral animals and domestic pets, poisoning by the introduced cane toad and road deaths. You can help to conserve snakes by supporting the retention of native bushland areas and their associated wildlife, keeping domestic pets in your backyard at all times and driving carefully on country roads.

WHAT ARE SNAKES?

Snakes are reptiles that lack limbs, although some of the most ancient lineages, such as pythons and blind snakes, have the remains of pelvic girdles. Pythons also retain 'cloacal spurs', all that is left of their ancestors' hind limbs, now used only to stimulate females during mating. Several groups of lizards (such as legless lizards) have also independently given up the use of limbs over evolutionary time in a process termed 'convergent evolution'.

Traits that distinguish snakes from legless lizards include the presence of a forked tongue, enlarged rectangular ventral scales across the underside of the body, and the lack of ear-openings. Snakes also have a lower jaw consisting of two pieces that are separate at the front, but, unlike legless lizards, they do not have a fragile tail that can be dropped to allow escape from predators.

Snakes first appeared in the fossil record about 130 million years ago. Some experts believe they evolved from small burrowing lizards, while others consider that they originated from monitor lizards (goannas) and mosasaurs, an extinct group of marine reptiles.

Australian snakes are derived from two geographic origins, providing a rich snake fauna. Most have evolved from ancestors that occurred on the supercontinent Gondwana (an amalgamation of Australia, Antarctica, Africa and South America) including the Typhlopidae (blind snakes), Pythonidae (pythons), and Elapidae (front-fanged venomous species, including some sea snakes). About 15 million years ago, as Australia drifted towards Asia, some snakes were able to cross the sea by rafting or swimming between islands, most notably those of the family Colubridae (which includes species such as the brown tree snake) and a number of aquatic lineages.

Photo – Jiri Lochman

Above Legless lizards have ear openings and a broad (not forked) tongue.

Snakes show a variety of feeding, physiological and reproductive adaptations. Almost all Australian snakes eat vertebrates (though blind snakes eat the pupae of ants and termites and some mangrove snakes consume crustaceans). Since snakes lack hands and shearing teeth, they have to swallow their prey in one piece—often quite an achievement when it is a large wallaby! As snakes eat and increase in size, they outgrow their skin and need to periodically shed the outer layer. Snakes lack eyelids, so a transparent scale protects the pupil. They have an excellent sense of smell, through the nostrils as well as collecting scent particles with the flicking tongue. Male snakes have a pair of reproductive organs (hemipenes) situated in the base of the tail. Some species of snake lay eggs, while others, such as sea snakes and many species that inhabit cool climates, bear live young.

IDENTIFYING SNAKES

Identifying snakes can be difficult. Colours are variable and not reliable for identification in many species. Often, juveniles have different or brighter colouration than adults. Reliable identification usually requires close examination and counting of various scales, especially those across the mid-body region, the belly (ventral scales) and the head. Only experienced herpetologists should carry out such counts on live snakes.

HOW TO SEE SNAKES

Looking for snakes is not everyone's idea of a 'good night out', but if you are interested in observing snakes, try driving along roads slowly on warm evenings in spring and summer in bushland areas. Remember to take a torch, drive carefully to avoid other wildlife and cars and always pull well off the road when you stop. Walking around in the bush on warm nights with a torch or head-torch can also be a good way to see snakes. Remember to wear long trousers and boots just in case you step on one and it takes exception to this treatment!

If you walk slowly along trails through bushland early in the morning (7am to 10am) especially in spring, you can often see snakes basking, as they try to warm up in the early sunlight.

Below Children's python.

Photo – David Pearson/DBCA

PEOPLE WHO STUDY SNAKES

Herpetologists are people who study reptiles and amphibians. Recent studies using genetic techniques have greatly improved our understanding of the origins and relationships between species and groups, and, in some instances, have led to the description of new species. Biological surveys carried out by DBCA, the Western Australian Museum, environmental consultants and amateur herpetologists provide important information on the distribution and habitat requirements of various species and sometimes result in the discovery of new species.

Advances in technology during the past 30 years, especially the production of reliable radio-transmitters and data-loggers that can be surgically implanted into snakes, has revolutionised their study. Radio-transmitters enable researchers to relocate individual snakes easily, a great bonus considering how well snakes can hide. Some of these devices can even collect data on the body temperature of a snake as it goes about its daily activities. Other studies rely on a mark-recapture technique where individual snakes are implanted with identification chips or scale-clipped, and then searched for regularly, to collect data on movements, growth rates and reproduction.

KEEPING REPTILES AS PETS IN WESTERN AUSTRALIA

In Western Australia, certain species of reptiles and amphibians can be kept as pets under the authority of a herpetofauna keeper's license issued by DBCA. Information about licences can be obtained from the 'Native fauna licences' section of the department's website (dbca.wa.gov.au/licences-permits). The West Australian Herpetological Society have produced a number of care sheets to help in the maintenance of pet reptiles at wahs.org.au/caresheets.

People thinking of obtaining a licence to keep pet reptiles should first consider the prospect carefully, as many reptiles are long-lived, have critical environmental requirements including specialised housing, adequate heating and the provision of vertebrate food (such as mice and rats), and are generally not as amenable to handling as dogs or cats.

Never release captive reptiles into the bush, as they may be vectors of diseases that could have a serious impact on native populations. Contact a licensed pet shop or DBCA to dispose of unwanted reptilian pets.

REPTILE REMOVERS — A VOLUNTEER SERVICE FOR THE COMMUNITY

Volunteer reptile removers in metropolitan Perth and many WA country towns provide a valuable community service by removing snakes and other reptiles when they appear in houses, gardens or sheds. If a member of the public calls the Wildcare Helpline requesting assistance to have a reptile removed, they are referred to the nearest volunteer reptile remover, who will try to get there as soon as possible. Once the reptile is caught, it will be relocated to suitable habitat nearby.

If you encounter a reptile around your house, leave someone to watch it from a safe distance and call the Wildcare Helpline on (08) 9474 9055 (open 24 hours, seven days a week).

Wildcare
HELPLINE
9474 9055

SNAKEBITE

Most bites are received by people attempting to capture or kill snakes. Non-venomous species are also capable of inflicting severe bites. When you are in environments where snakes can occur, wear adequate clothing such as long trousers, boots and gloves.

Any venomous snake can inflict a fatal bite. Reactions to venom vary between individuals and depend on many factors, including the amount of venom injected, the health status of the person bitten, allergies and the effectiveness of first aid administered.

THINGS TO REMEMBER ABOUT SNAKEBITES

- ✗ **DON'T** wash the venom off the skin (it may aid in identification).
- ✗ **DON'T** cut the bitten area and try to suck venom out of the wound.
- ✗ **DON'T** use a tourniquet.
- ✗ **DON'T** try and catch the snake.

St John

WHAT TO DO IN THE EVENT OF A SNAKEBITE

1. Follow DRSABCD St John Action Plan.
2. Lay the casualty down, rest and reassure.
3. If the bite is on a limb, apply a broad pressure bandage over the bite site as soon as possible.
4. Then apply a further elasticised or firm bandage - start at fingers or toes and move up the limb as far as can be reached. Apply tightly but without stopping blood flow.
5. Splint the limb including the joints on either side of the bite.
6. Ensure the casualty does not move.
7. Urgent medical aid. Call **Triple Zero (000)** for an ambulance.
8. Write down the time that the casualty was bitten and when the bandage was applied.

BLIND SNAKES

(*Anilios* species)

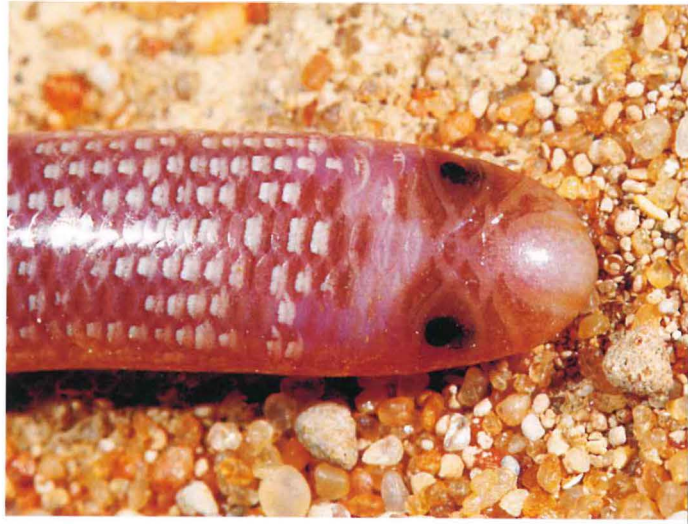
Blind snakes have tiny, poorly formed eyes that probably do little more than detect light and dark. These specialised burrowers rarely appear on the soil surface and then only at night. They are hard to identify, requiring a microscope or hand-lens to count scale rows and belly (ventral) scales, and to detect differences in the shape of the snout, the position of the nostrils and the shape of other scales.

DESCRIPTION Colouration varies from purplish-black to pink, sometimes with black patches on the head and tail. Their small size (the largest species grows to about 45 centimetres) and even, slender cylindrical bodies add to their worm-like appearance. Their eyes are located under large transparent scales on the head, appearing as two small black spots. The head shape varies between species; some have heads shaped like a down-turned shovel blade, whereas others have wedge-shaped or strongly hooked heads.

DISTRIBUTION About 25 species occur in WA, but new species are still being described. They are distributed throughout the State, but several species are known only from small geographic areas or a few individuals.

PREFERRED HABITAT All blind snakes spend most of their time under the soil surface. They occur in a variety of habitats, including desert sand plains, tropical savannas, forests, woodlands, rocky outcrops, islands and metropolitan gardens.

LIFE HISTORY Their small, tightly-aligned scales are so smooth that some species are able to penetrate ant burrows to steal their eggs and larvae without suffering injury from the soldier ants protecting the colony. Its small mouth and short lower jaw limit the size of its gape and hence the size of its prey. Apart from ants, blind snakes also eat termite pupae and insect larvae. Little is known about their reproduction. Mating probably occurs below ground. All species develop soft-shelled eggs.



Above *Anilios australis*

Below *A. endoterus*

Photos – Jiri Lochman

CARPET PYTHON

(Morelia spilota)

This snake is perhaps the most familiar to the public. It is non-venomous, slow-moving and championed as a killer of mice and rats in agricultural areas. Carpet pythons often live in close proximity to people, and may shelter in ceiling spaces and sheds.

DESCRIPTION Carpet pythons can reach up to three metres long and 20 centimetres in girth. The large, triangular head has small indentations (labial or heat pits) along the rear of the lower jaw and on the lips to aid hunting. These detect heat radiating from prey. Colouration is variable, but typically consists of a complex pattern of large black-edged grey to brown blotches or bars. The base colour varies from greenish-brown to black, and some populations have yellow highlights on their upper surface. The belly often has a yellowish hue, with three indistinct black stripes.

DISTRIBUTION Two widely separated subspecies occur in WA. The south-west carpet python (*Morelia spilota imbricata*) occurs from Shark Bay south to Albany and eastwards in an arc to Kalgoorlie and Norseman. Its distribution then extends in a narrow band across the coastal section of the Nullarbor and into South Australia. It occurs on West Wallabi Island in the Abrolhos Islands off Geraldton, on Garden Island near Rockingham and on two islands in the Recherche Archipelago off Esperance. *Morelia spilota variegata* has a northern Australian distribution, and in WA appears to be relatively uncommon.

PREFERRED HABITAT Carpet pythons occur in many habitats, including coastal heath, forest, shrubland, semi-arid woodlands, around rock outcrops and on windswept southern islands.

LIFE HISTORY Young carpet pythons consume lizards, birds and small mammals. Adults eat larger prey such as possums, small wallabies and large reptiles, including bobtail skinks and goannas. Females grow larger than males and, during the mating season (October to December in the south), attract males with scent

Photo – David Pearson/DBCA

Above South-west carpet python.

(pheromone) trails. Unlike related subspecies in eastern Australia, males do not fight for females, and have been observed in groups around females waiting for an opportunity to mate. Eggs are laid under rock slabs, in the burrows of other animals, in thick vegetation and sometimes in sheds. The female coils around the eggs and incubates them for around 60 days. When her eggs begin to hatch, she leaves the nest site and the young are on their own.

CONSERVATION STATUS This species has declined in the Wheatbelt region and along the Swan Coastal Plain.

STIMSON'S PYTHON

(Antaresia stimsoni)

This widespread species was formerly included with the Children's python, but was described as a distinct species in 1985.

DESCRIPTION Stimson's pythons grow to a metre long, with a robust body. The overall colour is reddish-brown to dark brown, with a bold pattern of blotches bounded by white or cream areas. The underside is white. It has a broad head, a distinct neck and heat pits on the lower jaw and snout. White stripes run along both sides of the body, from behind the head for about a third of the body length.

DISTRIBUTION The Stimson's python has a vast distribution across the central region of Australia, but it is replaced by the Children's python in the tropical north. In WA, it occurs from the southern Kimberley down as far south as the Darling Range near Perth and then eastwards across the central deserts. Stimson's pythons also occur on a number of islands including Barrow Island, the Dampier Archipelago and several in the Shark Bay area.

PREFERRED HABITAT This species occupies a wide range of habitats, including spinifex grasslands, particularly those with termite mounds that are used for shelter, rocky outcrops with caves and crevices, and tree-lined watercourses with logs and hollows.

LIFE HISTORY Small vertebrates such as geckos, mice and bats—captured by lying in ambush beside termite mounds, animal trails and at the entrances of caves—are the main prey. Mating occurs during late autumn and winter. The female then lays seven to 20 eggs in August to November. These hatch in October through to January, depending on when they were laid.

CONSERVATION STATUS Widespread and common.

RELATED SPECIES In WA, the Children's python (*Antaresia childreni*) only occurs in the north Kimberley, and is purplish-brown in colour with an indistinct pattern (see page 6). The scientific name

Photo – Jiri Lochman

Above Stimson's python constricting a rodent.

suggests that it would be a small and a suitable pet for children, but the species, described in 1842, was named after the Keeper of the Zoological Collection at the British Museum, John Children.

PYGMY PYTHON

(Antaresia perthensis)

The world's smallest python, the pygmy python, grows to about 60 centimetres long and only occurs in WA. The reference to Perth in the scientific name was an error, as the species is confined to the Pilbara and parts of the adjoining Ashburton region.

DESCRIPTION This tiny python has a reddish-brown or orange-brown body, with a faint pattern of darker spots or blotches. The pattern is more pronounced in juveniles and tends to fade with age. The body is rounded and has a less distinct neck than that of most other species of python. The undersurface is white with no pattern. It has fewer mid-body scale rows (31 to 35) than the Stimson's python (37 to 47), which it can be confused with.

DISTRIBUTION Pygmy pythons are confined to WA. They extend from near Port Hedland on the Pilbara coast, down to North West Cape, eastwards into the desert along the Canning Stock Route and south to Wiluna and Mullewa. They also occur on a number of islands in the Dampier Archipelago near Karratha.

PREFERRED HABITAT This species is usually associated with spinifex habitats with rocky hills or termite mounds. It is also found in grasslands and acacia shrubland, where it shelters under rocks, in soil cracks or within grass tussocks.

LIFE HISTORY The diet of the pygmy python consists mainly of geckos and small skinks, although it will also consume small mammals. Prey is usually ambushed on the ground, with the python waiting alongside a spinifex hummock for a passing meal. Very little is known about the breeding cycle of this species, and is based on observations of animals in captivity. Females lay between two and eight large eggs, which they coil around to incubate for about 50 days.

CONSERVATION STATUS Pygmy pythons are widespread and common in suitable habitat.

Photo – Brad Maryan

Above Pygmy python.

Below In ambush position.

Photo – David Pearson/DBCA

BLACK-HEADED PYTHON

(Aspidites melanocephalus)

The black-headed python has a striking appearance, with a glossy black hood covering the head and neck. When encountered, its first response is often to arch its body in a strong S-shape, adopting a stance that suggests it will soon strike in a similar manner to a venomous snake. Pintupi people in the central desert refer to this python as 'warrurungkalpa', which literally means 'crusher of rock-wallabies'.

DESCRIPTION The glossy black head and neck is a distinctive feature of this python, although the lack of a distinct neck gives it a superficial resemblance to the venomous gwardar (see pages 58–59). However, the black-headed python has a much more robust body, a rounded snout and attains lengths of up to three metres. The pale yellowish-cream to reddish-brown body has numerous (70 to 110) irregular, narrow black to brown bands.

DISTRIBUTION This species is widespread across northern Australia. In WA, it is found from the North West Cape, north and eastwards through the Pilbara and the Kimberley regions.

PREFERRED HABITAT The black-headed python inhabits rolling hills with spinifex, plains with cracking soils and rock outcrops.

LIFE HISTORY These snakes feed on a range of reptiles, including venomous snakes and goannas, but will also consume birds and mammals such as rock-wallabies. By day, black-headed pythons shelter in rock crevices, in logs or in cracks in clayey soil, from which they have been seen extending their head and forebody to bask. They emerge to forage in the early evening. Males engage in combat during the mating season, in late winter and early spring. Females lay five to 18 eggs in October or November that hatch in January or February.

CONSERVATION STATUS Black-headed pythons are locally common in areas of suitable habitat, but otherwise are rarely seen.

Photos – Babs and Bert Wells/DBCA

WOMA PYTHON

(Aspidites ramsayi)

The woma python is a little-known species with a broad distribution across drier areas of central and western Australia. It is an important tjukurrpa (Dreaming) character for some desert Aboriginal groups, and is held responsible for the creation of several features on Uluru (Ayers Rock).

DESCRIPTION This solid-bodied python reaches up to 2.5 metres. Like the black-headed python, it lacks a distinct neck and has no labial (heat detection) pits. The yellow to brown body is encircled by brown bands, which divide frequently. Older individuals are sometimes almost black on the upper surface, and the bands may be indistinct. The yellowish-brown head usually has glossy black patches above each eye and around the snout's tip. The tail is short.

DISTRIBUTION Womas occur in the Great Sandy, Gibson, Little Sandy and Great Victoria deserts and west to Shark Bay. Despite being relatively common in many Wheatbelt locations, north to around Northampton and east at least as far as Southern Cross, up to the 1950s, they now appear to be extinct over most of this area.

PREFERRED HABITAT Woma pythons inhabit sand plains with spinifex grassland or low acacia shrubland. They shelter in burrows constructed by other animals such as goannas, bilbies and rabbits.

LIFE HISTORY Very little is known about the wild behaviour of the woma python. At Shark Bay, it spends long periods below ground and presumably ambushes prey such as rabbits and goannas in their burrows. Desert Pintupi Aboriginal people, who are skilled hunters of this snake, say that they pair up in winter and stay together in burrows, probably mate in spring and then the females lay their eggs in a burrow.

CONSERVATION STATUS Desert populations appear secure, but are often hard to detect. Wheatbelt populations have seriously declined.

Photo – Brad Maryan

Photo – David Pearson/DBCA

OLIVE PYTHON

(Liasis olivaceus)

Olive pythons often grow to great lengths, climb readily and prey on a range of birds, reptiles and mammals. Two subspecies occur in WA.

DESCRIPTION These large pythons have stout bodies and long tails. The body is olive-green to reddish-brown in colour with no pattern. The head is broad and there are heat pits on the upper and lower jaw. The underside is creamy white.

DISTRIBUTION The most widespread subspecies is *L.o.olivaceus*, which occurs across northern Australia, including the whole Kimberley region. The other subspecies, *L.o.barroni*, is found only in WA, occurring in the Pilbara and the northern Ashburton regions.

PREFERRED HABITAT In the Kimberley, olive pythons are found in many habitats, including woodlands, river and streamside vegetation, caves and around rock outcrops and pools. In the Pilbara, they occur in rock outcrops, particularly those near waterholes and along watercourses in hilly areas.

LIFE HISTORY Olive pythons often take large prey including wallabies, bats, corellas and ducks. At Tom Price, in the central Pilbara, juvenile olive pythons are often attracted to aviaries and are fond of canaries and budgies!

CONSERVATION STATUS The northern subspecies is widespread and abundant. The Pilbara subspecies is currently listed as threatened and was the subject of a radio-tracking study involving volunteers from local communities between 1996 and 2005.

RELATED SPECIES Another large, unpatterned olive-green to brown python, the water python (*Liasis fuscus*) occurs across northern Australia, but in WA it is known only from the Kimberley region. This species has a yellow belly and is usually seen in or very close to water.

Above and below The Pilbara olive python.

Photos – David Pearson/DBCA

ROUGH-SCALED PYTHON

(Morelia carinata)

The rough-scaled python is confined to the north Kimberley region of WA, and was only described in 1981. It occurs in some of the most remote country in the State, where it lives well concealed in rocky outcrops and rainforest vine thickets.

DESCRIPTION This relatively small and slender python appears to spend most of its time off the ground hidden in vegetation. It reaches a maximum length of about two metres. The body displays a complex pattern of brown blotches overlying a cream background. The upper scales have a strong keel and there is a large round frontal scale on top of the head between the eyes.

DISTRIBUTION The rough-scaled python appears to be confined to sandstone escarpments in the north Kimberley.

PREFERRED HABITAT The few individuals observed so far have been found in boulder-strewn gullies or on cliff ledges. Further surveys may find a wider habitat preference. Most have been found hanging in low shrubs at night or sitting on rock ledges in patchy sunlight. One was saved from a hungry olive python that was beginning to swallow it.

LIFE HISTORY Little is known about the life history of the rough-scaled python. Fur recovered from droppings indicates that it eats rock-rats, but it probably also consumes a range of other mammals, birds and reptiles. Several were taken into captivity and successfully bred at the Australian Reptile Park in NSW and it is now available in the pet reptile industry.

CONSERVATION STATUS The rough-scaled python is rare and restricted to a small area in the north Kimberley.

Photos – John Weigel

BROWN TREE SNAKE

(Boiga irregularis)

The brown tree snake is a member of the family Colubridae, a lineage of snakes that invaded Australia from the north in comparatively recent times. The venom glands are connected to fangs that are positioned at the back of the upper jaw, giving rise to the term 'rear-fanged' to describe snakes in this family.

DESCRIPTION This is a long slender species that reaches up to two metres. The body is laterally flattened, and has smooth scales and a long prehensile tail, which aids climbing. It is primarily a tree-dwelling species, able to rapidly climb vegetation and rocks. In the Kimberley it has an off-white to yellow-white body with bold reddish-brown bands, and a white belly. The neck is narrow and the eyes are very large with a vertical (cat-like) pupil.

DISTRIBUTION Brown tree snakes are found across northern Australia. In WA, they are confined to the Kimberley.

PREFERRED HABITAT They live in woodlands, monsoon rainforest, streamside vegetation and rock outcrops. These snakes are usually seen climbing through vegetation above the ground.

LIFE HISTORY Brown tree snakes chase geckos or ambush sleeping lizards, birds, bats and other small mammals. They shelter in tree hollows, caves or at the base of palm fronds. Females lay four to 12 eggs.

CONSERVATION STATUS Secure.

RELATED SPECIES The green tree snake (*Dendrelaphis punctulatus*) has a similar arboreal lifestyle but is in a different genus and tends to be active by day. It has a round pupil, a bright green to brown back and a divided anal scale (the brown tree snake has an undivided anal scale).

Photo – Brad Maryan

MANGROVE SNAKES AND THE KEELBACK

Several other little known members of the family Colubridae occur in northern WA. They typically occur in estuarine environments and occasionally in adjoining fresh water. Mangrove snakes are venomous; however, the keelback is not.

DESCRIPTION Mangrove snakes have stout bodies with short tails. Their heads are broad with small eyes. Nostrils with valves on the top of the snout enable the snakes to breathe with most of the body submerged. The tail is partly flattened but not to the same extent as sea snakes. The keelback (*Tropidonophis mairii*) grows to 1.2 metres long and is found around fresh water. Its body is grey to olive with little or no pattern and the dorsal scales are strongly ridged.

DISTRIBUTION AND HABITAT The Australian bockadam (*Cerberus australis*) is known from scattered sites around the northern Australian coast, including the north Kimberley. The white-bellied mangrove snake (*Fordonia leucobalia*) is found in estuaries from Port Hedland, north around the Kimberley coast and across northern Australia into Asia. Richardson's mangrove snake (*Myron richardsonii*) occurs in New Guinea and along the northern Australia coastline, including the north Kimberley. Resetar's mangrove snake (*Myron resetari*) was only described in 2011 and occurs along the southern Kimberley coastline.

PREFERRED HABITAT Mangrove snakes typically inhabit mudflats and mangrove-lined channels that retain some water at low tide. The keelback shelters under vegetation or in holes close to freshwater rivers and swamps.

LIFE HISTORY Mangrove snakes catch fish, crabs and other crustaceans. They bear live young. The keelback eats frogs and lizards, and females lay five to 15 eggs.

CONSERVATION STATUS All species are considered secure.

Photo – Brad Maryan

Above White-bellied mangrove snake.

Below Keelback.

Photo – Jiri Lochman

SOUTHERN DEATH ADDER

(Acanthophis antarcticus)

Death adders are masters of camouflage. They lie concealed in leaf litter to wait for passing prey, attracting the attention of prey by hypnotically waving their tail over their head until the victim approaches close enough for ambush. Their bite is swift and a strongly neurotoxic venom is injected via long fangs.

DESCRIPTION Dangerously venomous. Death adders have distinctive short and stout bodies with broad, triangular heads. They reach a length of up to 0.7 metres. The tail is very slender, segmented and terminates with a spine. The body colour ranges from greyish-brown to reddish-brown, with numerous grey or brown bands marked with black on one or both edges. The eyes on the broad head are elevated with strong brow ridges and the lips are white, with contrasting black bars.

DISTRIBUTION The southern death adder is scattered across southern WA in an arc from the Darling Range behind Perth to the Nullarbor, but is absent from wetter areas in the south-western corner of the State. It also occurs on a number of islands off Esperance and across South Australia into eastern Australia.

PREFERRED HABITAT Death adders inhabit a wide range of vegetation types, but tend to choose sites with deep leaf litter such as long-unburnt areas in forests, woodlands and heath, along watercourses and around rock outcrops.

LIFE HISTORY Death adders lie in wait for their prey of skinks, geckos and small mammals, in leaf litter around the edge of shrubs, where they are shaded from the midday sun. They mate in spring and produce up to 30 live young. Females mature at around four years and the smaller males at two years.

CONSERVATION STATUS The southern death adder is widespread but patchily distributed, and its status is unclear. Frequent fire may limit its distribution in some forest areas.

Photo – David Pearson/DBCA

Photo – Babs and Bert Wells/DBCA

DESERT DEATH ADDER

(Acanthophis pyrrhus)

Despite a widespread distribution across much of arid Australia, this species is rarely seen. Like its southern counterpart, it lies concealed around the edge of spinifex hummocks or shrubs waiting for prey, or on warm nights will search for lizards sleeping in the open or on low perches.

DESCRIPTION Dangerously venomous. The desert death adder is not as stoutly built as the southern death adder, but attains a similar maximum length of around 0.7 metres. The reddish-brown body has numerous (about 60) paler cream cross-bands edged with dark brown or black spots. Scales on the upper surface are strongly ridged. The head is broadly triangular with rough-textured scales on the upper surface. The lips lack the strong black and white bars of other species of death adders.

DISTRIBUTION This species is patchily distributed across central and western WA, from the eastern Goldfields in the south to the southern edge of the Kimberley, excluding the Pilbara. It also occurs in arid parts of the Northern Territory and South Australia.

PREFERRED HABITAT Desert death adders inhabit rock outcrops, sand plains and sand dune country with hummock (spinifex) grassland or low acacia shrubland. They are usually found in microhabitats with thick leaf litter, burrows or soil cracks for shelter.

LIFE HISTORY Death adders are slow moving and vulnerable to fire, so tend to select sites where fires are infrequent or from which they can readily escape. Small lizards, dragons and geckos are the primary prey. Mating is in spring. Up to 13 live young are born in summer.

CONSERVATION STATUS Secure.

RELATED SPECIES The Pilbara death adder (*Acanthophis wellsi*) was recognised as a distinct species from the desert death adder in 1998. It has an orange-red body with numerous pale or black

Photo - Brad Maryan

Above Desert death adder.

Below Pilbara death adder.

Photo – David Pearson/DBCA

cross-bands and sometimes a black head. The Kimberley death adder (*Acanthophis cryptamydros*) is variable in colour from grey to brown and reddish-brown with cross bands along the body.

SHOVEL-NOSED SNAKES

(*Brachyurophis* species)

Four species of shovel-nosed snake occur in WA. These small, cylindrical burrowing snakes have numerous brown or black cross-bands. They are nocturnal and push through soil and leaf litter in search of prey. The snout extends beyond the end of the mouth and has a cutting edge to help them move through soil. While venomous, they are not dangerous and too small to bite a human.

DESCRIPTION The southern shovel-nosed snake (*Brachyurophis semifaciatus*) is cream to reddish-brown above, with many (up to 70) brown bands across the back. It reaches a maximum length of 0.4 metres. The narrow-banded shovel-nosed snake (*B. fasciolatus*) has a name almost longer than itself, with a maximum length of only 0.4 metres. It has a striking zigzag pattern of brown and black bands (up to 80) over a white background, and black patches on the head and neck.

DISTRIBUTION Southern shovel-nosed snakes occur in the southern half of WA, apart from the south-western corner and the south coast. Narrow-banded shovel-nosed snakes occur from Perth north to Shark Bay and eastwards through the Wheatbelt and into the deserts.

PREFERRED HABITAT Both species prefer habitats with sandy soils such as coastal dunes, sand plains and dunefields vegetated by woodland, shrubland, heath or hummock grassland.

LIFE HISTORY Both species appear to feed exclusively on lizard and snake eggs found in the soil or in leaf litter. Little is known about their reproductive behaviour. Females lay two to five eggs.

CONSERVATION STATUS All species are considered secure.

RELATED SPECIES The northern shovel-nosed snake (*B. roperi*) occurs in the Kimberley, while the north-western shovel-nosed snake (*B. approximans*) is found from Port Hedland south to Shark Bay and inland to Wiluna.

Photo – Jiri Lochman

Above Narrow-banded shovel-nosed snake.

Below Southern shovel-nosed snake.

Photo – Brad Maryan

WHIPSNAKES

(*Demansia* species)

Whipsnakes are fast-moving and active during the day. They feed on frogs and lizards, especially skinks and dragon lizards. The body and tail are both long and slender, hence their name. The head has a distinct brow ridge with large eyes, each with a round pupil. In some species a dark line extends back from the base of the eye, resembling a 'comma'. Many species occur in WA, the most widespread is the yellow-faced whipsnake (*Demansia psammophis*). They are reluctant to bite unless severely provoked.

DESCRIPTION Venomous. The yellow-faced whipsnake is long and thin, with a maximum length of about one metre. It has a distinctive and striking colouration. The front half of the body is bright pale green to yellow, with bold black cross-hatching due to the black edges of the scales on its back. The tail is copper to reddish-brown. Head colour varies across its range. In the south it is olive, but in the north it is a deep coppery brown. The comma mark below the eye is white, edged with black.

DISTRIBUTION This species is found across most of WA, from around Harvey in the south, north to the southern Kimberley and eastwards across the Great Victoria Desert.

PREFERRED HABITAT The yellow-faced whipsnake occurs in most vegetation types across its distribution and is most often seen moving rapidly between shrubs or across roads.

LIFE HISTORY This species is active year-round. It pursues its main prey of lizards with short bursts of great speed. Females lay three to nine eggs in summer, often in communal nests.

CONSERVATION STATUS All whipsnakes are considered secure, although little is known about the distribution of several species.

RELATED SPECIES The greater black (*D. papuensis*), lesser black (*D. vestigiata*), grey (*D. simplex*), olive (*D. olivacea*), *D. angusticeps* and *D. quaesitor* whipsnakes occur only in the Kimberley. The

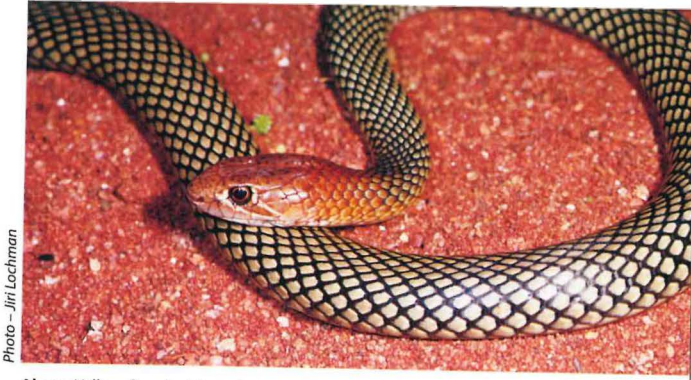


Photo – Jiri Lochman

Above Yellow-faced whipsnake.

Below Rufous whipsnake.

Photo Photo – Brad Maryan

rufous whipsnake (*D. rufescens*) occurs in the Pilbara while the black-necked whipsnake (*D. calodera*) ranges from the western Pilbara to the Shark Bay area. *Demansia rimicola* and *D. shinei* occur in the southern Kimberley and the margin of the Great Sandy Desert. All are venomous.

BARDICK

(Echiopsis curta)

Due to its stout shape and broad head, and its habit of flattening its body when threatened, the bardick is often confused with the southern death adder. While they are comparatively small, bardicks can inflict a painful bite that requires hospitalisation.

DESCRIPTION Venomous. This species has a short, stout reddish-brown to olive-brown body with no pattern. The head is broad and the lips sometimes have creamy blotches. It grows to a length of around 0.7 metres.

DISTRIBUTION In WA, the bardick occurs in the south-west and southern regions, from Kalbarri south and east to the edge of the Great Australian Bight and as far inland as Kalgoorlie.

PREFERRED HABITAT The bardick seems to prefer habitats with sandy soils, such as coastal and inland dunes, sand plains and along drainage channels with associated vegetation of heath, mallee or hummock grassland. It shelters under leaf litter, logs, dense vegetation and rocks.

LIFE HISTORY Young bardicks feed primarily on frogs, while adults take skinks, geckos, birds and small mammals. Mating has been reported in autumn, and three to 14 live young are born in late summer and autumn.

CONSERVATION STATUS Secure.

Photo – Jiri Lochman

Photo – Brad Maryan

CROWNED SNAKE

(Elapognathus coronatus)

This fabulous little snake is often observed in heathland, sunning itself in the morning on the edge of tracks with a 'smile' on its face. When it is basking or threatened, the crowned snake flattens itself strongly against the ground. Like many snakes in the cooler southern regions of Australia, it bears live young.

DESCRIPTION Venomous. It is a relatively small snake, up to 0.7 metres long, with uniform olive-grey to greyish-brown scales on its upper body. The top of the head is glossy olive to grey and contrasts with the body colour. A black stripe on the back of the head, and around the snout below the eye, forms the 'crown'. The upper lip scales are prominently white.

DISTRIBUTION The crowned snake is confined to the south-western corner of WA, from just north of Perth, inland to around Wagin and along the southern coast beyond Esperance, including many islands in the Recherche Archipelago.

PREFERRED HABITAT This species inhabits coastal plains and dunes, usually on sandy soils covered in open forest, heath or grassland. It also occurs around granite outcrops, especially in the Recherche Archipelago.

LIFE HISTORY The crowned snake consumes small skinks and frogs, which it appears to locate by searching under vegetation and in leaf litter. Females are larger than males and give birth to between three and nine live young in summer. In spring, pregnant females often bask together.

CONSERVATION STATUS Secure.

RELATED SPECIES The short-nosed snake (*Elapognathus minor*) is a rare and poorly known species confined to the extreme south-west, from Busselton to near Albany.

Photo – Brad Maryan

Above Crowned snake.
Below A basking pair of females.

Photo – David Pearson/DBCA

BLACK-NAPED AND BLACK-STRIPED SNAKES

(*Neelaps bimaculatus* and *Neelaps calonotos*)

These two species of burrowing snakes are restricted to south-west coastal regions of WA. They have a protruding snout, like other burrowing snakes, but lack the cutting edge of the shovel-nosed snakes and the cross-banding typical of many other burrowing snakes.

DESCRIPTION Venomous. The black-naped snake is slender, reaching around half a metre long. Pale yellow scales on its upper body are edged with orange to dark brown to form a net-like pattern. The head and neck have two prominent black bands. The end of the snout is white, sometimes with a black tip. The black-striped snake has a similar yellow and orange net-like pattern on its upper surface, but a broad bluish-black stripe, finely spotted with white, also runs along the spine. The head and neck have three black bands one on the tip of the snout, another over the eyes and a third on the neck.

DISTRIBUTION The black-naped snake is distributed from Shark Bay in the north, inland to around Cue and south to Bunbury, with an isolated population at North West Cape. The black-striped snake has a more restricted distribution on sand plains along the Swan Coastal Plain, from Dongara south to Mandurah.

PREFERRED HABITAT Both species occur on coastal sand plains and dunes, with heath and banksia woodlands, along the west coast. The black-naped snake is also found in alluvial areas around ranges and on inland sand plains. They shelter in the soil under fallen timber and leaf litter.

LIFE HISTORY There is little known about their life history. Both species prey on burrowing lizards and are often active on cool nights. Females produce two to six eggs.

CONSERVATION STATUS Both species are considered to be secure, although extensive urbanisation on the Swan Coastal Plain is reducing the range of the black-striped snake.

Above Black-naped snake.

Below Western black-striped snake.

Photos – Babs and Bert Wells/DBCA

TIGER SNAKE

(Notechis scutatus)

The tiger snake has an undeserved reputation for being aggressive. It occurs predominantly around swamps, where it can catch frogs, one of its preferred foods. When startled, tiger snakes flatten their neck widely, which makes them look somewhat like a cobra. They occasionally feign a strike, while attempting to slink away from danger.

DESCRIPTION Dangerously venomous. Tiger snakes are thick-bodied and may reach up to 1.2 metres long. The colouration of the upper body varies, and may range from a uniform glossy black to brown, with numerous yellow bands that may boldly encircle the body through to being barely visible. The belly is usually bright yellow. Depending on how recently they have sloughed, the scales may appear very glossy.

DISTRIBUTION In WA, tiger snakes are confined to the south-western region, from Gingin to just east of Esperance. They are also found on Garden and Carnac islands off Perth.

PREFERRED HABITAT The tiger snake is most abundant around swamps, watercourses and other moist sites, but extends out into woodlands and heath. It shelters in thick vegetation, under leaf litter, in burrows and under logs. On Garden and Carnac islands, it occurs in low coastal shrubland and shelters in seabird burrows, rock crevices and under dense shrubs.

LIFE HISTORY Tiger snakes appear to be very tolerant of cold temperatures and are often active on cool nights in search of frogs. They also consume geckos, skinks and small mammals. On Carnac Island, adults feed extensively on seagull chicks. Mating occurs in spring. Females give birth to live young, with most clutches ranging from 15 to 30.

CONSERVATION STATUS Secure.

Photo – Babs and Bert Wells/DBCA

Photo – Brad Maryan

TAIPAN

(Oxyuranus scutellatus)

The taipan is probably the most feared snake in Australia. The taipan's reputation is built on its large size, lightning speed and highly toxic venom. Killing power aside, it is a very graceful snake. When observed in the Kimberley, it is usually sinuously swimming across a river, or escaping quickly into thick vegetation.

DESCRIPTION Dangerously venomous. Taipans are long slender snakes, known to grow up to 3.5 metres in Queensland. In the Kimberley, they usually attain maximum lengths of about two metres. The body is a uniform yellow to reddish-brown, becoming paler on the flanks. The neck is thin, making the long head appear wide. The eye is large and the tip of the snout is often a cream colour.

DISTRIBUTION This snake is found across northern Australia. The few observed in WA were along the northernmost coast of the Kimberley, from Koolan Island to Kalumburu.

PREFERRED HABITAT Little is known about its habitat preferences in the Kimberley. It probably inhabits dense vegetation along watercourses and grasslands, where it shelters in burrows, under logs and in the base of hollow trees.

LIFE HISTORY It feeds on a range of rodents and birds, located by actively searching burrows and dense vegetation. Males grow larger than females, and engage in combat with each other for the opportunity to mate with females. Between three and 22 eggs are laid. Taipans are often active at night in warmer weather.

CONSERVATION STATUS The taipan is rare and poorly known in the Kimberley.

RELATED SPECIES The western desert taipan (*Oxyuranus temporalis*) was described in 2007 and is only known from a few locations in the central desert of WA. Nothing is yet known about its biology.

Photo – Gunther Schmida/Lochman Transparencies

Above Taipan.

Below Western desert taipan.

Photo – Karl Brennan/DBCA

LAKE CRONIN SNAKE

(Paroplocephalus atriceps)

The Lake Cronin snake has only been observed on a handful of occasions near Lake Cronin on the eastern edge of the Wheatbelt. Genetic evidence suggests that this species is most closely related to *Hoplocephalus*, a genus of three secretive species that inhabit trees or rocky areas on the east coast of Australia.

DESCRIPTION Dangerously venomous. It is a small, slender snake growing to a maximum length of about 0.45 metres. The upper body is uniform brown in colour, though the scales on its back are edged with black to give a faint net-like pattern. The belly is reddish-brown. The head, which is much broader than the neck, is covered with a black hood that extends down onto the neck. The lips are marked with vertical white bands, and the eyes are large and yellowish-brown.

DISTRIBUTION The Lake Cronin snake is known only from a small area around Lake Cronin, and Peak Eleanora, 145 kilometres to the east.

PREFERRED HABITAT While little is known of its habitat requirements, most specimens have been captured in open eucalypt woodland with an open shrubland understorey. The snake presumably shelters in hollow limbs, logs, under bark or in thick vegetation.

LIFE HISTORY Nothing is known of its life history. Related *Hoplocephalus* species are nocturnal, feed on small vertebrates such as geckos, bats and birds and produce live young.

CONSERVATION STATUS The Lake Cronin snake is rare and listed as a priority species. Surveys are required to determine its distribution and habitat preferences.

Photo – D. Robinson

GOULD'S SNAKE

(Parasuta gouldii)

The Gould's snake is one of four species in the genus *Parasuta* and is the only one confined to WA. It was named after the famous English biologist John Gould, back in 1841. All *Parasuta* species look similar, with uniformly coloured bodies (either black, grey or reddish-brown) and a distinctive black patch over the head.

DESCRIPTION Venomous. The Gould's snake grows to about 0.5 metres long. The body is orange to reddish-brown, with a net-like pattern on its back due to the scales being edged with black. A glossy black patch on the top of the head is interrupted by orange or white marks on the lips and in front of the eyes.

DISTRIBUTION This species is widespread in the south-west of WA, occupying the arc of country from Kalbarri to the western edge of the Nullarbor Plain, but excluding the tall forest areas of the south coast.

PREFERRED HABITAT Gould's snake occurs in many habitats, including open forests, woodland, mallee, rock outcrops and heath. It typically shelters under logs, leaf litter and termite mounds and preys on geckos and skinks.

LIFE HISTORY The species is predominantly nocturnal, searching slowly through leaf litter to locate its prey. Live young are produced, with litters of three to seven.

CONSERVATION STATUS Secure.

RELATED SPECIES The monk snake (*Parasuta monachus*) is found throughout central WA, and has an unbroken black patch on the head. The black-backed snake (*P. nigriceps*) occurs across southern WA and has a dark grey stripe along its back, while Krefft's snake (*P. spectabilis*), from the Nullarbor and near Esperance, lacks the net-like back pattern of Gould's snake.

Photo – Marie Lochman

MULGA SNAKE

(Pseudechis australis)

This impressive large snake is found throughout most of mainland Australia, but especially in arid and tropical areas. It is sometimes referred to as the 'king brown' snake. This name is misleading, as the mulga snake is closely related to, and its venom has similar characteristics to black snakes in eastern Australia.

DESCRIPTION Dangerously venomous. The mulga snake is one of Australia's largest venomous snakes, reaching lengths of more than 2.5 metres, and is more robust than the taipan. The upper body and tail are a uniform blackish-brown, brown or coppery brown, with northern individuals being paler. Each scale on its back has a dark spot that declines in size on the flanks, so that the back appears to be darker. The belly is creamy white. When the mulga snake feels that it is in danger, it flattens its neck in an impressive threat display.

DISTRIBUTION This species is found across most of WA, excluding the south coast and adjacent southern areas of the Wheatbelt, and the south-western corner from around Perth.

PREFERRED HABITAT The mulga snake occupies most available habitats within its distribution. It appears to be particularly abundant in hummock grasslands and open tropical woodlands. It shelters in burrows dug by goannas and rabbits, or under logs or crevices in rock outcrops.

LIFE HISTORY This species typically hunts by day during cool weather, but is nocturnal in northern areas and in hot weather. It feeds on lizards, small mammals, frogs, birds and their eggs. Males engage in combat during mating, and females lay four to 19 eggs.

CONSERVATION STATUS This snake is widespread and common.

RELATED SPECIES The Butler's or spotted mulga snake (*Pseudechis butleri*) grows to about 1.6 metres, and is bluish-black on its upper surface, with an irregular pattern of yellow dots. It is only found in

Photo – Babs and Bert Wells/DBCA

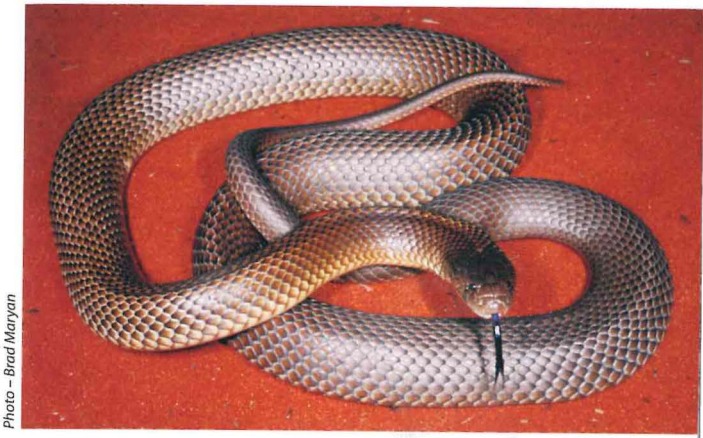


Photo – Brad Maryan

the Goldfields and in adjoining regions of the northern Wheatbelt, from Ninghan east to Laverton. Weigel's snake (*P. weigeli*) is a smaller species, often with a spotted head, known from northern Australia, including the Kimberley. Dangerously venomous.

DUGITE

(Pseudonaja affinis)

The dugite is one of the most commonly encountered snakes in the Perth metropolitan area. It has a highly variable colouration. Its love of mice, and the abundance of this prey around houses, sheds, aviaries and industrial buildings, means that dugites often live close to people. In summer, when the hatchlings emerge and travel out looking for somewhere to call home, they may enter houses, and are the species most frequently removed by Perth snake catchers (see 'Reptile removers' on page 8).

DESCRIPTION Dangerously venomous. The upper surface and head of this large snake (up to two metres) ranges from almost black to greyish-brown and pale olive yellow. There are often numerous irregular black spots along the back. A distinctive cross-banded form occurs in the Swan Valley. The belly is off-white to grey and may have a brown margin. Young dugites have a yellow to greenish-brown upper surface, occasionally with a faint black net-like pattern. The head and neck are topped with black. Dugites have nervous dispositions and usually slide off rapidly when threatened. If cornered, they quickly raise the body in a double S-shape, hiss and may strike.

DISTRIBUTION Dugites occur in the south-west corner, Wheatbelt and south coast, south of a line running from Cervantes to Kambalda and Eucla. They also occur on two islands in the Recherche Archipelago, off Esperance, as a distinct small subspecies (subsp. *tanneri*) and on Rottnest Island near Perth (subsp. *exilis*).

PREFERRED HABITAT They inhabit coastal shrubland on sand dunes, hill country, wheatfields, woodland, heath and forest, and shelter in logs, burrows, rubbish, or under sheets of tin and thick vegetation.

LIFE HISTORY Dugites hunt by day for small mammals, especially mice, lizards, birds and sometimes other snakes. They mate in

Photo – Babs and Bert Wells/DBCA

Above A dugite with her eggs.

Below A dugite in search of prey.

Photo – David Pearson/DBCA

spring. Large clutches of 13 to 31 eggs are laid in nests under rocks or in burrows and sometimes under houses or concrete slabs.

CONSERVATION STATUS Common.

GWARDAR

(Pseudonaja mengdeni)

This large species, also sometimes known as the western brown snake, is often confused with the dugite (see pages 56–57).

DESCRIPTION Dangerously venomous. This moderately large, active species can reach up to 1.6 metres. It is incredibly variable in colouration, with experts suggesting anywhere between five and 16 distinct forms. There is a banded form with a dark brown to black head and indistinct zigzag brown bands on the body, over a paler yellowish–brown background. Several forms with uniform patterns exist, with the back being grey or pale to dark brown and the head being either paler or darker than the back colour. Juveniles are similarly variable. All gwardars have distinctive off-white bellies with two rows of orange spots.

DISTRIBUTION This snake occurs in most of WA, other than the south-western corner and the south coastal regions. It is most abundant in semi-arid areas such as the northern Wheatbelt, but is found throughout the central deserts and the Kimberley.

PREFERRED HABITAT The gwardar occupies most habitats. It shelters in burrows, under or in logs, or under rocks, tin or rubbish.

LIFE HISTORY While it usually hunts by day, in hot weather it may be active in the early evening. The gwardar feeds on lizards, small mammals, birds and other snakes. Mating is in spring in southern regions, but desert populations may breed opportunistically following good seasons. Females lay nine to 38 eggs.

CONSERVATION STATUS Common.

RELATED SPECIES The ringed brown snake (*Pseudonaja modesta*), the smallest member of its genus reaching about 0.6 metres, occurs throughout most of WA and has a distinctive pattern of five to 12 widely-spaced narrow black bands on its upper surface. All dangerously venomous.

Photo – Gunther Schmida/Lochman Transparencies

Above Gwardar.

Below Ringed brown snake.

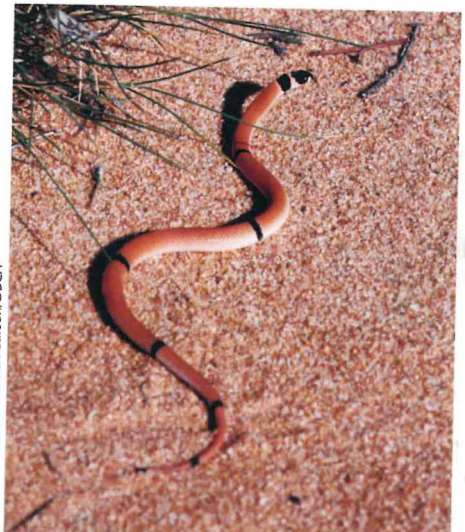


Photo – David Pearson/DBCA

BURROWING SNAKES

(*Simoselaps* species)

This remarkable group of four burrowing snake species has long protrusive snouts without the cutting edge of the shovel-nosed snakes (see pages 36–37). They hunt lizards in leaf litter or in the upper layer of the soil.

DESCRIPTION Venomous, but unlikely to bite. All are small (less than 0.4 metres long) with robust bodies and a short rapidly tapering tail. The upper surface of the body ranges from glossy pale yellow to orange and, apart from the Dampierland burrowing snake (*Simoselaps minimus*), is encircled with 18 to 42 black bands. Jan's banded snake (*S. bertholdi*) and the west coast banded snake (*S. littoralis*) have predominantly white heads, marked with complex black or orange dots and patches. The desert banded snake (*S. anomalus*) and Dampierland burrowing snake have mainly black heads, with a black patch over the top of the head and eyes, but with a white-tipped snout.

DISTRIBUTION The desert banded snake occurs in coastal areas of the Pilbara, the southern Kimberley and through the central sandy deserts. Jan's banded snake is found from Cape Range south to Bunbury, the Wheatbelt and Goldfields and into the southern deserts. Both species also occur in the Northern Territory. The west coast banded snake has a strongly coastal distribution, from Cervantes to North West Cape, and is only found in WA. The Dampierland burrowing snake is known only from WA's Dampier Peninsula north of Broome.

PREFERRED HABITAT Burrowing snakes prefer habitats in coastal dunes, hummock grasslands, alluvial washes around hills, open woodlands and heath. They shelter under leaf litter, fallen timber or loose soil.

LIFE HISTORY Little is known about their ecology. They all hunt skinks and legless lizards, which they restrain with body coils during capture. Females produce small clutches of two to four eggs.

Photo – Babs and Bert Wells/DBCA

Above Jan's banded snake.

Below West coast banded snake.

Photo – Brad Maryan

CONSERVATION STATUS All species are considered secure, although the Dampierland burrowing snake is still only known from a handful of specimens.

ROSEN'S SNAKE

(Suta fasciata)

The common name of this species refers to the person who originally described this snake in 1905, while *fasciata* means 'banded' in Latin and provides a clue to its appearance. This attractive snake is covered with darker blotches that align to form bold ragged bands across the body and tail.

DESCRIPTION Venomous. The upper body of this small, robust species (up to 0.6 metres) is yellowish-brown to orange, marked with dark brown blotches aligned roughly into zigzag bands. The head is brown to reddish-brown with white lips. A dark stripe extends from the snout, through the eye and onto the neck.

DISTRIBUTION Rosen's snake is found only in WA, where it is widespread in arid and semi-arid areas. It occurs from the Pilbara to the southern Wheatbelt, but is absent from the mid-west coast, south-western corner and south coast.

PREFERRED HABITAT The species seems to prefer areas with rocky and clayey soils, typically near hills and rock outcrops. Vegetation ranges from open eucalypt woodland and shrublands to hummock grasslands. Rosen's snake shelters in burrows, termite mounds and under bark and leaf litter.

LIFE HISTORY This nocturnal hunter forages along the ground searching for sleeping lizards, particularly dragons and geckos. Nothing is known about its mating behaviour. Females produce live young with two to seven in a brood.

CONSERVATION STATUS Secure.

RELATED SPECIES The Ord snake (*Suta ordensis*) is confined to alluvial floodplains in the east Kimberley along the WA-Northern Territory border, and has grey upper parts with a glossy black head. The spotted snake (*S. punctata*), found in the Pilbara and Kimberley and across northern Australia, has a reddish-orange body with prominent dark brown blotches on the head and neck.

Photo – Jiri Lochman

Above Rosen's snake.

Below Spotted snake.

Photo – David Pearson/DBCA

The Myall snake (*S. suta*) only just extends into WA in the east Kimberley and has a greyish-brown body with a glossy black cap on the head. All are venomous.

BURROWING SNAKES

(*Simoselaps* species)

This remarkable group of four burrowing snake species has long protrusive snouts without the cutting edge of the shovel-nosed snakes (see pages 36–37). They hunt lizards in leaf litter or in the upper layer of the soil.

DESCRIPTION Venomous, but unlikely to bite. All are small (less than 0.4 metres long) with robust bodies and a short rapidly tapering tail. The upper surface of the body ranges from glossy pale yellow to orange and, apart from the Dampierland burrowing snake (*Simoselaps minimus*), is encircled with 18 to 42 black bands. Jan's banded snake (*S. bertholdi*) and the west coast banded snake (*S. littoralis*) have predominantly white heads, marked with complex black or orange dots and patches. The desert banded snake (*S. anomalus*) and Dampierland burrowing snake have mainly black heads, with a black patch over the top of the head and eyes, but with a white-tipped snout.

DISTRIBUTION The desert banded snake occurs in coastal areas of the Pilbara, the southern Kimberley and through the central sandy deserts. Jan's banded snake is found from Cape Range south to Bunbury, the Wheatbelt and Goldfields and into the southern deserts. Both species also occur in the Northern Territory. The west coast banded snake has a strongly coastal distribution, from Cervantes to North West Cape, and is only found in WA. The Dampierland burrowing snake is known only from WA's Dampier Peninsula north of Broome.

PREFERRED HABITAT Burrowing snakes prefer habitats in coastal dunes, hummock grasslands, alluvial washes around hills, open woodlands and heath. They shelter under leaf litter, fallen timber or loose soil.

LIFE HISTORY Little is known about their ecology. They all hunt skinks and legless lizards, which they restrain with body coils during capture. Females produce small clutches of two to four eggs.

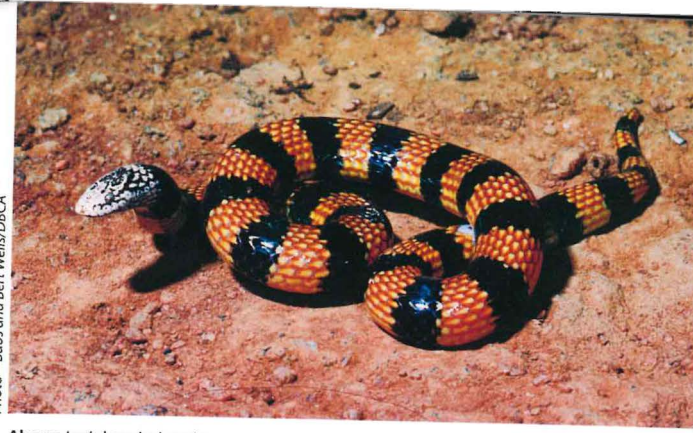


Photo – Babs and Bert Wells/DBCA

Above Jan's banded snake.

Below West coast banded snake.

Photo – Brad Maryan

CONSERVATION STATUS All species are considered secure, although the Dampierland burrowing snake is still only known from a handful of specimens.

ROSEN'S SNAKE

(Suta fasciata)

The common name of this species refers to the person who originally described this snake in 1905, while *fasciata* means 'banded' in Latin and provides a clue to its appearance. This attractive snake is covered with darker blotches that align to form bold ragged bands across the body and tail.

DESCRIPTION Venomous. The upper body of this small, robust species (up to 0.6 metres) is yellowish-brown to orange, marked with dark brown blotches aligned roughly into zigzag bands. The head is brown to reddish-brown with white lips. A dark stripe extends from the snout, through the eye and onto the neck.

DISTRIBUTION Rosen's snake is found only in WA, where it is widespread in arid and semi-arid areas. It occurs from the Pilbara to the southern Wheatbelt, but is absent from the mid-west coast, south-western corner and south coast.

PREFERRED HABITAT The species seems to prefer areas with rocky and clayey soils, typically near hills and rock outcrops. Vegetation ranges from open eucalypt woodland and shrublands to hummock grasslands. Rosen's snake shelters in burrows, termite mounds and under bark and leaf litter.

LIFE HISTORY This nocturnal hunter forages along the ground searching for sleeping lizards, particularly dragons and geckos. Nothing is known about its mating behaviour. Females produce live young with two to seven in a brood.

CONSERVATION STATUS Secure.

RELATED SPECIES The Ord snake (*Suta ordensis*) is confined to alluvial floodplains in the east Kimberley along the WA-Northern Territory border, and has grey upper parts with a glossy black head. The spotted snake (*S. punctata*), found in the Pilbara and Kimberley and across northern Australia, has a reddish-orange body with prominent dark brown blotches on the head and neck.

Photo – Jiri Lochman

Above Rosen's snake.

Below Spotted snake.

Photo – David Pearson/DBCA

The Myall snake (*S. suta*) only just extends into WA in the east Kimberley and has a greyish-brown body with a glossy black cap on the head. All are venomous.

BANDY BANDYS

(*Vermicella* species)

The three species of bandy bandys found in WA are rarely observed on account of their nocturnal and burrowing habits. All are striking looking animals with bold black and white bands around the body, thought to assist the snakes to escape by confusing and startling predators. When threatened, bandy bandys produce a remarkable display that involves arching the body into a series of high loops to reveal the brightly coloured belly.

DESCRIPTION Venomous. These small, cylindrical snakes have a short blunt tail and grow to 0.6 metres long. The body is almost encircled with a characteristic pattern of black and white bands. The head is covered in a black patch, the eyes are small and the snout is rounded without a cutting edge. Each species has a certain number of bands and some distinctive head scales.

DISTRIBUTION The wide-banded northern bandy bandy (*Vermicella intermedia*) has been recorded from scattered localities across northern Australia. In WA, it is known from the Mitchell Plateau and the southern Kimberley. The narrow-banded bandy bandy (*V. multifasciata*) has only been found near Lake Argyle in the east Kimberley. It also occurs in the Northern Territory. The Pilbara bandy bandy (*V. snelli*) occurs only in the Pilbara region.

PREFERRED HABITAT Little is known about the habitat preferences of these snakes. They tend to occur on crumbly soils around ranges and hills, with vegetation types such as tropical woodlands and vine thickets. They find shelter under rocks and logs, or retreat into cracks in the soil or among rocks.

LIFE HISTORY Bandy bandys display fascinating ecologies, although we still know little about them. They prey almost exclusively on blind snakes, which are captured from under cover or located when heavy rains drive the blind snakes to the surface. Females produce eggs.

CONSERVATION STATUS Secure though rarely observed.

Photo – David Pearson/DBCA

Above and below Pilbara bandy bandy.

Photo – Babs and Bert Wells/DBCA

SEA SNAKES

Snakes that regularly live in salt water belong to four families, and tend to be found in tropical waters. One species of file snake (*Acrochordidae*) and at least 22 species of true sea snake (Family Elapidae) have been recorded in WA. The remaining family, Colubridae, has many terrestrial species but also includes mangrove snakes (see pages 30–31). Sea snakes are remarkable swimmers and divers. Some species can dive to 100 metres and others can remain submerged for up to 80 minutes. Adaptations for aquatic life include flattened bodies and paddle-shaped tails, the ability to exchange some gases through the skin to supplement air taken in by the lungs, and nostrils with valves that close when the snake is submerged.

DESCRIPTION Dangerously venomous. Adult sea snakes that occur in WA range from 0.5 to 2.2 metres in length. Juveniles are usually more strongly coloured and banded than adults.

DISTRIBUTION Sea snakes are rare in WA south of Shark Bay, although occasional vagrants are washed up on beaches around Perth or further south. The yellow-bellied sea snake (*Hydrophis platurus*) is the only true open ocean (pelagic) species, and is sometimes found beached along the south-western coasts. It has a glossy black upper body, a bright yellow belly and a yellow and black spotted tail. Several species have very restricted distributions. For instance, the Shark Bay sea snake (*Aipysurus pooleorum*) is mainly confined to Shark Bay.

PREFERRED HABITAT Many species live around coral reefs and surrounding sandy sea floors in the open ocean, while others prefer river mouths, shallow muddy estuaries and tidal creeks. Habitat preferences are probably determined by the same factors that influence prey, such as water depth, currents, turbidity and type of underwater surface (such as coral, mud, sand, seagrass).

Photo – Brad Maryan

Above Yellow-bellied sea snake.

Below Stoke's sea snake.

Photo – Eva Boogaard/Lochman Transparencies

LIFE HISTORY Most sea snakes eat fish, with many species specialising in particular types, such as eels or catfish, that shelter in burrows or reef crevices. A few species are known to consume crustaceans and fish eggs. Sea snakes actively search for prey, detected by scent and vibrations, then seize it with the mouth and inject it with potent venom. Sea snakes give birth to live young at sea.

CONSERVATION STATUS Two species (*Aipysurus apraefrontalis* and *A. foliosquama*) are listed as threatened, while the distribution and conservation status of most other species is poorly known.

MUD SNAKES

Mud snakes occur in shallow muddy waters around mangrove creeks, crawling through and out of the mud in search of their prey. They are perhaps the most primitive of the sea snakes, living on the boundary of the land and sea, not having made a total transition to aquatic life.

DESCRIPTION Venomous. The southern mud snake (*Ephalophis greyae*) is a small species (up to 0.7 metres) with a grey body marked with 27 to 30 irregular black bands, which generally narrow towards the belly. The head is narrow with no distinct neck. The black-ringed mud snake (*Hydrelaps darwiniensis*) is also small, reaching just 0.6 metres long. It has a yellowish to grey body with 35 to 44 bold dark grey or black rings. The head is bluish-grey.

DISTRIBUTION The southern mud snake is endemic to WA and is found along the tropical northern coast from near Shark Bay to King Sound in the west Kimberley. The black-ringed mud snake has a more extensive distribution from Dampier in the Pilbara around the Kimberley coast and into the Northern Territory, Queensland and Irian Jaya.

PREFERRED HABITAT Both species favour mangrove-lined creeks. They probably shelter in hollow mangrove trees and under rocks, and move out onto muddy flats to find their prey.

LIFE HISTORY Little is known about the ecology of mud snakes. The southern mud snake is most often observed at low tide, as it crawls through burrows in the mud in search of its preferred prey of mudskippers. Large numbers of this species have been observed in Exmouth Gulf on some occasions.

CONSERVATION STATUS Poorly known, but both species are probably secure.

Photo – Jiri Lochman

Above Black-ringed mud snake.

SIGHTING RECORD			
SPECIES	**DATE**	**LOCALITY**	**REMARKS**
bandy bandys			
bardick			
black-headed python			
black-naped snake			
black-striped snake			
blind snakes			
brown tree snake			
burrowing snakes			
carpet python			
crowned snake			
desert death adder			
dugite			
Gould's snake			
gwardar			
keelback			
Lake Cronin snake			
mangrove snakes			
mud snakes			
mulga snake			
narrow-banded shovel-nosed snake			
olive python			
pygmy python			

SIGHTING RECORD			
SPECIES	**DATE**	**LOCALITY**	**REMARKS**
Rosen's snake			
rough-scaled python			
sea snakes			
southern death adder			
southern shovel-nosed snake			
Stimson's python			
taipan			
tiger snake			
woma python			
yellow-faced whipsnake			

Below Local residents erected this sign near Greenough to alert motorists to wandering pythons.

Photo – David Pearson/DBCA

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