

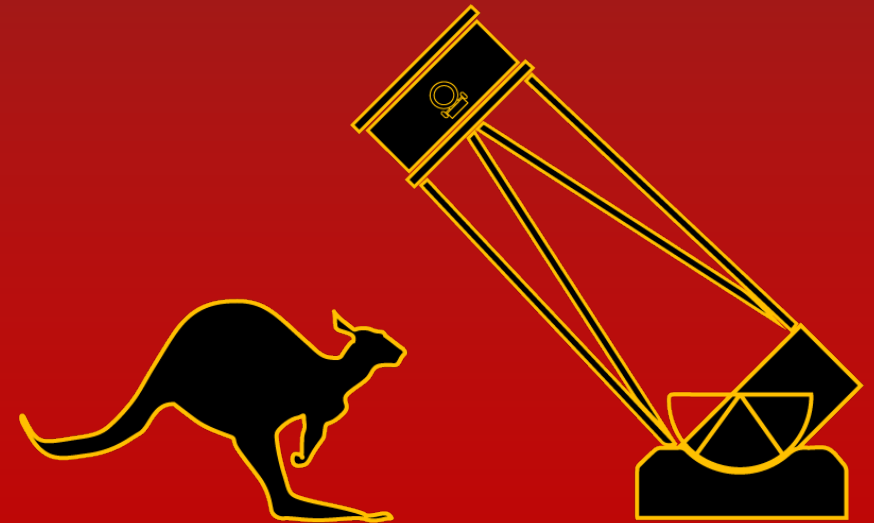


VENOMOUS AUSSIE SNAKES

THE FACTS REVEALED

JOHN BAMBURY

www.OzSky.org



AUSTRALIAN SCRUB PYTHON

VERY PRETTY AND NON-VENOMOUS



A VERY IMPORTANT FACT

Do not listen to anything Tony Buckley tells you about Australian snakes, or wildlife.

If you do, you will believe there is an Eastern Brown Snake and a Sydney Funnel Web Spider hiding under every bed in the motel and free-swimming saltwater crocodiles in the swimming pool, which, as we all "hope" is a long way from the truth.

World's most venomous spider



World's second-most venomous snake





SOME FUN FACTS

- Australia is home to some of the most venomous snakes on the planet
- Australia has about 140 different species of land snake and about 32 species of sea snake. Of the 140 species of land snake, just over 100 are considered venomous
- However, of the 100 or so species considered venomous, only about the top 20 or so are considered to be potentially fatal, if left untreated.
- Some of the other 80 or so venomous species can cause an extremely painful bite and can cause serious illness.
- In some cases, the bites from these snakes could prove fatal to a victim in less than excellent health



COMMON FAMILIES OF VENOMOUS SNAKES

- Elapids (*Elapidae*) – hollow fixed fangs used to inject venom
- Vipers (*Viperidae*) – hollow hinged fangs used to inject venom

Northern Death Adder (Elapid)
Largest fangs of any Australian Snake
along with the Coastal Taipan (12mm / ½")



© D. Bruce Means

Gaboon Viper (Viper)
Largest fangs of any snake (50mm / 2")



SNAKE VENOM – WHAT IS IT?

- Snake Venom is a complex mixture of over 20 different proteins, polypeptides, enzymes and other complex chemical compounds.
- It is designed to immobilise and kill the snake's prey (*it's food not it's enemies*), enabling the snake to swallow it whole and then digest it. The snake has no teeth and cannot easily use a knife and fork.
- Snake venom is not designed to be dangerous to humans, that's just a very unfortunate side-effect many snake venoms have.
- Some animals, by nature's design and good fortune, are immune to some venoms, whilst similar species are not.
- Some of the complex compounds found in snake and other animal venom are being isolated and used in medical research



SNAKE VENOM – DIFFERENT TYPES

- Snake Venom generally falls into two broad main types, Neurotoxic and Haemotoxic. There are also many other types of toxins found in snake venom.
- Most snake venoms also contain some other toxins including, cytotoxins, cardiotoxins, myotoxins, dendrotoxins and haemorrhagins.
- Neurotoxic venom affects the central nervous system and the body's vital organs.
- Haemotoxic venom affects the red blood cells, blood clotting and muscle tissue.



SNAKE VENOM – DIFFERENT TYPES

- A general rule of thumb is that elapid snakes have neurotoxic venom and vipers have haemotoxic venom, however, there are exceptions.
- In addition, snake venom is evolving based on the snake's geographic location and likely prey.
- Specimens of the Mojave and Southern Pacific Rattlesnakes from different parts of California have been found to have both types of toxins based on their location.
- Some snakes have a cocktail of several different types of toxins.





SNAKE VENOM – TOXICITY MEASUREMENT

- There are several methods used to measure the potency of snake venoms and other poisons in toxicology. The most common of these is Median Lethal Dose.
- There are several scales on which this can be measured and the most common of these is LD_{50} .
- The value of LD_{50} for a substance is the dose required to kill half the members of a tested population after a specified time duration and is usually expressed as the mass of the toxin administered per unit mass of the test subject, typically as milligrams of substance per kilogram of body mass.
- There are also a number of ways the toxin can be administered which can give rise to different results.
- The most common method is subcutaneous injection, which is an injection into normal flesh tissue, which is where most people would normally be envenomated.





MOST "VENOMOUS" OR MOST "DANGEROUS"?

- There is a major difference between "most venomous" and "most dangerous".
- The Black Mamba found in Africa is considered by many experts to be the world's "most dangerous" snake.
- This is because when you take all factors into account including its speed across the ground, its totally nasty disposition and aggression, its ability to climb trees quickly, its toxic venom and its effective venom delivery and reasonable venom yield, it is one of the planet's most feared creatures.
- The Coastal Taipan found in North-Eastern Australia is also considered one of the "most dangerous" snakes in the world for similar reasons.





WORLD'S MOST VENOMOUS SNAKES

<u>Rank</u>	<u>Species</u>	<u>Region Found</u>	<u>Subcutaneous injection</u> <u>LD₅₀ Saline</u>	<u>Found in</u> <u>Australia?</u>
1	Inland Taipan	Australia	0.025 mg/kg	Yes
2	Eastern Brown Snake	Australia, New Guinea, Indonesia	0.037 mg/kg	Yes
3	Dubois' Sea Snake	Coral Sea, Arafura Sea, Timor Sea and Indian Ocean	0.044 mg/kg	Yes
4	Yellow-Bellied Sea Snake	Tropical oceanic waters	0.067 mg/kg	Yes
5	Peron's Sea Snake	Gulf of Siam, Strait of Taiwan, Coral sea islands, and other places	0.079 mg/kg	Yes
6	Coastal Taipan	Australia	0.106 mg/kg	Yes
7	Many-banded Krait	Mainland China, Taiwan, Vietnam, Laos, Burma	0.108 mg/kg	No
8	Black-banded Sea krait	South-east Asian Waters	0.111 mg/kg	No
9	Mainland Tiger Snake	Australia	0.118 mg/kg	Yes
10	Black Tiger Snake	Australia	0.121 mg/kg	Yes

8 out of the 10 most venomous snakes on the planet can be found in Australia, or in Australian waters





RELATIVE TOXICITY OF AUSTRALIAN SNAKES

Common Name	Scientific Name	Relative Toxicity*
Inland Taipan	<i>Oxyuranus microlepidotus</i>	50
Common Brown Snake	<i>Pseudonaja textilis</i>	12.5
Coastal Taipan	<i>Oxyuranus scutellatus</i>	7.8
Reevesby Island Tiger Snake	<i>Notechis ater niger</i>	5.1
Mainland Tiger Snake	<i>Notechis scutatus</i>	4.2
Western Tiger Snake	<i>Notechis ater occidentalis</i>	4
Beaked Sea Snake	<i>Enhydrina schistosa</i>	2.9
Chappell Island Tiger Snake	<i>Notechis ater serventyi</i>	1.8
Common Death Adder	<i>Acanthophis antarcticus</i>	1.5
Western Brown Snake	<i>Pseudonaja nuchalis</i>	1.5
Copperhead	<i>Austrelaps superbis</i>	1
Dugite	<i>Pseudonaja affinis</i>	0.9
Stephens Banded Snake	<i>Hoplocephalus stephensi</i>	0.4
Rough-scaled Snake	<i>Tropidechis carinatus</i>	0.5
Spotted Black Snake	<i>Pseudechis guttatus</i>	0.3
King Brown Snake	<i>Pseudechis australis</i>	0.3
Collett's Snake	<i>Pseudechis colletti</i>	0.2
Red-bellied Black Snake	<i>Pseudechis porphyriacus</i>	0.2
Small-eyed Snake	<i>Cryptophis nigrescens</i>	0.2
Whip Snake	<i>Demansia olivacea</i>	< 0.1





RELATIVE TOXICITY: NON-AUSTRALIAN SNAKES

Common Name	Scientific Name	Relative Toxicity*
Indian cobra	<i>Naja naja</i>	1
Papuan black snake	<i>Pseudechis papuanus</i>	0.4
King cobra	<i>Ophiophagus hannah</i>	0.3
Eastern diamond-back rattlesnake	<i>Crotalus adamanteus</i>	< 0.1
Brazillian viper (Barba amarilla)	<i>Bothrops atrox</i>	< 0.1

* The relative toxicity table on this and the preceding page is calculated using the toxicity of the Indian Cobra as "1.0".
The Indian Cobra has a sub cutaneous LD₅₀ value of about 0.45 with an average maximum venom yield of 250mg.





VENOM YIELD AND DRY BITES

Common Name	Venom Yield	Venom Toxicity LD ₅₀
Inland Taipan	217mg	.025mg/kg
Eastern Brown Snake	155mg	.037mg/kg
Coastal Taipan	882mg	.106mg/kg
Black Mamba	400mg	.25mg/kg
Eastern Diamond Back Rattlesnake	848mg	14.6mg/kg (sc) 1.65mg/kg (iv)
Gaboon Viper	2400mg	5mg/kg

- Sometimes when a snake bites it will deliver a “dry bite”.
- This is a “warning bite” to scare off an adversary without actually envenomating it.
- Some snakes have the ability to deliver a lot more venom in a single bite than others.
- The Inland Taipan is easily the “most venomous” snake on the planet. The venom from a single bite is sufficient to kill 100 adult men or 1,000,000 mice.





SOME OF AUSTRALIA'S MOST VENOMOUS SNAKES



INLAND TAIPAN

OXYURANUS MICROLEPIDOTUS



- Other Names: Fierce Snake
- Location: Desert Areas of QLD, NT & SA
- LD₅₀ (sc): 0.025 mg/kg (SC)
- Venom Yield: 217mg
- Fang Length: 6.2mm
- Snake Length: 2.4 metres (8 feet)
- Disposition: Timid by nature but an accurate aggressive striker
- The Inland Taipan has the most toxic venom known, of any creature in nature, when tested on human heart cells. But no-one has ever died from its bite.



EASTERN BROWN SNAKE

PSEUDONAJA TEXTILIS



- Other Names: Common Brown Snake, Brown Snake or a Pain in the Arse
- Location: The entire East Coast of Australia and some desert areas of the NT
- LD₅₀ (sc): 0.037 mg/kg (sc)
- Venom Yield: 155mg
- Fang Length: 4.0mm
- Snake Length: 2.4 metres (8 feet)
- Disposition: Timid by nature but can be very aggressive when threatened.
- The Eastern Brown snake is responsible for over 50% of all snake bite fatalities in Australia



COASTAL TAIPAN

OXYURANUS SCUTELLATUS



- Other Names: Eastern Taipan or Taipan
- Location: Coastal regions of Northern Australia
- LD₅₀ (sc): 0.106 mg/kg (sc)
0.013 mg/kg (iv)
- Venom Yield: 882mg
- Fang Length: 12mm
- Snake Length: 3 metres (12 feet)
- Disposition: An extremely agile snake with an absolutely nasty disposition and extremely aggressive nature. It will strike and envenomate multiple times.
- The Coastal Taipan is one of the “most dangerous” snakes on the planet.
- Prior to the invention of anti-venom in 1956 almost 100% of Taipan bites proved fatal.



MAINLAND TIGER SNAKE

NOTECHIS SCUTATUS



- Other Names: Common or Eastern Tiger Snake + Numerous sub-species
- Location: South-Eastern coast of Australia and now Southern Western coast
- LD₅₀ (sc): 0.118 mg/kg
- Venom Yield: 336mg
- Fang Length: 5.5mm
- Snake Length: 2 metres (6.5 feet)
- Disposition: Timid by nature and will often do several mock strikes before it strikes
- The Mainland Tiger Snake accounts for the 2nd highest number of serious bites in Australia.



COMMON DEATH ADDER

ACANTHOPIS ANTARCTICUS



- Other Names: Death Adder
+ Numerous sub-species including Northern and Desert Death Adder
- Location: Sub-species found Australia-wide
- LD₅₀ (sc): 0.25 mg/kg
- Venom Yield: 236mg
- Fang Length: 12mm
- Snake Length: 1 metre (3' 3")
- Disposition: Will not retreat but wait motionless hoping it is not detected or disturbed
- The Death Adder has the fastest strike of any land snake in the world. (0.15 sec and ready to strike again).
- Prior to Antivenom over 50% of all Death Adder bites proved fatal



WESTERN BROWN SNAKE

PSEUDONAJA NUCHALIS



- Other Names: Gwardar
- Location: Most of Australia except coastal areas of East coast
- LD₅₀ (sc): 0.47 mg/kg
- Venom Yield: 200mg
- Fang Length: 3mm
- Snake Length: 1.8 metres (6 feet)
- Disposition: Timid by nature but becomes very aggressive when confronted
- The Western Brown Snake, despite having a very potent venom, sometimes kills its prey with a combination of envenomation and constriction.



DUGITE

PSEUDONAJA AFFINIS



- Other Names: Spotted Brown Snake (however this name is sometimes also attributed to *Pseudonaja guttata*)
- Location: Southern WA and into SA
- LD₅₀ (sc): 0.66 mg/kg
- Venom Yield: 150mg
- Fang Length: 5mm
- Snake Length: 2.1 metres (7 feet)
- Disposition: Can be aggressive and becomes more aggressive when confronted
- The Dugite is the main dangerous snake which inhabits the more heavily populated areas of Southern WA



KING BROWN SNAKE

PSEUDECHIS AUSTRALIS



- Other Names: Mulga Snake, Pilbara Cobra
- Location: Entire Central and Northern Australia
- LD₅₀ (sc): 1.94 mg/kg
- Venom Yield: 800mg
- Fang Length: 6.5mm
- Snake Length: 3 metres (10 feet)
- Disposition: Can become aggressive when confronted. Sometimes arches its body flattens its neck and sways side to side like a cobra
- Despite its name and colour, the King Brown Snake is part of the Black Snake family, not the Brown Snake family



COLLETT'S SNAKE

PSEUDECHIS COLLETTI



© Tom Charlton



- Other Names: Down's Tiger Snake
(not in Tiger Snake family)
- Location: Central Western Queensland
- LD₅₀ (sc): 2.38 mg/kg
- Venom Yield: 220mg
- Fang Length: 5mm
- Snake Length: 1.8 metres (6 feet)
- Disposition: Secretive and rarely seen. Normally very placid but can become aggressive when confronted.
- Collett's Snake is part of the Black Snake family and is one of Australia's prettiest venomous snakes



RED-BELLIED BLACK SNAKE

PSEUDECHIS PORPHYRIACUS



- Other Names: Black Snake
- Location: Australian East Coast and inland
- LD₅₀ (sc): 2.52 mg/kg
- Venom Yield: 300mg
- Fang Length: 5mm
- Snake Length: 1.8 metres (6 feet)
- Disposition: Normally very placid but can become aggressive when confronted.
- The Red-bellied Black Snake is the East Coast's most common snake.
- Many consider it less venomous than it really is.
- It rarely delivers a full dose of venom.





SOME MORE FUN FACTS

- Australia is one of the safest countries in the world to live.
- Most of the snakes live where people don't live and Australia has excellent medical facilities with excellent supplies of anti-venom.
- In Australia there are about 3,000 snake bites per year, of which 200 – 500 receive anti-venom; on average one or two may prove fatal.
- About half the deaths are due to bites from the Eastern Brown Snake; the rest mostly from Tiger Snake, Taipan and Death Adder.
- In India over 50,000 people die each year from snake bite.
- Some of the snakes you may be lucky enough (*or unlucky enough*) to see around Coonabarabran include the Eastern Brown Snake, Red-Bellied Black Snake, Death Adder, or King Brown Snake.

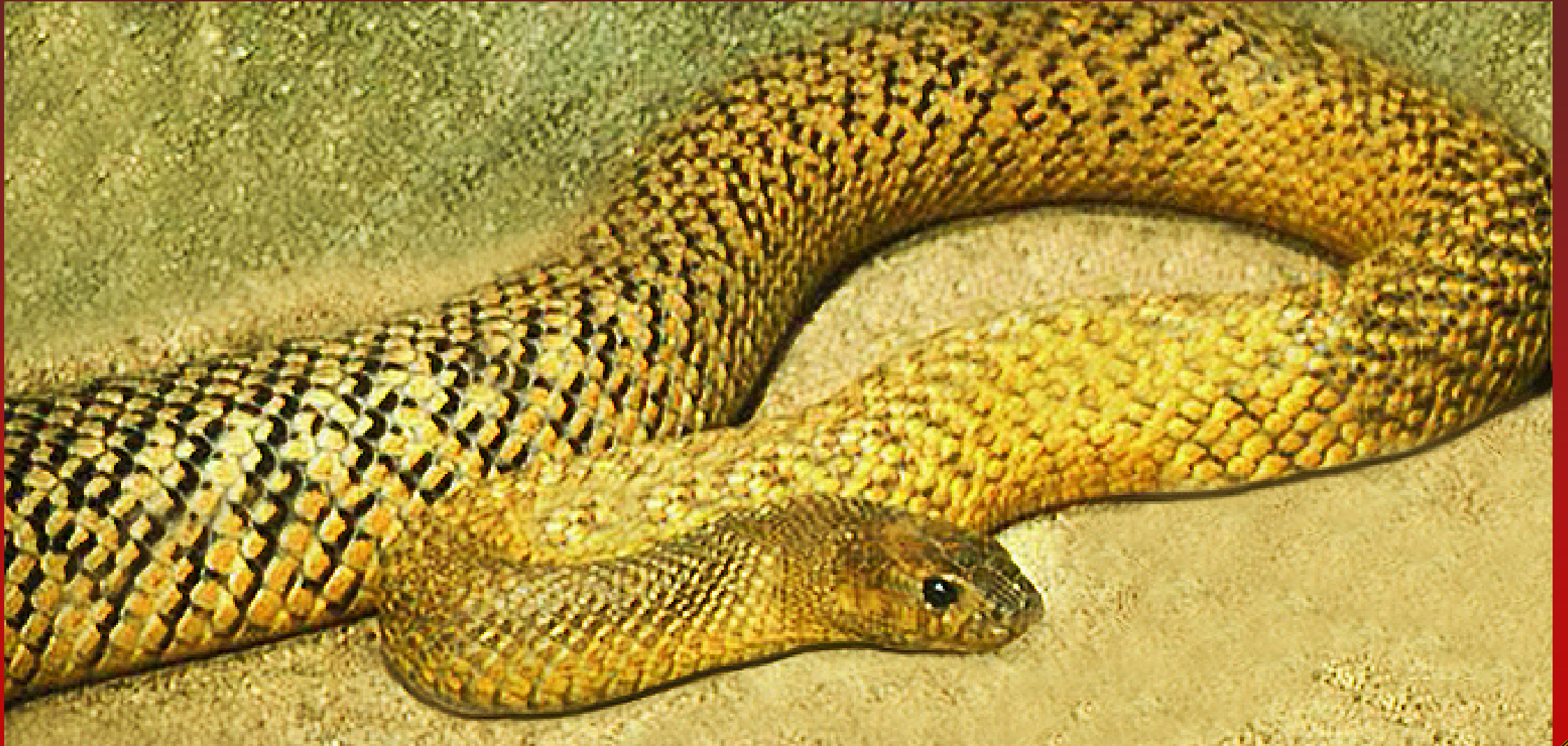




AUSTRALIA'S AND THE WORLD'S MOST VENOMOUS CRITTERS

#	Common Name	Scientific Name	Distribution	Characteristics	Toxicity (LD ₅₀)	Other Information
1	Inland Taipan	<i>Oxyuranus Microlepidotus</i>	Desert areas of SW QLD, SW NT and NE SA	Up to 2.4 metres long	0.025 mg/kg	Worlds most toxic known venom. 100 times the potency of Cyanide. Can kill a human adult in 15 minutes. One bite could kill 100 adult humans.
2	Geography Cone Snail	<i>Conus Geographus</i>	Indo Pacific - Northern Australia (Rockhampton QLD) up to Japan across the Indian Ocean to East Africa	Shell is any colour and usually 45mm to 150mm long	0.025 mg/kg	Uses a "harpoon" to inject venom
3	Eastern Brown Snake	<i>Pseudonaja Textilis</i>	Eastern Australia and desert areas of the NT	Up to 2.4 metres long	0.037 mg/kg	Responsible for the most Snake Bite fatalities in Australia
4	Australian Box Jellyfish	<i>Chironex fleckeri</i>	Indo Pacific - Northern Australia (Rockhampton QLD) up to Japan	Bell up to 300mm in diameter, 15 Tentacles up to 3 metres long	0.04 mg/kg	51 known species of Box Jellyfish Worldwide of which Chironex fleckeri is the most deadly. Can kill a human adult in 15 minutes.
5	Dubois Sea Snake	<i>Aipysurus duboisii</i>	Indo Pacific - Northern Australia (Rockhampton QLD) up to Japan across the Indian Ocean to East Africa	Maximum length of about 1.6 metres	0.044 mg/kg	4th most venomous snake in the world
6	Yellow Bellied Sea Snake	<i>Hydrophis platurus</i>	Worldwide but not in the Atlantic	Maximum length of 1 metre, but generally about 700mm	0.067 mg/kg	2nd most venomous Sea Snake and 4th most venomous snake in the world
7	Coastal Taipan	<i>Oxyuranus Scutellatus</i>	Coastal areas of Northern Australia	Up to 3.0 metres long	0.106 mg/kg	Curtains without Antivenom
8	Australian Funnel Web (Atricidea)	36 Species across 3 Genera, the most common being the Sydney Funnel Web (<i>Atrax Robustus</i>)	Australian East Coast from Bundaberg QLD to Tasmania and across into the SA Gulf	Females to 62mm (2.5") Males to 52mm (2"). One female recoded at 84mm (3.5"),	0.22 mg/kg	The male is only about 60% to 75% the size of a female but 3 times as toxic. No fatalities since Antivenom developed in 1977. Can kill an adult in 15 minutes. Possibly the worlds most toxic spider, but less fatalities and adverse cases than the Brazilian Wandering Spider due to location
9	Blue Ringed Octopus	Genus <i>Hapalochlaena</i> (4 species)	Indo Pacific - North to Japan, East to Vanuatu and right around Australia, including Tasmania	Bodies up to 5cm and 8 arms up to 10 cm long	0.3 mg/kg	Venom is Neurotoxic containing tetrodotoxin. Can kill a human adult in 15 minutes.
10	Irukandji Jellyfish	<i>Malo Kingi</i> (several similar species)	Indo Pacific - Northern Australia (Rockhampton QLD) up to Japan	Bell from 5mm to 25mm in diameter, 4 fine almost invisible Tentacles up to 1 metre long	4.2 mg/kg	Causes Irukandji Syndrome after 15 to 120 minutes, which is rated as the most painful envenomation a human can experience. This can last from a couple of days, to several weeks.

#1 INLAND TAIPAN





#3 EASTERN BROWN SNAKE





#5 DUBOIS SEA SNAKE



#6 YELLOW BELLED SEA SNAKE



#7 COASTAL TAIPAN

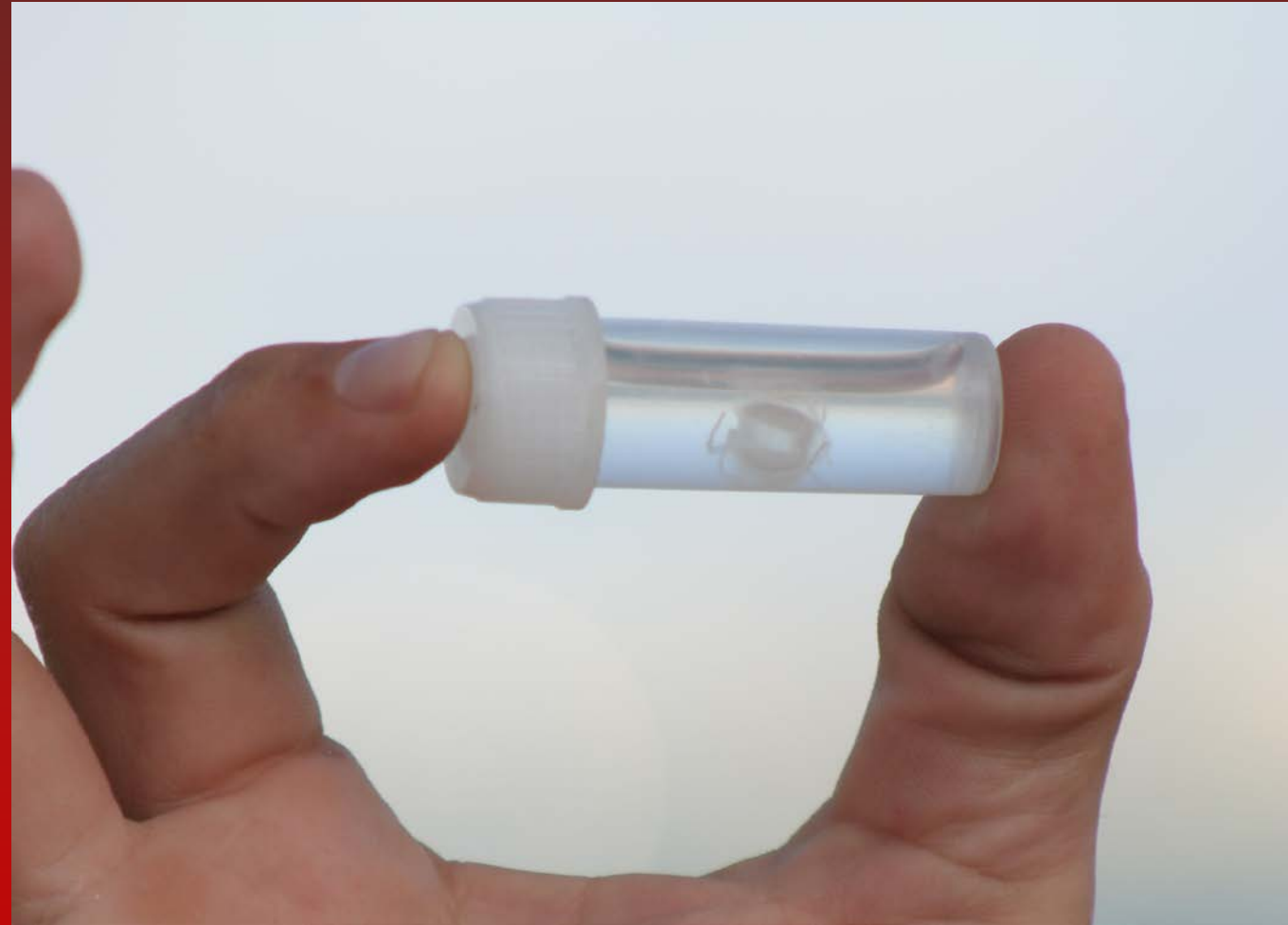


#8 SYDNEY FUNNEL WEB





#10 IRUKANDJI JELLYFISH





www.OZSky.ORG