



Venomous snakes in Cambodia

Lecture 1: Snake bite Management Course

Introduction

- There are at least 86 different species of snake found in Cambodia
- 17 species are known to be venomous
- 6 species are responsible for the majority of all severe illness after snake bite
- Another 5 species can cause potentially fatal illness
- The aim of this lecture is to learn some basic information about these 11 dangerous snakes and to be able to recognise them

Types of snakes found in Cambodia

- Most Cambodian snake species are non-venomous:
 - Worm snakes
 - File snakes
 - Pythons
 - Most colubrids
 - Most homalopsine water snakes
- Venomous snakes include:
 - Front-fanged elapid snakes (including sea snakes)
 - Pit vipers
 - Some colubrids and homalopsine water snakes



Long-nosed whip snake (*Ahaetulla nasuta*)

Striped kukri snake (*Oligodon taeniatus*)



Indo-Chinese Russell's viper (*Daboia siamensis*)



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Golden tree snake (*Chrysopelea ornata*)

Monocellate cobra (*Naja kaouthia*)

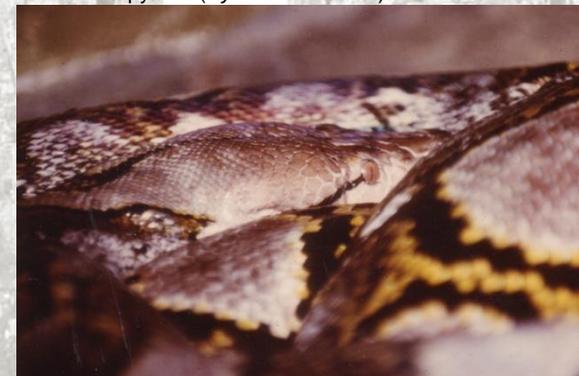


Common 'blind' snake (*Ramphotyphlops braminus*)

Malayan, or blue krait (*Bungarus candidus*)



Reticulated python (*Python reticulatus*)



Medically important snakes (1)

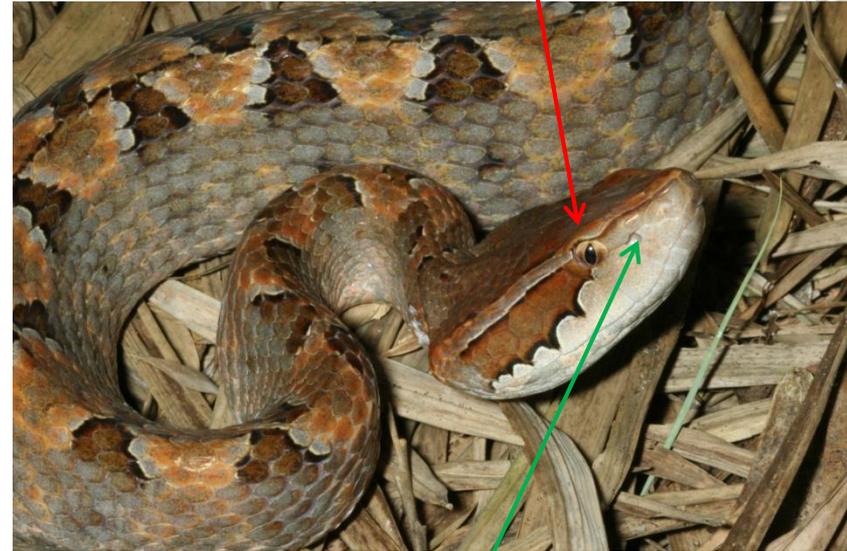
- Cambodia's venomous snakes belong to two main taxonomic groups:
 - Elapidae – cobras, kraits, sea snakes
 - Viperidae – pit vipers
- Venoms of these two groups vary greatly, between the groups and within them.
- Both groups include species which can cause death
- Easily distinguished on the basis of external morphology

Elapids vs. Pit vipers (1)

Round pupil



Elliptical pupil

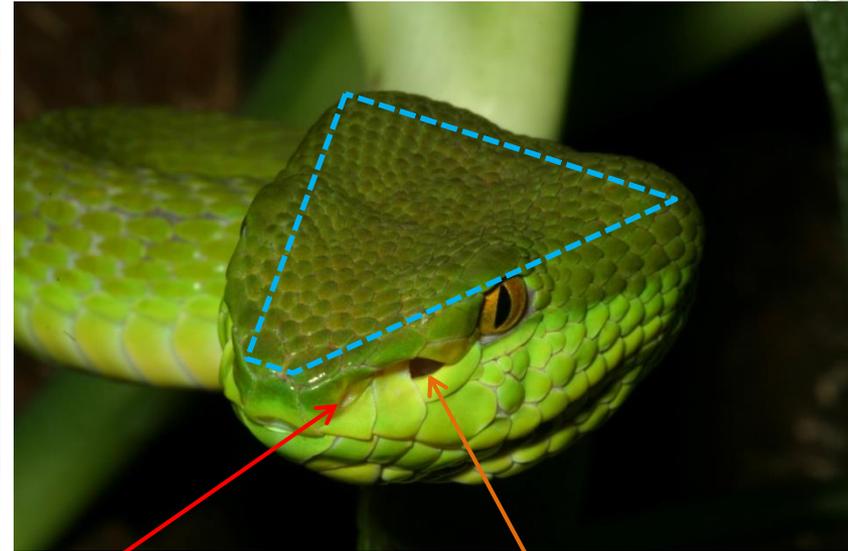
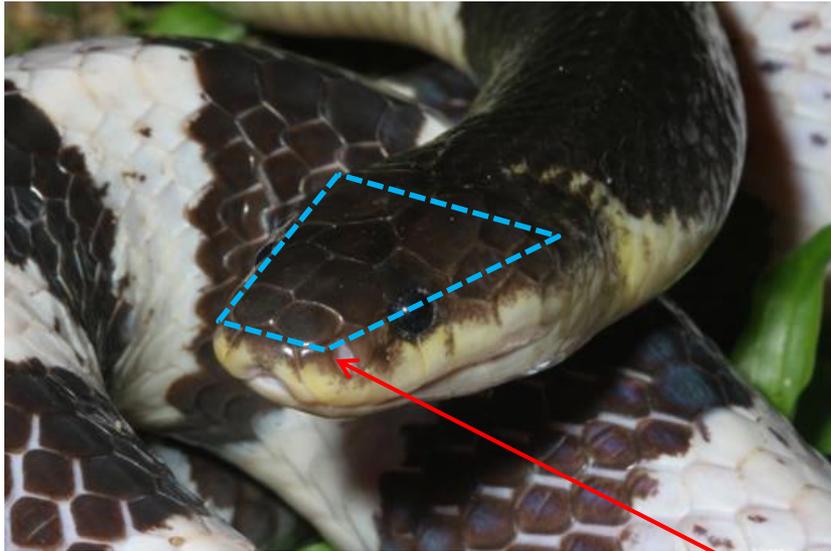


Absent heat-sensing pits

Heat-sensing pits present

Elapids vs. Pit vipers (2)

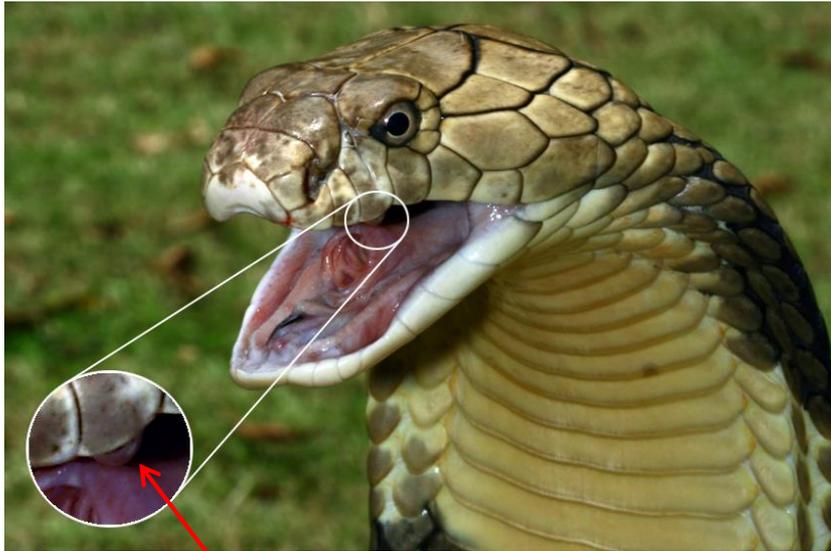
Viewed from above, elapid heads are broader across the nose, and more rectangular than the triangular heads of pit vipers.



Nostrils

Heat-sensing pit

Elapids vs. Pit vipers (3)



Short, immobile fangs



Very large, mobile fangs that rotate forward when biting

Medically important snakes (2)

- Two species of pit viper are extremely dangerous:
 - Malayan pit viper (*Calloselasma rhodostoma*)
 - Indo-Chinese Russell's viper (*Daboia siamensis*)
- Bites by “green pit vipers” are very common, but are usually not as severe:
 - White-lipped pit viper (*Cryptelytrops albolabris*)
 - Big-eyed pit viper (*Cryptelytrops macrops*)
 - Vogel's pit viper (*Viridovipera vogeli*)

Malayan pit viper

(*Calloselasma rhodostoma*)



- Causes severe local pain, oedema, ecchymoses, bullae and necrosis
- Consumption coagulopathy
- Most dangerous Cambodian snake - many bites are fatal
- Most common in forested areas but also in oil palm, rubber, tea and other plantations
- Bites most common during the wet season and at night
- Common in southern and eastern Provinces such as Kratie, Kampong Cham, Kampong Som, Koh Kong and Kampot

Indo-Chinese Russell's Viper

(Daboia siamensis)



- Clinical effects include local pain, swelling, variable neurotoxicity, rhabdomyolysis, consumption coagulopathy and renal failure
- Only venomous Cambodia snake likely to cause renal failure
- Typically inhabits rice paddies and nearby areas
- Recognised by local people in Pursat, Battambang, Banteay Meanchey, Kampong Thom and Siem Reap
- Exact distribution needs to be confirmed

White-lipped pit viper

(Cryptelytrops albolabris)



- Majority bites result in pain and swelling and are non-lethal
- A small proportion also develop consumption coagulopathy
- Deaths are rare, but do occur
- Widespread in many different habitats
- Usually arboreal, but moves to ground at night
- Possibly the most common cause of envenoming snake bite throughout Cambodia
- “Green pit vipers” well known by people from all Provinces

Big-eyed pit viper

(*Cryptelytrops macrops*)



- Easily confused with the white-lipped pit viper
- Venom effects similar and in Bangkok, this snake is the cause of 17% of “green pit viper” bites
- Local effects, thrombocytopenia and neutrophil leucocytosis are reported effects
- Common snake in Cambodia
- Nocturnal and arboreal, but often found on the ground at night

Vogel's pit viper

(*Viridovipera vogeli*)



- Another “Green pit viper”!
- Inhabits wet forest habitats and often found close to water in low branches
- Restriction to forest areas means that it is a less common cause of snake bite
- Venom effects similar to those of *Cryptelytrops* spp.
- No records of human fatality but severity of local effects and bleeding after bites by “green pit vipers” varies considerably.

Medically important snakes (3)

- Bites by three species of highly venomous elapid snakes are common:
 - Monocellate cobra (*Naja kaouthia*)
 - Indo-Chinese spitting cobra (*Naja siamensis*)
 - Malayan krait (*Bungarus candidus*)
- Another three species are responsible for a small number of potentially fatal bites:
 - Banded krait (*Bungarus fasciatus*)
 - Red headed krait (*Bungarus flaviceps*)
 - King cobra (*Ophiophagus hannah*)

Monocellate cobra

(*Naja kaouthia*)



- Local effects include pain, some swelling and necrosis
- Necrosis typically only involves the skin and subcutaneous tissues and not deeper muscle
- Neurotoxicity (i.e.: cranial and bulbar nerve palsies)
- Common in rice paddy and other farming areas, rarely in deep forests, but occurs in plantations such as oil palm
- Widespread throughout all of Cambodia

Indo-Chinese spitting cobra

(*Naja siamensis*)



- The only cobra in Cambodia that can spit venom defensively
- Clinical effects of bites are very similar to those of Monocellate cobra envenoming
- Tends to be a smaller and more agile species
- Severe corneal injury can result from entry of spat venom into eyes
- Widely distributed in non-forest habitats and farmland
- Widespread in Cambodia

Malayan or blue krait

(*Bungarus candidus*)



- Bites can cause neurotoxicity that results in nerve terminal destruction and irreversible paralysis that is poorly reversed by antivenom
- Widespread species in a variety of habitats ranging from open farmland to rubber plantations and primary forests
- Common in many Provinces but often less frequently seen than the black and yellow banded krait (*Bungarus fasciatus*)
- Nocturnal and will enter homes

Banded krait

(Bungarus fasciatus)



- Often found in farmland, rice paddies and dry forests
- Also found near water, including mangroves
- Although often blamed for snake bite, cases are rare as this is a shy, often docile species
- Clinical effects are dominated by neurotoxicity
- Nocturnal and may enter homes at night in search of food
- Common through most of Cambodia

Red-headed krait

(*Bungarus flaviceps*)



- Usually inhabits undisturbed lowland and hill forests, but sometimes found in farmland or in plantations
- Seldom seen, and bites are rare, but may be fatal due to potent neurotoxicity
- Nocturnal and most likely to be encountered by hunters walking in the forest at night
- Diet consists mostly of other snakes
- May be confused with blue coral snake *Calliophis bivirgata*

King cobra

(*Ophiophagus hannah*)



- World's largest venomous snake reaching 5.5 metres
- Inhabits wet forests, plantations, bamboo groves and thickets, often near creeks, drains, rivers and lakes.
- Can climb trees very well
- Venom is highly neurotoxic but also contains other toxins
- Bites by this snake are very rare and often involve snake hunters and animal dealers
- Uncommon in Cambodia, except in remote forest areas.

Marine seasnakes

(Several species from different genera)



Beaked sea snake (*Enhydrina schistosa*)



Spine-bellied sea snake (*Lapemis hardwickei*)

- Most species are not known to be dangerous to man
- ‘Seasnakes’ includes truly aquatic (*Hydrophiid*) snakes that live completely in water, and semi-aquatic (*Laticauda*) that sleep, reproduce on land
- Some species common in coastal rivers, estuaries and tidal river deltas, and will bite if handled or stepped on in shallow water

Summary

- Most of Cambodia's 86 snake species are not dangerous to humans
- Malayan pit vipers are the most dangerous species
- 10 other highly venomous species can cause severe envenoming
- Bites by king cobras' are very rare, most cobra bites are caused by the much smaller Monocellate cobra or the Indo-Chinese spitting cobra
- "Green pit viper" bites are very common, but often cause only local envenoming