LAND SNAKES
OF MEDICAL SIGNIFICANCE IN MALAYSIA

Ahmad Khaldun Ismail, Teo Eng Wah, Indraneil Das, Taksa Vasaruchapong & Scott A. Weinstein

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Overview

The range of snakes of medical significance in Malaysia currently encompasses four families of snakes (Natricidae, Elapidae, Pythonidae and Viperidae). There are limited data on the distribution of snakes in the country. The following account is based on available published information on snakes recorded from Peninsular Malaysia, Labuan, Sabah and Sarawak. This book should be viewed as a guide, especially for healthcare providers, to identify and manage potential envenoming from snakebites in Malaysia. Information on the snake species listed here is based on the local data and those from neighbouring countries. Due to their geographical proximity, snakes occurring in Peninsular Malaysia are genetically closer to those from Thailand and Singapore, while those on Sabah and Sarawak are naturally closer to populations from Brunei Darussalam, Kalimantan and islands of the southern Philippines.

While a majority of snakes occurring in Malaysia are non-venomous, and constitute no threat to humans, a number of species can cause mild to severe envenoming that may lead to permanent disability or even death in humans.

The main groups of medically significant snakes in Malaysia are:

- Elapidae (front-fanged snakes) are venomous snakes, which are potentially dangerous and capable of causing significant systemic and local envenoming syndrome. This group includes all sea snakes, of which many are considered highly dangerous and may cause significant systemic envenoming syndrome. Other members include cobras, the king cobra, kraits and coral snakes.
- Viperidae (vipers and pit vipers are also front-fanged snakes), which could cause significant local and systemic envenoming syndrome.
- Natricidae (non-front-fanged) snakes, of which two or three species in Malaysia are potentially dangerous, in being able to cause significant systemic and local envenoming syndromes, while some of the others could probably cause limited local reactions.
- Pythonidae (the giant constricting snakes), including pythons, all species in this family are potentially dangerous to humans and can cause significant local injuries. Large-growing members of this species can even constrict and consume adult humans.

The purpose of this book is to highlight the potentially dangerous species to humans, with a list of the main potentially medically significant snakes. It is important to note that if a species is not listed below, it does not necessarily mean that it does not exist in Malaysia nor that its bite cannot cause harmful effects in humans. In particular, the list of colubrid (non-front-fanged) snakes has been selective, to include only a number known to be of potential medical significance. It is also important to note that a poor surveillance of the pet trade and irresponsible importation of exotic snakes may introduce a medically significant species, which is not indigenous to Malaysia. This may add to the complexity of managing envenomings in this country.

Identifying Snakes in Malaysia

1. A reliable reference is invaluable for helping accurate identification of snakes. Several are available in the market, and all illustrate the species of medical significance. You should be familiar with at least some of the identification characteristics of the potentially dangerous snakes in Malaysia.
2. The most noticeable characteristic about any snake, at first glance, will be its colour. This can help identify some snakes that are very distinctive in colouration. However, snakes also vary in colouration, and several non-venomous snakes are known to mimic venomous ones. Within the same species, the sexes and growth stages may display different colouration.
3. An excellent character for the identification of snakes is its scales. The shape, texture and number of scales are often unique to each species. A knowledge of scale morphology is useful if you have found a dead snake or a shed skin, but not always useful for the identification of a live snake, for obvious reasons!
4. Knowledge of the geographical distribution of a snake is helpful for its identification. Several snakes are found widespread in the country, while others have limited range, and may be further restricted to specific altitudes and habitats.
5. Knowledge of the biology, including habitat (e.g. terrestrial/arboreal/fossorial/aquatic) is also useful for making a positive identification- knowing where particular snakes tend to live will help you identify them.
6. Knowledge of patterns of activity (diurnal/nocturnal/crepuscular) of snakes may also help in identification.

Elephant Trunk Snake
Acrochordus javanicus

Note:
The scientific name used in this book's snake profiles are based on Uetz P. & Hošek, J. 2017. The Reptile Database. 15 Oct 2017. http://www.reptile-database.org. Accessed 6 November 2017.

Symbols for Snake Profile

Snake Food

Rodent / Mammal *Bird* *Frog/Toad* *Snake* *Fish* *Lizard*

Venom Level

Non Venomous *Venomous*

Snake Habitat

ARBOREAL
Living in tress

TERRESTRIAL
Living on land

FOSSORIAL
Living digging & bury themselves underground

SEMI AQUATIC
Living partly on land and in water

AQUATIC
Living in water

Behaviour

Diurnal *Nocturnal*

Antivenom

NKAV — Cobra Antivenin

OHAV — King Cobra Antivenin

BCAV — Malayan Krait Antivenin

BFAV — Banded Krait Antivenin

CRAV — Malayan Pit Viper Antivenin

GPAV — Green Pit Viper Antivenin

HPAV — Hemato Polyvalent Snake Antivenom

NPAV — Neuro Polyvalent Snake Antivenom

RTAV — Tiger Keelback Antivenom

Instructions for Identification

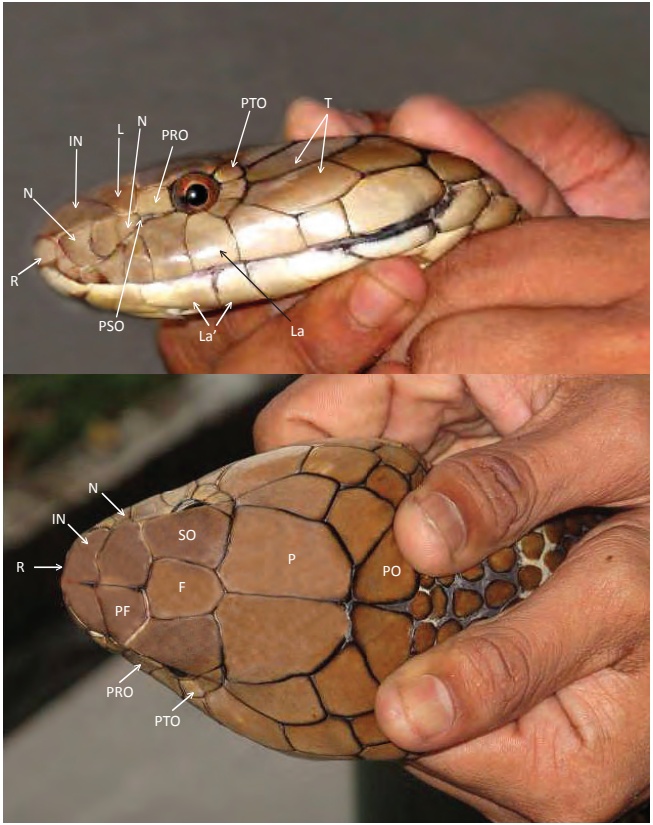
1. Measure the length (and diameter) of the snake. Standard measurements of snakes include tail length, head to vent length and head width (especially relative to its neck).
2. Notice and describe the colours on the snake's body, as well as any patterns. Stripes are marks lengthwise along the body; bands are marks across the body.
3. Look at the shape of snake's head and tail (size and arrangement of scales on the top of its head and under its tail are important for identification).
4. Observe and count the scales (on head/midbody/anal/subcaudals) on dead snakes. Observations on scales, including texture (bearing a keel or not), pattern (overlapping or situated next to each other) and colouration, in combination with other morphological characteristics, are the principal means of classifying snakes to level of species.
5. Take pictures from different perspectives, especially entire body in dorsal and ventral views (so that scale counts can be made later), head from dorsum, venter as well as lateral views. Specialists of snakes can typically identify the snake from these images.

Pit Vipers – Head Shape & Scalation

Note:

There is no simple way of differentiating a venomous snake from a non-venomous one. Determining whether a snake is venomous is correctly done by identification of the species with the help of snake systematists. In their absence, close examination of the snake (make sure that they are truly dead! Wounded snakes may appear dead, and venomous species can inject venom after death if carelessly handled – always treat a 'dead' specimen with great caution and confirm the specimen is truly dead before relaxing such cautions!) or good quality pictures, and using authoritative references on the snakes of the particular geographical region, will help to identify it. Reliable identification can be used to guide the most appropriate management of the patient.

Elapidae/Colubridae – Head Shape & Scalation



F	–	frontal
IN	–	internasal
L	–	loreal
La	–	supralabial
La'	–	infralabial
N	–	nasal
P	–	parietal
PF	–	prefrontal
PRO	–	preocular
PSO	–	presubocular
PTO	–	postocular
R	–	rostral
SO	–	supraocular
T	–	anterior & posterior temporals
PO	–	postoccipital

Adult
© Teo Eng Wah

MyBIS: *20831*

Malayan Krait (EN) Ular Katam Tebu (BM)
Bungarus candidus

IUCN Red List
Least Concern (LC)

BCAV
NPAV

Adult
© Teo Eng Wah

Adult
© Teo Eng Wah

© Tom Charlton
Juvenile

© Taksa Vasaruchapong
Juvenile

ELAPIDAE

Juvenile
© Taksa Vasaruchapong

MyBIS: *9935*

IUCN Red List

Least Concern (LC)

BFAV

NPAV

Banded Krait (EN) Ular Katam Belang (BM)
Bungarus fasciatus

Adult
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Adult

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Adult

Adult
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MyBIS: 9936

IUCN Red List

Least Concern (LC)

NPAV

Red-headed Krait (EN) Ular Katam Kepala Merah (BM)
Bungarus flaviceps

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B. f. baluensis
Adult

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B. f. baluensis
Adult