IMAGE GALLERY OF
LAND SNAKES OF MEDICAL SIGNIFICANCE
IN MALAYSIA

For
Intermediate Level Workshop on
Snakebite & Envenomation Management (SEM™)

and
International Workshop on
Advanced Marine Animals & Snake Envenomation Management

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Overview

The range of snakes of medical significance in Malaysia currently encompasses three families of snakes (Colubridae, Elapidae 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, Sabah and Sarawak. This document 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 and 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 important 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.
- Colubridae (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 syndrome, 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 gallery 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 on 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 importance. It is also important to note that a poor surveillance of pet trade and irresponsible importation of exotic snakes may introduce a medically important 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 in helping you identify snakes. Several are available in the market, and all illustrate the species of medical importance. 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. A 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.

Instructions for identification

1. Measure the length (and diameter) of the snake. Standard measurements of snakes include tail length.

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.
A. ELAPIDAE/COLUBRIDAE HEAD SHAPE AND SCALATION

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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 and posterior temporals
B. PIT VIPERS HEAD SHAPE AND SCALATION

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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 (making sure they are dead!) 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.
A. Elapidae

Common name

Scientific name

Malayan krait
Bungarus candidus

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Terrestrial
Banded krait
*Bungarus fasciatus*

Terrestrial
Red-headed krait
*Bungarus flaviceps*

Terrestrial
Banded coral
*Calliophis intestinalis lineata*

Subfossorial

© Ahmad Khaidur Ismail
Blue coral
*Calliophis bivirgatus*

Terrestrial/Subfossorial
Calliophis maculiceps

Subfossorial

Calliophis bivirgatus tetrataenia

Terrestrial/Subfassorial

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Monocled cobra
*Naja kaouthia*

Terrestrial

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Albino Naja kaouthia

Golden phase Naja kaouthia
Melanistic phase Naja kaouthia
Equatorial spitting cobra
*Naja sumatrana*
Golden phase *Naja sumatrana*
Juvenile Naja sumatrana
King cobra
*Ophiophagus hannah*

Terrestrial/
Arboreal

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B. Viperidae

Common name

Malayan pit viper

Scientific name

Calloselasma rhodostoma

Terrestrial

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Mountain pit viper
*Ovophis convictus*

Terrestrial
Kinabalu brown pit viper
*Garthius chaseni*

Leaf nose/ Wirot’s palm pit viper
*Trimeresurus wiroti*

Terrestrial

Terrestrial/Arboreal
Borneo palm pit viper
Trimeresurus borneensis

Terrestrial/Arboreal

© Pui Yong Min
Mangrove/shore pit viper
Trimeresurus (Cryptelytrops) purpureomaculatus

Arboreal

© Taksa Vasaruchapong

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White-lipped green pit viper
Trimersurus (Cryptelytrops) albolabris

Arboreal
Thai peninsular pit viper
*Trimeresurus (Popeia) fucata*

Arboreal
Tioman island pit viper
*Trimeresurus (Popeia) buniana*

Arboreal
Cameron pit viper
*Trimeresurus* (Popeia) *nebularis*

Arboreal
Sabah green pit viper
Trimeresurus (Popeia) sabahi

Arboreal
Sumatran pit viper
*Trimeresurus (Parias) sumatranus*

Arboreal

© Jeet Sukumaran

Kinabalu green pit viper
*Trimeresurus (Parias) malcomi*

Arboreal

© Indraneil Das
Hagen’s green pit viper
*Trimeresurus (Parias) hageni*

**Arboreal**
Temple/Wagler’s pit viper
*Tropidolaemus wagleri*

Adult female *Tropidolaemus wagleri*
Male Tropidolaemus wegleri

Female Tropidolaemus subannulatus

Male T. subannulatus

Arboreal
C. Colubridae

Common name  Scientific name
Red-necked keelback  *Rhabdophis subminiatus*

Note: To date, *Rhabdophis subminiatus* is the only Colubrid found in Malaysia that inflicts bites with systemic effects. Bites from *R. subminiatus* have not produced fatalities, but can be life threatening and should be treated with anti-yamakagashi antivenom (available from Japan) when indicated.
D. Pythonidae

**Common name**

*Reticulated Python*

*Broghammerus (Python) reticulatus*

**Scientific name**

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**Terrestrial/Arboreal**

© Ahmad Khodran Ismail

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Brongersma’s Short Python
Python brongersmai

Terrestrial
Bornean Short / Blood Python
Python breitensteini

Terrestrial
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Further Reading


Notes