

An easy-to-use photographic identification guide covering 265 snake species found in Thailand, Malaysia, Singapore, Myanmar, Borneo, Sumatra, Java and Bali.

- Authoritative text describes identifying features, distribution, habits and habitat with boxed features introducing snake families
- Length, common and scientific names plus vernacular names listed
- Introduction includes venom data, snake topography to permit rapid field identification of each species covered and glossary
- Includes an up-to-date checklist of the snakes of Southeast Asia, with their current global conservation status



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SNAKES OF SOUTHEAST ASIA

Indraneil Das



3rd EDITION

A NATURALIST'S GUIDE TO THE

SNAKES OF SOUTHEAST ASIA

Indraneil Das

NATURAL HISTORY/HERPETOLOGY

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A NATURALIST'S GUIDE TO THE

SNAKES OF SOUTHEAST ASIA

including Malaysia, Singapore, Thailand,
Myanmar, Borneo, Sumatra, Java and Bali



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Photo captions

Front cover: *main image* Blue Coral Snake; *bottom left* Gumprecht's Pit Viper; *bottom centre* White-bellied Rat Snake; *bottom right* Sunbeam Snake, all © Indraneil Das.

Back cover: Large-eyed Pit Viper © Gernot Vogel.

Title page: Golden-bellied Reed Snake © Evan Quah. **Contents page:** Cambodian Puff-faced Water Snake © Nikolay Poyarkov.

Dedication

Nothing would have happened without the support of the folks at home: my wife, Genevieve V.A. Gee, and son, Rahul Das. To them, I dedicate this book.

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INTRODUCTION

Snakes form one of the major components of vertebrate fauna of Southeast Asia. They feature prominently in folklore, mythology and other belief systems of the indigenous people of the region, and are of ecological and conservation value, some species supporting significant (albeit often illegal) economic activities (primarily, the snake-skin trade, but also sale of meat and other body parts that purportedly have medicinal properties). They fascinate city-dwellers as much as they engage rural folks, but often suffer prejudices, perhaps borne out of fear, ignorance, and religious and other early teachings.

As of 2020, a total of 444 species of snake have been recorded from the region. This guide, now in its third edition, describes and illustrates 265 species (or nearly 60 per cent) of the snake fauna of Southeast Asia (here including Myanmar, Thailand, Peninsular Malaysia and Singapore, and within the insular region, Sumatra, Borneo, Java and Bali, as well as the smaller islands and archipelago systems of the Greater Sundas). All other regions are termed extralimital in this work (although the natural distribution of species that spill over political boundaries of these countries may not necessarily be biologically extralimital).

The aim of this work is to permit rapid field identification of each species covered via descriptive text and one or more live photographs. In particular, details of colour and form are noted in the descriptions. A few species in this work have never been illustrated in a publication before, and for all I have made an effort to use previously unpublished images. In several species, accurate identification in the field is not possible without detailed scale counts or other morphological examination, for which users will have to refer to more technical works (see Further Reading, p. 170).

HABITATS

Southeast Asia is home to a remarkable diversity of snake life, due in part to the habitat conditions. Stretching from Myanmar to the islands of the Sundas, the habitat range encompasses the dry deciduous and subtropical forests of Myanmar that lie to the south of the western outliers of the Himalayas, the vast relatively low-lying areas of southern Thailand and the Malay Peninsula, and the often isolated mountain massifs of northern Myanmar, eastern Thailand and Sundaland; the southern regions relatively aseasonal, albeit with more wet periods, especially during the passage of the winter monsoons.

Natural habitats include lowland and hill dipterocarp forests that may reach subalpine limits, as in Gunung Kinabalu (4,095m asl) in northern Borneo; Hkakabo Razi (5,881m asl) in northern Myanmar and Doi Inthanon (2,576m asl) in northern Thailand. Also remarkable is the presence of more specialized habitats, including *kerangas* (Bornean heath) and vast tracks of forests associated with blackwater habitats that, because they are highly acidic, present important challenges for their biodiversity. Coastal habitats round up snake habitats in our region, and include mangrove swamps, beach forest habitats, shallow coastal seas and coral reefs.



Mangrove forests, Pulau Selurong, Brunei Darussalam

SNAKE IDENTIFICATION

Many species of snake can be told apart using details of their coloration, including both colour and pattern observed on their scales and, sometimes, underlying skin. Other features that are important for snake identification include the shape of their heads, robustness of their bodies, and relative length of their tails. The nature of scales present on different parts of the body is also instructive; they may be smooth, weakly keeled or bear multiple, sharp keels. Although a majority of users of this guide will use colour and form, including body proportions, to identify species, it is counts of specific scales that often set species apart. Figures 1 & 2 (p.6) show important scales that can be counted in order to confirm identification. Important scales include the midbody scale rows (dorsals), scales along the belly (ventrals) and those under the tail (subcaudals). A number of scales of the head are of importance in species identification, some of which are shown here.

Counts should not be made on live snakes for obvious reasons (potential danger to the investigator, stress to the snake, etc.); counts of scales can be made easily (after some practice) on both dead snakes (such as road-kills) and shed skins. Readers are encouraged to read more technical works in order to reliably identify species, as may be required in cases of bites from unknown snakes, or simply to know what species is found in a particular area.



Figure 1 Scales of a snake's dorsum and head.

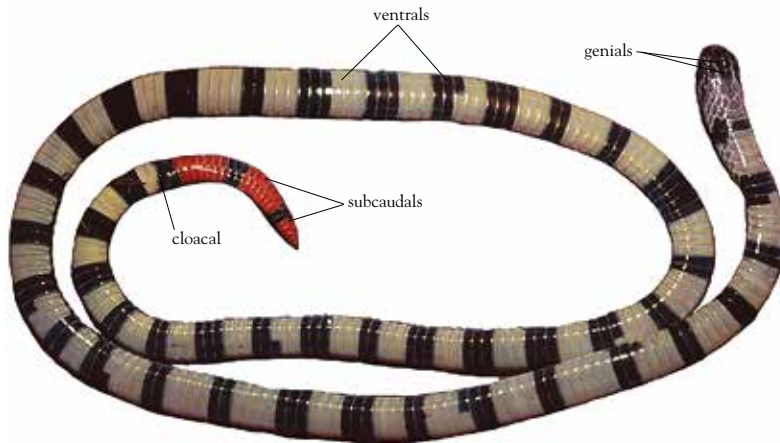


Figure 2 Scales of a snake's venter.

DEALING WITH SNAKE BITES

A number of snake species in Southeast Asia can deliver bites that are life-threatening to humans. These highly venomous snakes are found in forests and fields, in coastal waters and also out in the open sea. Deaths from snake bites are generally caused by a relatively small group of snakes, most of which are adapted to human-modified environments or live in forest edges. In this section, I list precautionary measures for avoiding snake bites and for dealing with cases of snake envenomation, as relevant to the region.

The majority of Southeast Asia's snakes are non-venomous, and the chances of getting bitten are more remote than those of being in a motor accident or drowning. It is important, nonetheless, to be able to identify the major venomous snake groups. Vipers (such as *Daboia*) and pit vipers (such as *Parais*, *Popeia*, *Trimeresurus* and *Tropidolaemus*) are relatively slow-moving snakes, with narrow necks and enlarged heads, whose fangs can be folded when not in use. Cobras (*Naja* and *Ophiophagus*) are large, heavy-bodied snakes, with the ability to raise a hood; they have short, fixed fangs. Coral snakes (*Calliophis* and *Sinomicrurus*) and kraits (*Bungarus*) are close relatives of cobras, but cannot raise their hoods. Finally, the sea snakes (including *Hydrophis* and *Laticauda*) are large, slender- or heavy-bodied snakes that are marine or at least coastal in distribution, with just a few (e.g. *Hydrophis sibauensis*) travelling far up tidal rivers. A genus of sea snake, *Laticauda* (two species in this region), comes ashore. All sea snakes have short, fixed fangs.

Many non-venomous snakes (particularly the kukri snakes and cat snakes) can inflict a painful bite, which while not immediately fatal may lead to bleeding and secondary infection. Needless to say, a bite from a large python can be dangerous, and these giant constricting snakes, especially the Reticulated Python, have been known to kill adult humans through constriction.

Below are a few dos and don'ts to follow when visiting places where venomous or unknown snakes have been sighted:

- Don't put your hand inside cracks or holes where a snake may be sheltering.
- Wear shoes that conceal the entire foot, especially in tall grass, where large vipers may be present.
- When moving in the dark, carry a reliable torch or wear a headtorch.
- To keep snakes away from human residences, ensure surroundings are free from litter, which attracts rats, and in turn, rodent-eating snakes.

Anti-venom sera used in treating snake bites are maintained at many hospitals, clinics and primary health centres in areas where such incidents are common (e.g. farms and oil-palm estates). In the event of a venomous snake bite, the patient needs to be kept calm and warm, and taken to a hospital as quickly as possible. The region around the bite should be immobilised with a stiff cloth bandage (not a tight tourniquet), in the case of bites from cobras, kraits, coral snakes and sea snakes. Some description or photograph of the snake in question will help medical staff provide appropriate treatment, as the neurotoxic venom of cobras, kraits and coral snakes acts differently from the haemotoxic venom of vipers. It is not advisable to cut or suck a bite, as these actions are likely to complicate the treatment as well as the subsequent healing process.

Finally, remember that anti-venom serum is the only proven cure for a snake bite.

ABOUT THIS BOOK

This book deals with representative species of snake the average visitor to, or resident of, Southeast Asia is likely to encounter. A number of the species are, nonetheless, rare, and are perhaps being illustrated here for the first time in a printed work of this sort. The aim of the volume is to aid rapid field identification – useful for biodiversity surveys, necessary for conservation and management, or simply enjoyable for anyone interested in fauna. The cut-off date for the checklist in this work was 31 July 2020.

For each species covered, the heading provides the following details: a common English name (the majority of which are from published sources); the current scientific name; the maximum total length attained; and, where they exist, vernacular and ‘book’ names (names applied by herpetologists to particular species in published works, which may not necessarily be used by indigenous people of a certain region) in some of the local languages (including Chinese languages, Dusun, Iban, Bahasa Malaysia/Brunei/Indonesia, Kelabit, Sundanese and Thai). In the species descriptions, the following information is given: colours and morphological characters used to aid field identification; distributional range within the area covered by this work, and notes on occurrence in extralimital areas; and brief notes on habits and behaviour, including habitat associations, elevational range, diet and reproduction, when known. The conservation status of each species according to the 2020 IUCN Red List of Threatened Species, Red List Categories, Version version 2020-2 (www.iucnredlist.org), is given in the Checklist of Southeast Asian Snakes (pp. 158–169).

Abbreviations

asl	above sea-level	m	metre
c.	circa	mm	millimetre
cm	centimetre	N	north
E	east	S	south
IUCN	International Union for Conservation of Nature and Natural Resources	W	west

GLOSSARY

Anterior Toward front of body; opposite of posterior.

Arboreal Living in trees.

Autotomy Spontaneous or reflexive separation of a body part (typically, a tail).

Chevron V-shaped mark.

Cloaca Chamber into which intestinal, urinary and reproductive ducts discharge contents.

Clutch Entire compliment of eggs or neonates from a single female.

Concave Bent inwards, rounded.

Conical scales Cone-shaped scales.

Convex Bent outwards, rounded.

Cryptic Camouflaged or hidden.

Dimorphism Difference in morphology between members of the same species.

Diurnal Active during the day.

Dorsal Toward upper surface of the body; scale in this area.

Dorsal crest Ridge of highly modified (often conical) scales along back.

Dorsum Back, or dorsal surface, of body.

Fang Recurved, elongate teeth on upper jaw, through which venom passes.

Furrow Well-defined groove.

Granular scales Small, convex, non-overlapping scales, typically with a pebbly appearance.

Hood Expanded skin behind head, especially in cobras.

Imbricate With regularly arranged, overlapping edges, like tiles on a roof.

Juvenile Young or sexually immature individual.

Keel Raised ridge down back, tail or scale.

Lateral Pertaining to side of body.

Nuchal Relating to the back of the neck.

Nuchal venom gland Integumental glands in paravertebral region of neck of several species of snakes.

Ocellate With eye-like markings.

Oviparity Reproduction through production of eggs that have membranes and/or shells.

Ovoviviparity Reproduction through production of live young that hatch from eggs within female oviducts.

Paravertebral stripe Stripe on one side of midline of dorsum.

Parthenogenesis Form of asexual reproduction involving development of embryos without fertilisation.

Posterior Toward rear of body; opposite of anterior.

Prehensile Able to grasp objects.

Reticulation Colour pattern resembling mesh of a net.

Scalation Pattern of scales on body or on a specific part of body.

Scute Enlarged scale.

Serrated With a saw-like appearance.

Sexual dimorphism Condition in which males and females have distinctly different forms.

Snout-vent length Measurement between snout tip and vent.

Spinose Sharp, pointed shape like a thorn.

Sub-fossorial Habit of living under a substrate, such as in leaf litter, under fallen objects.

Temporal Scale behind post-ocular.

Total length Measurement between snout tip and tail tip.

Venom Substance capable of producing toxic reaction when introduced into tissue.

Ventrum Underside of body.

ACROCHORDIDAE – WART SNAKES

This family includes three species worldwide, two of them in the region. They are recognisable in showing heavy bodies; loose, folded skin with rough, granular scales and bristle-tipped tubercles; valvular nostrils; eyes positioned on top of the head; and a flap for closing the lingual opening of mouth – all adaptations for a highly aquatic mode of life. They inhabit fresh waters and sea coasts, and are nocturnal, secreting themselves beneath fallen logs and other debris underwater, and emerging to hunt crabs, fish and other snakes at night. Large-growing species are harvested for their durable skins and also for their flesh, while at other localities they are killed by fishermen on account of their fish diet.

Wart Snake ■ *Acrochordus granulatus* 100cm

(Bahasa Malaysia: Ular Kadut. Bahasa Indonesia: Ular Air Tawar Kecil. Iban: Ular Paiie. Thai: Ngu Pai-ki-reu)

DESCRIPTION Top of body is olive, blue or blackish grey, and is marked with distinct transverse cream bands, especially in juveniles, that may sometimes persist in adults. Body is stout but compressed; head is indistinct from neck, and covered with small juxtaposed scales; eyes are tiny with a vertical pupil; mid-body scale is largest on vertebral region; tail is short and prehensile; a distinct fold of skin is present along middle of belly. **DISTRIBUTION** Myanmar, Thailand, Peninsular Malaysia, Sumatra, Borneo, Java. Extraliminally: from Indian sub-continent to Southeast Asia, New Guinea and Australia. **HABITS AND HABITAT** Coastal regions, such as estuaries, mangroves and sea coasts. Diet includes crabs, eels, burrowing gobies and other snakes. One population on Lake Taal, Luzon, in the Philippines lives in a freshwater lake. Ovoviviparous, producing 6–12 neonates (360–400mm).



Elephant Trunk Snake ■ *Acrochordus javanicus* 200cm

(Bahasa Malaysia/Indonesia: Ular Belalai Gajah. Hakka Chinese: Nai She. Iban: Ular Pai. Thai: Ngu Nguang-chang)

DESCRIPTION Top of body is greyish black, the head with darker lines; 2 diffuse longitudinal stripes and elongated dark blotches are present on flanks; belly is cream. Compared to its relative, the Wart Snake (see opposite), body is extremely stout and slightly compressed; head is indistinct from neck; forehead scales are small and rough; eyes are small with a vertical pupil; dorsals are keeled; mid-body scale rows are largest around vertebrals; tail is short but prehensile. **DISTRIBUTION** Thailand, Peninsular Malaysia, Singapore, Sumatra, Borneo, Java. Extraliminally: Cambodia, Vietnam. **HABITS AND HABITAT** Freshwater wetlands, including peat swamps and black-water rivers, plus ditches and canals. Diet comprises fish, including eels and catfish. Ovoviviparous, producing 6–48 neonates (290–460mm). An interesting aspect of its reproductive biology is its capacity, as documented once, to produce embryos without mating. Termed 'parthenogenesis', this phenomenon has also been reported in a few other snakes.

