

## Guest Article

### Sri Lankan Colubrid Snakes

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At some point of our lives we have come across the words ‘Mapila’, ‘Ahatulla’ or ‘Malsara’ ; *the feared , mysterious snakes that come in a group of seven and suck the blood of sleeping people ; the eye-plucking monsters.....* the stories go on. But these fascinating snakes are far more innocent and helpful to humans than we think. This article will expose the unremarkable and splendid colubrid snakes in Sri Lanka, with focus on the species diversity according to their habitats. The article will also reveal their current status, threats faced by these animals and their conservation in the country.

Snakes are the ‘youngest’ reptile group on earth, the last big invention of nature. Although the first ‘snake-like’ creatures are considered to have appeared on earth about 135 - 180 million years ago in the Jurassic period of the Mesozoic era (Mattison,1995), when other tetrapod reptiles have already gained ground, the earliest known snake fossils belong only to the Cretaceous period about 95 million years ago. Today nearly 3 000 species of snakes, belonging to 18 snake families, inhabit most parts of the Earth excluding some countries like Ireland, New Zealand, Bermuda, Antarctic region etc.

Family ‘Colubridae’ is the largest snake family in the world including more than 1700 known species, belonging to 304 genera (Zaher,1999). In fact, according to the EMBL reptile database, which is one of the leading databases on reptiles, the number of described colubrids as of January 2005, was 1827. They arose in Asia during the Oligocene era (>30 million years ago) and radiated to other continents (Green,1997), where they now occupy a variety of habitats. A very high number of 177 species (of 30 genera) are currently known from the Southern Asian region (Das,2001).

Sri Lanka, as a country, is ranked among the highest in Asia in terms of biodiversity per unit area. Although small in size, significant variation in climate, topography and soil properties have given rise to a striking variety of forest types that provide habitats to all faunal and floral species, including snakes. The island, being a megahotspot of snakes, harbors a rich composition of serpents including 96 described species and subspecies, with 48 endemic taxa (de Silva, 2001), out of which 44 (45.83 %) distinct species and subspecies are colubrids (Annex I). They include 19 endemic forms. Out of the five geographically relict genera (the members of the genus are only found in that particular country / an endemic genus) in Sri

Lanka, other than the genus *Pseudotyphlops* of family Uropeltidae, the other four genera namely *Aspidura*, *Balanophis*, *Cercaspis* and *Haplocercus* belong to family Colubridae, and they include nine relict colubrid species.

The colubrids display some common morphological features, which can be used to separate them from other snake families. Their ventral scales are well developed, usually as broad as the belly. The head is usually oval shaped with systematically arranged shields. The tails of the colubrids are normally cylindrical and pointed and in some species the last few teeth on the maxilla are enlarged and grooved hence these are known as ‘rear-fanged snakes’.

In his book ‘Reptile Fauna of Ceylon’, which is the first comprehensive and fully annotated list of Sri Lankan herpetofauna, William Ferguson (1877) has divided the current colubrids in to eight separate families such as Homalopsidae, Dendrophidae, Oligodontidae etc. But according to later taxonomic reviews all these snakes are considered to be belonging to family Colubridae (under several subfamilies), hence making it the largest snake family in the world.

### Habitat preferences

Being the largest snake family, Colubridae members occupy a variety of diverse habitats. The snakes can be divided into four ecological categories according to their habitats namely, Fossorial (live inside soil), Terrestrial (live on the ground), Arboreal (live on shrubs and trees) and Aquatic (live in water), where the last habitat can be furthermore divided as Freshwater, Brackish water and Marine. The following is a brief general description about the Sri Lankan Colubrids of the four main ecological groups.

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## Fossorial species

Out of the 44 colubrid species in the country seven species are considered to be 'truly' fossorial, living a subterranean life by burrowing into loose soil and staying under debris, stones, logs etc. It is an important fact that all these seven species are endemic and relict to the country. Because of the habit of burrowing into soil, these snakes are small compared with other colubrids, with their heads pointed and with small eyes. Their body scales are smooth and have a 'polished' appearance, reducing friction. Genus *Aspidura* or rough-side snakes ('Medilla' in Sinhala) includes six relict fossorial snakes which are confined to the wet zone of Sri Lanka. These diminutive, inoffensive snakes mainly feed on earthworms and insect larvae and prefer cool, damp fossorial niches. The well-known Boie's rough-side (*Aspidura brachyorrhos*) inhabits most parts of the wet zone. I have obtained this species from a home garden in Bambalapitiya (3 m above sea level) and even from Horton plains National park (ca. 2100m above sea level), the highest tableland in the country, where it is one of the very few snake species encountered. But the ecology and natural history of most other members of the genus are poorly known, and among them is Drummond-Hay's rough-side (*Aspidura drummondhayi*), a fossorial snake, residing in the lowland and midland rain forests.

The other member of the fossorial snake group, 'Kurunkarawala' or *Haplocercus ceylonensis* (Black-spine snake), is an endemic, monotypic (only one species exists in the genus) snake, inhabiting cool damp places in the 2<sup>nd</sup> and 3<sup>rd</sup> peneplains of the wet zone. All these fossorial snakes need moisture, coolness and shade. When exposed to dryer and warmer environments, desiccation and possible death is recorded to occur (Gans, 1982).

## Terrestrial species

Living at ground level, terrestrial species consist of the largest section of Sri Lankan Colubrids, being 18 species with eight endemics. The Genus *Oligodon*, consisting of five species and subspecies that are common ground-dwelling, non-venomous snakes known as 'Dhath Ketiya' in Sinhala. Their common English name 'Kukri snake' derives from the shape of their teeth, which are curved rather like a *kukri*, the famed curved knife used by the Ghurka soldiers. Although they are considered to be diurnal, some observations have been made also during the evening and night. Kukri snakes can inflate their bodies to a remarkable degree when excited. The Banded kukri snake (*Oligodon arnensis*), being the most widely distributed member of the genus, inhabits lower elevations of all three climatic zones. But Dumeril's kukri snake (*Oligodon sublineatus*) and *Oligodon taeniolatus ceylonicus* (Varigated kukri snake), both endemics, are mainly confined to the wet zone and the dry zone, respectively. The least known, Templeton's kukri snake (*Oligodon calamarius*) is a secretive

endemic snake whose usual haunts are damp forests of the wet zone. Kukri snakes are found under debris and stones, in earth cracks, and even inside houses and other anthropogenic habitats. They are offensive, small snakes.

Three species of Wolf snakes of the genus *Lycodon*, called 'Radanakaya' in Sinhala, are known from the island, viz., *Lycodon striatus* (Shaw's wolf snake), *Lycodon aulicus* (Common wolf snake and *Lycodon osmanhilli* (Flowery wolf snake). But interbreeding between the endemic *Lycodon osmanhilli* and *Lycodon aulicus* has been documented (Nanayakkara, 1987), which is unusual for two different, distinct species. Hence some have considered *Lycodon osmanhilli* as a colour variety of *Lycodon aulicus* (Deraniyagala, 1955). Wolf snakes are nocturnal small animals and are frequently found inside and near human habitation. Most specimens are extremely vicious and release foul-smelling excreta when handled. *Lycodon* species can be considered the most widely killed colubrid snakes in the country due to misidentification and fear. A gecko (*Hemidactylus leschenaulti*) preying on a *Lycodon striatus* is documented (Somaweera, 2005), which is the first ever record of a *Hemidactylus* species preying on a snake in the country.

The only colubrid which had a doubtful status in the country is the Scarce Bridal snake (*Dryocalamus gracilis*), which ever since 1888 was only known from two specimens collected by Haly (specific locations not known), until in 2002, a third specimen was obtained from Ambanpola area of the Kurunegala District, whilst 'road cruising' for Russell's vipers (*Daboia russelii russelii*) to the southwest of Anuradhapura, during the filming of the documentary 'Venom', about the Sri Lankan Russell's viper. (O'Shea and De Silva, 2003). The specimen is thus only the third specimen of *D. gracilis* for Sri Lanka, the first after 114 years. Although Mahendra (1984) considered *Dryocalamus gracilis* to be conspecific with the other species of the genus, *Dryocalamus nympha*, it is readily distinguishable from its relative by the presence of 15 scale rows at midbody (Vs. 13 in *D. nympha*) and an entire anal plate (Vs. divided in *D. nympha*). *Dryocalamus nympha* (Bridal snake, 'Geta radanakaya') is an uncommon snake confined to the lower elevations of the dry zone. The snake is very similar in color to *Lycodon* species and also has arboreal tendencies. It is a harmless, nocturnal snake, which is very active and timid by nature. But if disturbed and provoked, it will fiercely attack its challenger repeatedly.

Each of the other terrestrial colubrid genera in Sri Lanka, has only one species present in the country. The endemic sub-species of the Rat snake (Dhaman) or 'Gerandiya' (*Ptyas mucosa maximus*) is one of the most famous snakes in the island. It is also the second largest snake in Sri Lanka, generally reaching lengths nearly



Fig. 1 Bole's rough-side *Aspidura brachyomphos*  
(Photo - Ruchira Somaweera)



Fig. 2 Common rough-side *Aspidura brachyomphos*  
(Photo - Ruchira Somaweera)



Fig. 3 Drummond-Hay's rough-side *Aspidura drummondhayi*  
(Photo - Ruchira Somaweera)



Fig. 4 Günther's rough-side *Aspidura guentheri*  
(Photo - Kanishka Ukwela)



Fig. 5 Banded kukri snake *Oligodon amoenus*  
(Photo - Ruchira Somaweera)



Fig. 6 Dumeril's kukri snake *Oligodon sublineatus*  
(Photo - Ruchira Somaweera)



Fig. 7 Variegated kukri snake *Oligodon taeniolatus ceylonicus*  
(Photo - Ruchira Somaweera)



Fig. 8 Russell's kukri snake *Oligodon taeniolatus fasciatus*  
(Photo - Ishan Agarwal, India)



Fig. 9 Templeton's kukri snake *Oligodon calamarius* -  
dorsal aspect. (Photo - Ruchira Somaweera)



Fig. 10 Templeton's kukri snake *Oligodon calamarius* -  
ventral aspect. (Photo - Ruchira Somaweera)



Fig. 11 Shaw's wolf snake *Lycodon striatus*  
(Photo - Ruchira Somaweera)



Fig. 12 Common wolf snake *Lycodon aulicus*  
(Photo - Ruchira Somaweera)



Fig. 13 Flawless wolf snake *Lycodon asiamhill*  
(Photo - Ruchira Somaweera)



Fig. 14 Brit's snake *Dipocalamus symph*  
(Photo - Uthra Suresh Hettige)



Fig. 15 Rat snake *Ptyas mucosa maximus* - juvenile  
(Photo - Ruchira Somaweera)





Fig. 16 Rat snake *Ptyas mucosa maximus* – adult  
(Photo - Ruchira Somaweera)



Fig. 17 Green keelback *Macropisthodon plumbeicolor*  
- Juvenile (Photo - Ruchira Somaweera)



Fig. 18 Green keelback *Macropisthodon plumbeicolor*  
- Sub adult (Photo - Ruchira Somaweera)



Fig. 19 Green keelback *Macropisthodon plumbeicolor*  
- Fully grown adult (Photo - Ruchira Somaweera)



Fig. 20 Reed snake *Liopeltis calamaria*  
(Photo - Ruchira Somaweera)



Fig. 21 Jerdon's polyodont *Sibynophis subpunctatus*  
(Photo - Ruchira Somaweera)



Fig. 22 Trinket snake *Eiaphe helena* in defensive posture  
(Photo - Ruchira Somaweera)



Fig. 23 Blossom krait *Baiianophis ceylonensis*  
(Photo - Ruchira Somaweera)



Fig. 24 Banded Racer *Argyrogena fasciatus*  
(Photo - Ashok Chaitan, India)



Fig. 25 Sri Lanka wolf snake *Cercaspiis carinata* - Sub adult  
(Photo - Mendis Wickramasinghe)



Fig. 26 Sri Lanka wolf snake *Cercaspiis carinata* - Adult  
(Photo - Mendis Wickramasinghe)



Fig. 27 Gamma cat snake *Boiga trigonatus*  
(Photo - Ruchira Somaweera)



Fig. 28 Sri Lanka cat snake *Boiga ceylonensis*  
(Photo - Ruchira Somaweera)



Fig. 29 Beddom's catsnake *Boiga beddomi*  
(Photo - Ishan Agarwal, India)



Fig. 30 Forster's cat snake *Boiga forsteri*/ Black color variety known as 'Naga mapila' (Photo - Ruchira Somaweera)





Fig. 31 Forster's cat snake *Boiga forsteri* Red color variety known as 'Le mapila' (Photo - Ruchira Somaweera)

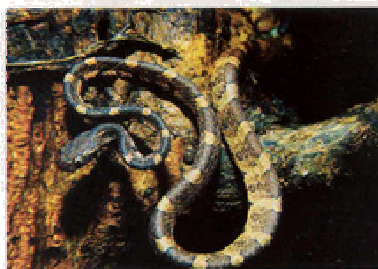


Fig. 32 Bames's cat snake *Boiga bamesii* - Male (Photo - Ruchira Somaweera)



Fig. 33 Bames's cat snake *Boiga bamesii* - Female (Photo - Ruchira Somaweera)



Fig. 34 A cat snake hanging from its prehensile tail. (Photo - Ruchira Somaweera)



Fig. 35 Green vine snake *Ahaetulla nasutus* juvenile (Photo - Ruchira Somaweera)

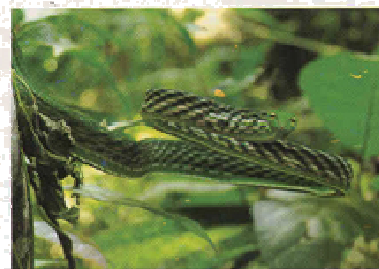


Fig. 36 Green vine snake *Ahaetulla nasutus* adult (Photo - Ruchira Somaweera)



Fig. 37 Brown vine snake *Ahaetulla pulverulenta* (Photo - Uditha Suresh Hettige)

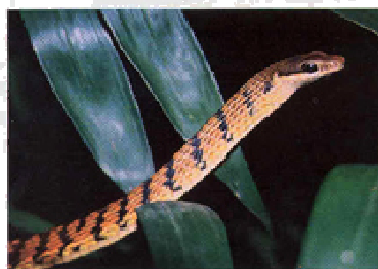


Fig. 38 Gunther's Bronze-back *Dendrolaphis countolepis* (Photo - Ruchira Somaweera)



Fig. 39 Common Bronze-back *Dendrolaphis tristis* (Photo - Ruchira Somaweera)



Fig. 40 Boulenger's bronze-back *Dendrolaphis bifasciata* (Photo - Kanishka Uluwela)



Fig. 41 Ornate flying snake *Chrysocela ornata* (Photo - Ruchira Somaweera)



Fig. 42 Striped flying snake *Chrysocela leproleuca* (Photo - Ruchira Somaweera)



Fig. 43 Checkered keelback *Xenochrophis asperimus* (Photo - Ruchira Somaweera)



Fig. 44 Checkered keelback *Xenochrophis piscator* (Photo - Ruchira Somaweera)



Fig. 45 Olive keelback *Atractus schistosomus* (Photo - Ruchira Somaweera)



Fig. 46 Buff striped keelback *Amphiesma stolatum*  
(Photo - Ruchira Somaweera)



Fig. 47 Gerard's water snake *Gerardia prevosanus*  
(Photo - Kedar Bhde, India)



Fig. 48 Dog-faced water snake *Cerberus rynchops*  
- light phase (Photo - Ruchira Somaweera)



Fig. 49 Dog-faced water snake *Cerberus rynchops*  
- dark phase (Photo - Ruchira Somaweera)



Fig. 50 Dog-faced water snake *Cerberus rynchops*  
- Ventral aspects (Photo - Ruchira Somaweera)

10 feet long, but a specimen of 11 feet and 9 inches long is on record (Smith, 1943). Unlike most colubrids, the females of this species guard their clutches. It is a diurnal species and a good climber. The Rat snake is a very fierce, powerful and a courageous snake and when disturbed, it raises its forebody, arches the neck region, puffs the throat, hisses and attacks. Wall reported sound production of Rat snakes when alert. It is widely distributed in the island and common near human habitation.

The Green keelback (*Macropisthodon plumbicolor*, 'Palaa bariya' in Sinhala) is a common snake mainly inhabiting grasslands throughout the country, excluding the highest elevations. It is known to flatten, expand, and raise the anterior part of its body when anxious, hence it's known as 'Pachcha naga' in Tamil, meaning 'Green Cobra'. Arboreal tendencies have also been recorded from this diurnal colubrid. The Jerdon's polyodont (*Sibynophis subpunctatus*, 'Dethi Gomaraya') is a rather rare, primarily ground dwelling, diurnal colubrid, while the Reed snake (*Liopeltis calamaria*, 'Pun bariya') is one of the rarest colubrids in the country with very few scattered records. Both these species are inoffensive by nature and voraciously feed on geckos and skinks. They are non-venomous but very little is known about their ecology.

The Trinket snake (*Elaphe helena* or *Coelognathus helena* in recent literature) known as 'Katakaluwa' by the Sinhalese, has a unique place among the Sri Lankan snakes due to various myths and assorted beliefs held by the Sri Lankans. It is a non-venomous active snake with diurnal habits. In defense, Trinket snakes raise their anterior part of the body and form a series of loops while expanding the neck. The species

is widely distributed throughout the island except for high altitudes. Its food consists mainly of small mammals and it squeezes its prey by coiling around it, as a python does.

Being a forest dweller, the Sri Lanka keelback or Blossom krait (*Balanophis ceylonensis*) is rarely seen. This slow moving terrestrial snake is mainly confined to the low country wet zone rain forests of the country, where it inhabits the leaf litter.

According to published literature, the only specimen of the Sri Lankan species of Banded Racer (*Argyrogena fasciolatus*) was first recorded by Ferguson (1877), and considered to have been collected by Mr. Twynam, a government agent of Northern Province, back in 1877 from Aripo in Jaffna. The same specimen was subsequently cited by Haly (1886) in his 'First report of the collection of snakes in the Colombo museum'. The species is known to be daytime-active, vicious and non-venomous, and it distends the anterior part of its body and elevates it to resemble a cobra.

Perhaps the best example for mimicry among Sri Lankan snakes is shown by the endemic, non-venomous, Sri Lanka wolf snake (*Cercaspis carinata* or 'Dhara radanakaya' in Sinhala), which greatly resembles the highly venomous Elapid, Sri Lanka krait or 'Mudhu karawala' (*Bungarus ceylonicus*) in morphology, coloration and even scalation to a great extent. Inhabiting damp areas in forests of the wet zone, the Sri Lanka wolf snake exhibits a 'dehydrated' appearance when exposed to dry conditions. This nocturnal animal is fierce and attempts to bites. It is known to feed on geckos, skinks and also on other small terrestrial and fossorial snakes.

## Arboreal species

Of the 13 species of arboreal Colubrids of the country, five species belong to the genus *Boiga* and are widely known as 'Mapilas' or Cat snakes, due to their large, pronounced eyes with vertical pupils, like that of a cat. Although Taylor (1950) records five species of Cat Snakes from the island, many authors (Deraniyagala 1955, de Silva 1980 & de Silva 1990) doubted the validity of *Boiga beddomei* (Beddom's cat snake) and considered it as a synonym of *Boiga ceylonensis* (Sri Lanka cat snake). But in his splendid book 'Ophidia Taprobanica or the Snakes of Ceylon', Frank Wall regards it to be a distinct Sri Lankan snake. This leads to an uncertainty of the validity of this species. But the clear distinctiveness of *Boiga beddomei* in several morphological, scalation and colour pattern features, suggests that it is a different species. Back in 1920, Wall obtained three specimens from Peradeniya and one from Kandy. A considerable number of specimens have been secured from the country in the recent past, both from the central hills (especially around Kandy) and from lower elevations.

Two of the other species, namely Gamma cat snake (*Boiga trigonatus*, 'Raan mapila') and Sri Lanka cat snake (*Boiga ceylonensis*, 'Nidi mapila') are common snakes in the country, with wide distributions, while the Forsten's cat snake (*Boiga forsteni*, 'Le mapila' or 'Naga mapila'), is a comparatively uncommon snake. But the endemic Barnes's cat snake (*Boiga barnesii*, 'Panduru mapila') is considered to be very rare, and has only few scattered records. Cat snakes are aggressive snakes with nocturnal behavior. These moderate-sized snakes spend most of the day time hiding in a tree hole or up on a bush, coiled up. If provoked, they raise their fore-body and form it into loops; they often vibrate the posterior end of the body and attempt to bite. They are known to 'rattle' their tails when agitated. The food usually consists of geckos, lizards, small mammals and small birds but there is a record of *Boiga forsteni* feeding on a *Boiga ceylonensis* (ophiophagus habit) under captive conditions (De Silva, 1975) and *Boiga ceylonensis* swallowing another smaller *Boiga ceylonensis* (cannibalistic habit) in the wild (Ukuwela, 2004). They seize the prey with their teeth, but then kill it by constriction.

The genus *Ahaetulla* contains common, largely arboreal snakes. Two species occur in Sri Lanka *Ahaetulla nasutus* (Green vine snake, 'Ahatulla') and *Ahaetulla pulverulentus* (Brown vine snake or Thunderbolt snake, 'Hena kandaya'). The former is a common garden snake widely distributed in the island but the latter is uncommon and endemic to the island. *Ahaetulla* species have several special features. They have for instance, horizontal pupils in the shape of a keyhole and a small groove from the eye to the nose, through which the pupils can move further to the direction of the nostrils. In that way, three dimensional vision is increased which is important in catching prey on vegetation. They move very fast and elegantly in

their habitat. Both Sri Lankan species are diurnal and mildly venomous. The food usually consists of geckos, lizards, small mammals and small birds but, Whitaker (1978) and Golder (1898) records incidents of *Ahaetulla nasutus* catching and feeding on fish.

*Dendrelaphis* is another genus which consists of four species of arboreal snakes known as Bronze-backs ('Hal danda' in Sinhala). Boulenger's Bronze-back (*Dendrelaphis bifrenalis*), Gunther's Bronze-back (*Dendrelaphis caudolineolatus*) and Common Bronze-back (*Dendrelaphis tristis*) are comparatively common snakes. In contrast, the only endemic species of the genus, Oliver's Bronze-back (*Dendrelaphis oliveri*), is only known from a single specimen (type specimen) collected north of Trincomalee by Taylor in 1950. *Dendrelaphis* species are fast-moving arboreal snakes, which often descend to the ground in search of food and water. They inhabit shrubs and trees of forests but *Dendrelaphis tristis* is most frequently encountered in the neighborhood of human settlements.

Out of the 96 species of snakes recorded from the country, two species have the ability to 'glide', hence they are known as 'Flying snakes'. Two species of colubrids belonging to the genus *Chrysopelea* inhabit the scrublands and forests of the island. The 'Malsara' or Ornate flying snake (*Chrysopelea ornata ornata*) is mainly confined to the lowest peneplain of all three climatic zones, while the endemic Striped flying snake or 'Dhangara danda' (*Chrysopelea taprobanica*) is distributed in the 1<sup>st</sup> peneplain of the dry zone. They have a remarkable ability to launch themselves from a coil, straightening the body like a released spring, and travel through the air in a controlled glide, in the case of long distances; and to spring in case of short distances. During the flight, the body is flattened and concave ventrally, a posture facilitated by hinges on either side of each ventral scale. Both are mildly venomous rear-fanged snakes that mainly feed on skinks and geckos.

## Aquatic species

So far, six freshwater and estuarine semi-aquatic colubrids have been recorded from the country. They are characterized by upward-directed eyes and more dorsally situated nostrils, enabling them to see and breathe when staying at the water surface and by keeled body scales. Unlike most other snakes which commence to swallow their prey after it has been smothered or at least exhausted, aquatic colubrids swallow their prey immediately after they have seized it. Checkered keelbacks or *Xenochrophis* species are the most common, inhabiting most of the lakes, streams, paddy fields etc. in the country. The genus includes two species, *Xenochrophis asperimus* ('Diya bariya') and *Xenochrophis piscator* ('Diya naya'), with the former being endemic to the country. The Olive keelback (*Atretium schistosum*, 'Diyawarnaya' or 'Kadola') is a diurnal snake that mainly feeds on fish and frogs.

They are also seen in brackish water bodies and occasionally on land close to water bodies. It is usually met in anthropogenic habitats where I have observed a large specimen in a ditch in the middle of the Matale town.

Although grouped as an aquatic snake, the Buff striped keelback or 'Aharakukka' (*Amphiesma stolata*) is always found on land within close proximity to water. In fact Wall (1921) states that he have never found one actually in water. This widely distributed snake appears to be common near paddy fields and other man-made water bodies.

While, hitherto only known from two specimens, one collected by H.F. Fonseka in 1886 from the estuaries of Kelani river and the other by Gyi in 1970 with no specific location (Now deposited in the Field Museum of Natural History, USA), the rare *Gerardia prevostianus* (Gerard's water snake) has been again recorded from Doowa in Negambo during a biodiversity survey in 1999 (Kandamby, *pers. comm.*). It is a mildly venomous rear-fanged, aquatic snake, extralimittally recorded in several countries including Burma, India and Thailand. While no systematic studies have been conducted on its natural history in Sri Lanka, a recent study at the National University of Singapore found the species to feast on soft-shelled crabs, which it tears apart and swallows one bite at a time (Jayne *et al*, 2002). This feeding behavior is very unusual for a snake, because snake teeth curve back into the mouth as an adaptation for holding the prey inside the mouth and are not adapted for slicing and cutting. Thus, all snakes swallow their meals in one giant portion.

The only 'genuine' brackish-water colubrid species in the country is the Dog-faced water snake (*Cerberus rynchops*, 'Kunu-diya kaluwa'). It is an excellent swimmer mainly inhabiting the mangroves of the coastal areas, but also found in adjoining freshwater bodies. The Dog-faced water snake is a mildly venomous snake and usually bites readily and

savagely. Gunther (1887) reports that *Cerberus rynchops* ( then in the family Homalopsidae) even enter the sea and in some points of their lives they approach the truly marine Hydroporphids (sea snakes). But no such observations have been made in Sri Lanka! Unlike most colubrids, it is a viviparous snake, and give birth to about 10 young.

## The Origin – Where did they come from

Sri Lankan colubrids show affinities with those of mainland India, Madagascar and Malaysia. According to Taylor (1950), the genus *Aspidura* is the oldest colubrid genus in Sri Lanka, and could have been derived from an ancestor that originated in the Indo-Malayan region, whence the ancestor stock spread out, perhaps during late Miocene or Pliocene. The genus *Oligodon*, followed by the genus *Boiga*, would have arrived subsequently. Perhaps most of the other genera of colubrids, which barely show subspecific characters, would have arrived during the temporary land connections, which according to Moor (1960) occurred four times during Pleistocene. Conceivably the last few genera to arrive before the final partition were *Argyrogena* and *Gerardia*. Hora (1949) considered that some colubrid genera found in Peninsula India possess distinct Malayan affinities, i.e. *Dendrelaphis*, *Chrysopelea*, *Dryocalamus*, *Atretium*, *Boiga*, *Ahaetulla* and *Rhabdops*. Excluding the last, all other genera listed by Hora are found in Sri Lanka. Certain of the colubrid elements of the fauna of the island are similar to those of Madagascar, including *Sibynophis*, which is found on both these islands and mainland India, but not in Africa.

## Venom

Snakes can be divided into four categories based on their venom, as Highly venomous, Moderately venomous, Mildly venomous and non-venomous. In snakes, venom is an

**Table 1. The Mildly venomous colubrids in Sri Lanka**

	Scientific name	English name	Sinhala name
01	<i>Ahaetulla nasutus</i>	Green vine snake	Ahatulla
02	<i>Ahaetulla pulverulentus</i>	Brown vine snake	Henakandaya
03	<i>Balanaphis ceylonensis</i>	Blossom krait	Nihaluwa
04	<i>Boiga barnesii</i>	Barnes's cat snake	Panduru Mapila
05	<i>Boiga ceylonensis</i>	Sri Lanka cat snake	Nidi Mapila
06	<i>Boiga beddomei</i>	Beddom's cat snake	Kaha Mapila
07	<i>Boiga forsteni</i>	Forsten's cat snake	Naga Mapila / Le Mapila
08	<i>Boiga trigonatus</i>	Gamma cat snake	Raan Mapila
09	<i>Cerberus rynchops</i>	Dog-faced water snake	Kunu diya kaluwa
10	<i>Chrysopelea ornata</i>	Ornate flying snake	Malsara
11	<i>Chrysopelea taprobanica</i>	Striped flying snake	Dangara Dhanda
12	<i>Gerardia prevostianus</i>	Gerard's water snake	Prevostige Diyabariya



evolutionary adaptation to immobilize prey and secondarily used in defense. The chemistry of snake venom is complicated. Snake venoms are at least 90% protein (by dry weight), and most of the proteins are enzymes such as proteases, phospholipases, esterases, hyaluronidases, nucleotidases and lecithinases. Some venoms contain biologically active amines (eg. Serotonin), polypeptide toxins, glycoproteins and other low-molecular-weight compounds etc.

Depending on the effect, snake venoms can be categorized as haematotoxins (cause coagulation defects and intravascular haemolysis), neurotoxins (affects the neural system and neuromuscular transmission), nephrotoxins (damage kidneys either directly or indirectly), cardiovascular toxins (effects the heart), myotoxins (effects muscles) and rarely, endocrine toxins (cause acute pituitary and adrenal insufficiency). But in the case of Sri Lankan colubrid snake bites, the symptoms are mainly restricted to local pain, swelling etc.

Sri Lankan colubrids include only mildly venomous and non-venomous species. Other than the following 12 colubrid snake species, which are considered as 'Mildly Venomous' (Table 01), all other species are non-venomous.

Some non-venomous colubrids known as Aglyphous (grooveless) snakes lack any groove in their teeth for venom conduction. But there are records of bites by non-venomous, Aglyphous, snakes such as the Trinket snake (*Elaphe helena*) and Boie's roughside (*Aspidura brachyorrhos*), which caused systemic effects such as prolonged blood-clotting time and swelling etc. (Kularatne & de Silva, 1998 ; de Silva, 1997). Also a bite in my hand by a ca. 4-foot Common Bronze-back (*Dendrelaphis tristis*) in Wilpattu area resulted a swelling that lasted for nearly 3 days, which is uncommon in the case of bites by non-venomous colubrids. One possible explanation to these incidents is that some non-venomous snakes might possess mild 'toxic saliva' or derivatives of true venoms. In a recent study, Dr. Bryan Fry of Australian Venom Research Unit and his co-workers, has been able to even isolate the typical cobra-style neurotoxin, belonging to a toxin family called 3FTx (three-finger toxins) that is the signature of elapid venoms, from few species of colubrids including the Radiated rat snake (*Coelognathus radiatus*), very similar to the Sri Lankan Trinket snake (*Elaphe helena* or *Coelognathus helena*), which is considered to be a non-venomous colubrid. (Fry *et. al*, 2003) These suggests that the evolution of snake venom happened far before the 'non-venomous' snakes appeared and why there cannot be a strong selection pressure for the development of advanced appendages like fangs unless there was already a potent venom worth delivering.

Others possess grooved venom fangs and comprise the group Opisthoglyphous, the 'rear-fanged snakes'. They have at least one pair of distinct fangs, larger than their other teeth, attached near the rear of the upper jaw. The venom is produced in a special tubuloacinous gland called Duvernoy's gland. But, some scientists consider that the Duvernoy's gland is in fact the same venom gland as the one found in some venomous species such as cobras etc. because venom evolved once, at the very base of the Colubroidea (Advanced snakes) evolutionarily tree, long before any of the 'colubrids' evolved. However, due to the above fang configuration, chances are very limited of suffering a fang-bite from an attack. Even if the venom gets injected into the body, in the case of Sri Lankan species, it is only feebly toxic to humans, having only trivial local effects restricted to pain, swelling and color change due to haematoma around the bite site.

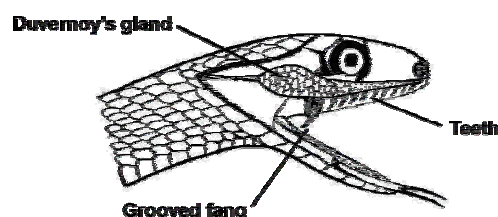


Fig.1: Head of an Opisthoglyphous (rear-fanged) snake

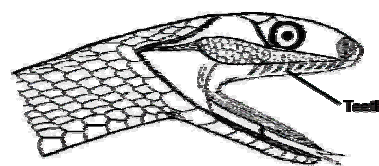


Fig.2: Head of an Aglyphous (grooveless) snake

Kularatne (2004) mentions of an authenticated report of a dog killed by a bite from Forsten's cat snake (*Boiga forsteni*), which could be mainly due to the large size of the snake. But no human deaths have been recorded due to colubrids in Sri Lanka. However, on Guam, the researcher Fritts (1990) and his co-workers have reported serious bites, even leading to respiratory paralysis, due to envenomation by the colubrid, Brown cat snake (*Boiga irregularis*), which is one of the worst invasive alien species in the world (ISSG, 2000). Also a very few species of colubrids including the Boomslang (*Dispholidus typus*), Savanna Twigsnake (*Thelotornis capensis*) and some Japanese *Rhabdophis* species have been reported to cause systematic poisoning leading to death (Green, 1997). However, no such effects have been recorded from our country and personal experience confirms that most colubrid bites are not that painful!

## Beliefs

No snake has been both so widely known and so misunderstood in Sri Lanka as the colubrid snakes. These snakes have long fascinated the Sri Lankan people, so that

already in his book 'Sketches of the Natural History of Ceylon' published back in 1861, Sir. Emerson Tennent has described their appearance and the attitude of local people towards them. Furthermore, several places in several provinces are named after Sinhala names of colubrids such as Gerandiella (Sabaragamuwa province), Garandiulla (Uva province), Gerandiyahela (Eastern province), Barigama (Central province), Barigoda (North western province), Ahatullawewa (Central province), Haldaduwana (North western province) etc.

Sri Lanka has a unique place among countries that are famous for their mythology because of the varied beliefs held by the Sri Lankans. Because this family includes approximately half of the known snake fauna of the country, myths about colubrid snakes are more numerous and more extreme than about any other snake in the country. Hence, only few famous myths and the relevant reality are described below.

**Myth** - The Trinket snake or 'Katakaluwa' is widely believed to be highly venomous and that envenomation due to its bite will result in discoloration of the whole body, including the saliva and urine. Furthermore it is believed that the Trinket snake, after biting a person, would climb a tree and watch to confirm whether the victim is dead, only then will it descend to the ground.

**Reality** - 'Katakaluwa' (*Elaphe helena*) is a terrestrial and sub-arboreal aglyphous, non-venomous snake. The Sinhala word 'Katakaluwa' has been applied because of the dark color inside the mouth. Although they are vicious when first encountered they cannot harm a human, other than by making mild wounds.

**Myth** - The 'Gerandaya' (Rat snake) and 'Diya bariya' (Checked Keel backs) are considered to be the meanest of all snakes. Hence if they bite a person, no other snake will bite the individual again.

**Reality** - The 'meanest' reputation must be due to their high abundance in anthropogenic habitats and their habit of hasty escaping when encountered. Although Rat snakes and Checked keelbacks are non-venomous, their bites are fierce and savage if improperly handled or caught. But other than the wounds, no envenomation features occur, and personal experience confirms that after their bites, other snake bites are not reduced at all.

**Myth** - When a Cat snake ('Nidi Mapila') bites, the victim dies in sleep.

**Reality** - The Sri Lanka cat snake or the 'Nidi mapila' has got its name (*Nidi* = Sleeping) due to its inactive behavior during the daytime. Because the

snake is a nocturnal species, it spends most of the daytime hiding and resting. Thus the '*Nidi*' part implies its habit but not that it can kill a person in sleep.

**Myth** - 'Mapilas' or Cat snakes stay in packs of seven, and when one is killed the others come to take revenge.

**Reality** - Unlike most of the other Sri Lankan snakes, the cat snakes are partially 'social' animals. They sometimes stay in groups. This social behavior helps them to protect themselves from their enemies and to reproduce easily. Members of a group identify their allies from a pheromone they emit. So that if one is killed, there is a possibility for the others to come near the carcass due to this pheromone. But the revenge part is unbelievable!

**Myth** - The 'Le mapilas' hang from the ceiling one after the other in a chain-like form, and like 'vampires' drink blood from sleeping humans. The one nearest to the sleeping person will bite the toe of the human and suck the blood, which will be passed all the way to the seventh one through the others.

**Reality** - 'Le mapila' is a color variation of *Boiga forsteni* and it has a reddish body colour. The word 'Le', meaning blood in Sinhala, has been used due to the body colour. No snake in Sri Lanka is capable of sucking and drinking blood. In fact, as Cat snakes are rear-fanged it is impossible even to make an effective bite. But all cat snakes have prehensile tails from which they can hang. This serves to protect the snake, as it prevents it from falling down from high elevations if a target is missed when hunting in high places.

**Myth** - The famous 'Ahaetulla' is thought to be plucking eyes of humans.

**Reality** - 'Ahatullas' (*Ahaetulla nasutus*) are mildly venomous snakes. Because of their arboreal habits, the most vulnerable area of a person to get a bite is the upper body including the face. No such incident of 'eye-plucking' has ever been recorded.

Ancient Ayurvedic, Ahikuntaka, Sidda and Unani literature and medical systems provide strong evidence that ancient Sri Lankan people knew about the colubrid snakes, and most indigenous medical systems describe the characteristics and treatments to their bites. In almost all ancient local literature, most of these snakes are considered to be deadly venomous, and in one such book by Seneviratne (1967) it is said that 'Mapilas' are the most venomous and the most dangerous snakes in the country, harming the innocent people'.

## Threats

Ever since Adam's early encounter with the 'Serpent', snakes have been the receivers of a bad press. Snakes have an image problem due to which most people fear and loathe them. To many people, they are worth more dead than alive. Due to this negative impression of these snakes, which arose from the early days, several colubrids are ruthlessly over-killed through fear, misidentification, poor knowledge and as precautionary measure against snakebite, despite their being ecologically important as pest controllers. Studies indicate that an average of five snakes was killed daily in Mahaweli settlement areas alone (de Silva, 1990). Local people once in a blue moon regret their loss from the neighborhood, and it may in fact even provide a mental relief to them. Given this situation the, management and conservation of these snakes in Sri Lanka must be backed by strong educational programmes and public awareness campaigns on the importance of these animals in the ecology of nature.

Other than over-killing, loss of habitat and human interference, are the two most common threats faced by all snakes in the country. Lack of consistent studies on the population dynamics and distribution etc. for most species, precludes confident statements or even inference concerning the reduction in populations.

Deforestation or the reduction of wild land habitats to less than the critical amount necessary for the survival of the species has become a serious environmental issue on the island. Especially chena cultivation (slash and burn cultivation), an ancient practice that still continues in many parts of the dry zone, the main geographical distribution zone of some colubrids, does a major damage. Over 1000 hectares of forests and grasslands are known to be set fire annually, damaging most snakes and their eggs etc. The human population is continuously growing and people are trying to develop their standard of living through economic development based on natural resource utilization in general, and particularly on exploiting forest resources. According to the recent census the present population of the island is around 19 million and it is almost 290 people per km<sup>2</sup> making Sri Lanka one of the most densely populated countries in Asia. Secondary effects of deforestation, such as soil erosion, climatic changes and exposure to predators also affect the snake fauna. Fragmentation of habitats and victimization to road kills, due to the above situations, are also significant factors. According my observations, the most widely killed colubrids by road kills in the country include *Ahaetulla nasuta*, *Boiga trigonatus trigonatus*, *Xenochrophis* sp (Somaweera *et al*, 2004), *Oligodon* sp. and *Lycodon* sp. (not in specific order).

**Table 02 : Sri Lankan Colubrid species listed in the 1999 IUCN list of Threatened Fauna and Flora of Sri Lanka**

Species	Category	Species	Category
<i>Aspidura brachyorrhos</i>	TR	<i>Chrysopelea taprobanica</i>	TR
<i>Aspidura copei</i>	TR	<i>Dendrelaphis oliveri</i>	TR
<i>Aspidura deraniyagalae</i>	HT	<i>Dryocalamus gracilis</i>	TR
<i>Aspidura drummondhayai</i>	TR	<i>Dryocalamus nympha</i>	TR
<i>Aspidura guentheri</i>	TR	<i>Gerarda prevostianus</i>	TR
<i>Aspidura trachyprocta</i>	TR	<i>Haplocercus ceylonensis</i>	TR
<i>Balanophis ceylonensis</i>	TR	<i>Lycodon osmanhilli</i>	TR
<i>Boiga barnesii</i>	TR	<i>Oligodon calamarius</i>	TR
<i>Cercaspis carinata</i>	TR	<i>Oligodon sublineatus</i>	TR
<i>Chrysopelea ornata</i>	TR	<i>Xenochrophis asperimus</i>	TR

TR – Threatened , HT – Highly Threatened

**Table 03 : Status of the Sri Lankan Colubrids as assessed at the CAMP (Conservation Assessment & Management Plan) workshop for Amphibians and selected taxa of Reptiles of Sri Lanka , (November 1998)**

Status	No. of Colubrids	Examples
Critically Endangered	02	<i>Dendrelaphis oliveri</i> , <i>Aspidura deraniyagalae</i>
Endangered	03	<i>Aspidura copei</i> , <i>Boiga barnesii</i>
Vulnerable	11	<i>Cercaspis carinata</i> , <i>Chrysopelea taprobanica</i>
Lower Risk : near threatened	04	<i>Balanophis ceylonensis</i> , <i>Ptyas mucosa</i>
Lower Risk : least concerned	01	<i>Lycodon osmanhilli</i>
Not Evaluated	22	<i>Boiga beddomei</i> , <i>Elaphe helena</i>
Doubtful species	01	<i>Dryocalamus gracilis</i>



As a result of habitat loss and urbanization, many snakes have become more vulnerable to natural and domestic predators and native opportunistic fauna. Domestic cats, being the worst predator, have often been observed preying on *Bioga*, *Aspidura*, *Dendrelaphis*, *Oligodon*, *Lycodon* and *Ahaetulla* species, which are common garden snakes in most areas (Somaweera *et al*, 2001). Other than cats, poultry and several raptors (Birds of Prey) are recorded to be predators of these snakes.

## The future

There are compelling economic, scientific, aesthetic and ethical reasons for preserving snakes. The economical justification for preserving snakes is that they are undeveloped resources *i.e.* they have significant economic potential that is currently undiscovered, undervalued or underutilized, especially in the field of modern medicine. Snake venoms have great potential for medical use because of the wide variety of compounds they contain and the specific action of each compound. They are used to produce medication for diseases such as Plague, Hemophilia, Rheumatic fever, Measles etc., and also used in preparing Anti Venom Serum (AVS) for snakebites. Venom components are also used in basic research in physiology, biochemistry and immunology. Snakes play a major role in maintaining the ecological balance in the environment. In an agricultural country, rats are economically important in terms of consuming and destroying food stores and carrying epidemics and diseases with their fleas, urine, and dirt. Through predation and competition, rats have contributed to the endangerment or extinction of many species of wildlife. The worst natural enemies of the rats are snakes. So they play a main role in controlling these agricultural and economical pests. The scientific importance is that we cannot understand the interactions of life forms and their environments unless we observe them in the absence of human intervention. Moreover, each species has unique physiological, biochemical and population characteristics, the study of which can help us to understand basic life processes. Aesthetically snakes are irreplaceable sources of wonder and enthusiasm to humans because of their intriguing appearance, variety and fascinating behavior. The ethical or moral reason is that, humans should not exercise their power to obliterate other species at will - even species not known to have any practical value to humankind, especially in a Buddhist country like Sri Lanka. But, snakes are being pushed towards the brink of extinction at an alarming rate due to anthropogenic activities.

The problems affecting the natural habitats of snakes are, in the case of Sri Lanka, particularly difficult to solve because of its overpopulation. However, several new protected wildlife areas are declared each year by the government. But roads in several parts of the country bisect the forest habitats with the highest

concentration of these animals and unfortunately, movement to the other side of the road is essential for them to access the different parts of their home range.

Several forms of legal protection have been given to Sri Lankan colubrids. All colubrids are listed as protected species in the country under the Flora and Fauna Protection Ordinance (Gunawardena, 1995). Most Sri Lankan colubrids are considered to be threatened (Bambaradeniya *et al*, 2001), hence 19 species are listed as 'Threatened species' and *Aspidura deraniyagalae* as a 'Highly threatened species' in the 1999 IUCN list of Threatened Fauna and Flora of Sri Lanka, considering their status in the country (Table 02). Also some colubrids have been separately assessed using global IUCN criteria (Table 03). As Sri Lanka is a signatory to the CITES (Convention on the International Trade of Endangered Species), the Rat snake (*Ptyas mucosa*) is listed as protected from international trading in Appendix II, where they make delicious food items in several countries. But, any export of any other snake or a part must be permitted by the Director of the Wildlife Conservation Department.

Notwithstanding the few steps taken to protect snakes, their future is still in the dark. As initial steps we propose that the following protective steps would be beneficial to these animals. If at any rate some of these steps are taken, we can assume that there will be some hope for the snakes in the future.

1. Conduct awareness programmes to the general public, using mass media ( A well directed and produced scientific documentary film on Sri Lankan snakes is essential. )
2. Promote educational activities related to snakes and their conservation amongst school children
3. Promote basic research on the status and the distribution of these unique animals
4. *Ex situ conservation* : Captive breeding for most snakes is essential, with releasing them into their remaining original habitats and new locations. While this would be an expensive activity for a country like Sri Lanka, the National Zoological Gardens can play a major role.
5. *In situ conservation* : Identify and protect the habitats of the remaining populations located in different climatic zones in the island.

Ultimately it appears that successful conservation of snakes in the country will have to largely depend on educational organizing. Without good extension work, which encourages the full participation of local people to implement and maintain conservation plans in their areas, there are few good prospects for the protection of the snakes and other wildlife species in the country.

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## Annex I

### Checklist of the colubrid snakes of Sri Lanka

1. *Ahaetulla nasutus* (Lacepede, 1789) ; E. Green vine snake ; S. Ahatulla
2. *Ahaetulla pulverulentus* (Dumeril & Bibron, 1854) ; E. Brown vine snake, Thunderbolt snake ; S. Henakandaya
3. *Amphiesma stolata* (Linnaeus, 1758) ; E. Buff striped keelback ; S. Aharakukka
4. *Argyrogena fasciolata* (Shaw, 1802) ; E. Banded racer ; S. Wal gerandiya
5. *Aspidura brachyorrhos* (Boie, 1827) ; E. Boie's rough-side ; S. Le madilla <sup>Endemic</sup>
6. *Aspidura copei* Gunther, 1864 ; E. Cope's rough-side ; S. Kalu medilla <sup>Endemic</sup>
7. *Aspidura deraniyagalae* Gans & Fetcho, 1982 ; E. Deraniyagala's rough-side ; S. Kalu medilla <sup>Endemic</sup>
8. *Aspidura drummondhayai* Boulenger, 1904 ; E. Drummond-Hay's rough-side ; S. Ket-i-walga medilla <sup>Endemic</sup>
9. *Aspidura guentheri* Ferguson, 1876 ; E. Guenther's rough-side ; S. Kudamadilla <sup>Endemic</sup>
10. *Aspidura trachyprocta* Cope, 1860 ; E. Common rough-side ; S. Dalawa madilla <sup>Endemic</sup>
11. *Atridium schistosum* (Daudin, 1803) ; E. Olive keelback ; S. Diyawarna, Kadola
12. *Balanophis ceylonensis* (Gunther, 1858) ; E. Blossom krait ; S. Mal karawala, Nihaluwa <sup>Endemic</sup>
13. *Boiga barnesii* (Gunther, 1869) ; E. Barnes's catsnake ; S. Panduru mapila <sup>Endemic</sup>
14. *Boiga beddomei* (Wall, 1909) ; E. Beddom's catsnake ; S. Kaha mapila
15. *Boiga ceylonensis* (Gunther, 1858) ; E. Sri Lanka catsnake ; S. Nidi mapila
16. *Boiga forsteni* (Dumeril & Bibron, 1854) ; E. Forsten's catsnake ; S. Le mapila / Naga mapila
17. *Boiga trigonatus trigonatus* (Scheider, 1802) ; E. Gamma catsnake ; S. Raan mapila
18. *Cerberus rhynchops rhynchops* (Scheider, 1799) ; E. Dog-faced watersnake ; S. Kuna diya kaluwa
19. *Cercaspis carinata* (Kuhl, 1820) ; E. Sri Lanka wolf snake ; S. Dhara karawala <sup>Endemic</sup>
20. *Chrysopelea ornata ornata* (Shaw, 1802) ; E. Ornate flying snake ; S. Malsara, Polmal karawala
21. *Chrysopelea taprobanica* Smith, 1943 ; E. Gold & Black flying snake ; S. Dangara danda <sup>Endemic</sup>
22. *Dendrelaphis bifrenalis* (Boulenger, 1890) ; E. Boulenger's bronze-back ; S. Haldanda
23. *Dendrelaphis caudolineolatus* (Gunther, 1869) ; E. Gunther's bonze-back ; S. Wairi haldanda
24. *Dendrelaphis oliveri* (Taylor, 1950) ; E. Oliver's bronze-back ; S. Oliverge Haldanda <sup>Endemic</sup>
25. *Dendrelaphis tristis* (Daudin, 1803) ; E. Common bronze-back ; S. Thuru haldanda
26. *Dryocalamus gracilis* (Gunther, 1864) ; E. Scarce bridal snake ; S. Megata karawala
27. *Dryocalamus nympha* (Daudin, 1803) ; E. Bridal snake ; S. Geta karawala
28. *Elaphe helena* (Daudin, 1803) ; E. Trinket snake ; S. Katalaluwa
29. *Gerarda prevostianus* (Eydoux & Gervais, 1837) ; E. Gerard's water snake ; S. Prevostige diya bariya
30. *Haplocercus ceylonensis* Gunther, 1858 ; E. Black-spine snake, Mould snake ; S. Kurankarawala <sup>Endemic</sup>
31. *Liopeltis calamaria* (Gunther, 1858) ; E. Reed snake ; S. Punbariya
32. *Lycodon aulicus* (Linnaeus, 1758) ; E. Wolf snake ; S. Alu radanakaya
33. *Lycodon osmanhilli* Taylor, 1950 ; E. Flowery Wolf snake ; S. Mal radanakaya
34. *Lycodon striatus sinhaleyus* Deraniyagala, 1955 ; E. Shaw's wolf snake ; S. Kabara radanakaya <sup>Endemic</sup>
35. *Macropisthodon plumbicolor palabariya* Deraniyagala, 1955 ; E. Green keelback ; S. Palabariya <sup>Endemic</sup>
36. *Oligodon arnensis* (Shaw, 1802) ; E. Common kukri snake ; S. Arani dath ketiya
37. *Oligodon calamarius* (Linnaeus, 1754) ; E. Templeton's kukri snake ; S. Kabara dath ketiya <sup>Endemic</sup>
38. *Oligodon sublineatus* Dumeril & Bibron, 1854 ; E. Dumeril's kukri snake ; S. Pulli dath ketiya <sup>Endemic</sup>
39. *Oligodon taeniolatus ceylonicus* Wall, 1921 ; E. Varigated kukri snake ; S. Wairi dath ketiya <sup>Endemic</sup>
40. *Oligodon taeniolatus fasciatus* (Gunther, 1864) ; E. Russell's kukri snake ; S. Pulli dath ketiya
41. *Ptyas mucosa maximus* (Deraniyagala, 1955) ; E. Rat snake ; S. Gerandiya <sup>Endemic</sup>
42. *Sibynophis subpunctatus* (Dumeril & Bibron, 1854) ; E. Jerdon's polyodent ; S. Dathigomaraya
43. *Xenochrophis asperrimus* (Boulenger, 1891) ; E. Checkered keelback ; S. Diya bariya <sup>Endemic</sup>
44. *Xenochrophis piscator* (Shneider, 1799) ; E. Checkered keelback ; S. Diya naya