

Amphibians

NOEL J. THOMAS, LAW ING SIND

Scientific Name:
Ichthyophis paucisulcus

Common Name:
Asian Striped Caecilian

Order/Family:
Gymnophiona: Ichthyophidae



Photo: Noel Thomas

National Status: Critically Endangered (CR)

Habitat and Ecology: Inhabits mature forest, burrowing in soil and leaf litter along forest streams. Probably feeds on worms and other soil-dwelling animals. Larvae are aquatic and live in streams among submerged leaf litter.

Distribution: Known from the Bukit Timah Nature Reserve and observed in a single location at the Central Catchment Nature Reserve. Otherwise, it is known only from Sumatra.

Threats: Habitat degradation and climate change.

Scientific Interest and Potential Value: The identification is tentative. The true identity of the species is uncertain as species identification can only be based on adult specimens, and adults have not been found recently. Allied species in the genus are sometimes collected for the pet trade in other parts of Southeast Asia.

Conservation Measures: Continued habitat protection in Bukit Timah and Central Catchment Nature Reserves where it is known to occur, and to protect streams against siltation.

Scientific Name:
Ingerophrynus quadriporcatus

Common Name:
Four-ridged Toad

Order/Family:
Anura: Bufonidae

National Status: Vulnerable (VU)

Habitat and Ecology: Adults congregate near clear stagnant puddles in primary and secondary swampy forests, where they breed. Larvae are free swimming and live in the puddles.



Photo: Law Ing Sind

Distribution: Peninsular Malaysia, Singapore, Borneo and Sumatra. In Singapore it is restricted to the Bukit Timah and Central Catchment Nature Reserves.

Threats: Habitat degradation and climate change.

Scientific Interest and Potential Value: Striking red colour may be attractive to poachers for the commercial pet trade.

Conservation Measures: Continued habitat protection of available habitats, all of which are currently protected.

Scientific Name:
Pelophryne ingeri

Common Name:
Inger's Cross Toadlet

Order/Family:
Anura: Bufonidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Known only from a small patch of primary forest in Bukit Timah Nature Reserve where the humidity is very high, and breeds in water filled tree holes. Tadpoles are free swimming but do not have functional mouthparts and quickly develop into toadlets.

Distribution: Peninsular Malaysia, Singapore and parts of Sumatra. Locally known only from a small patch of primary forest in Bukit Timah Nature Reserve.

Threats: Habitat degradation, potentially the drying up of Bukit Timah Forest.

Photo: Nick Baker



Scientific Interest and Potential Value: Biology and ecology are poorly known. Small size and bright colours might make it attractive to poachers for the commercial pet trade.

Conservation Measures: Continued protection of Bukit Timah Nature Reserve and control of recreational human activities at the specific site where this species occurs. The design and creation of artificial 'tree-holes' for the species to utilise could be considered. Continued population monitoring is needed. A captive breeding program is recommended to further protect this species.

Scientific Name:
Pelobatrachus nasutus

Common Name:
Malayan Horned Frog

Order/Family:
Anura: Megophryidae

Photo: Noel Thomas



National Status: Critically Endangered (CR)

Habitat and Ecology: Known only from small patches of primary forest in Bukit Timah Nature Reserve and the Central Catchment Nature Reserve. This species breeds in flowing clear rocky or sandy bottom streams.

Distribution: Has a wide regional distribution, from Peninsular Malaysia, Indonesia, Thailand, Borneo and Singapore.

Threats: Habitat degradation, fouling of streams and poaching.

Scientific Interest and Potential Value: This species is highly sought after in the pet trade.

Conservation Measures: Continued protection of sites where it occurs at and conservation of forest streams from human use.

Scientific Name:
Leptobrachium nigrops

Common Name:
Black-eyed Litter Frog

Order/Family:
Anura: Megophryidae

National Status: Near Threatened (NT)

Habitat and Ecology: Species occurs in deep leaf litter in primary and mature secondary forests. Tadpoles can be found in puddles or slow flowing streams.

Distribution: Peninsular Malaysia, Singapore and Sumatra. Locally it is restricted to Bukit Timah and Central Catchment Nature Reserves.

Threats: Habitat degradation, fouling of breeding pools, and climate change.

Scientific Interest and Potential Value: Described from Singapore, extinction at type locality will be an issue for future taxonomic work.

Conservation Measures: Continued protection of sites where it occurs.

Photo: Noel Thomas



Scientific Name:
Limnonectes paramacrodon

Common Name:
Lesser Swamp Frog

Order/Family:
Anura: Dicroglossidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Known only from a single patch of swamp forest on mainland Singapore and also from Pulau Tekong. Little else is known about the ecology of the species, but it presumably breeds in freshwater swamp forests.

Distribution: Peninsular Malaysia, Borneo, Thailand, Indonesia, Singapore.



Threats: Degradation of swamp forest.

Scientific Interest and Potential Value: The tadpoles are undescribed.

Conservation Measures: Continued protection of forest reserves.

Scientific Name:
Limnonectes plicatellus

Common Name:
Rhinoceros Frog

Order/Family:
Anura: Dicroglossidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Occurs in primary and mature secondary forests of Bukit Timah Nature Reserve and Central Catchment Nature Reserve. This species breeds in streams and puddles that form after heavy rain. Males are often heard calling from the vicinity of water bodies.

Distribution: Peninsular Malaysia, Borneo, Thailand, Indonesia, Singapore.



Threats: Habitat degradation.

Scientific Interest and Potential Value: It is a potential indicator of the quality of freshwater bodies.

Conservation Measures: Continued protection of the nature reserves is required.

Scientific Name:

Leptomantis cyanopunctatus

Common Name:

Blue-legged Bush Frog

Order/Family:

Anura: Rhacophoridae

National Status: Critically Endangered (CR)

Habitat and Ecology: Known from primary forest from a single patch of swamp forest in mainland Singapore. Little else is known about the ecology of the species, but it presumably breeds in freshwater swamp forest streams.

Distribution: Peninsular Malaysia, Borneo, Thailand, Indonesia, Singapore.

Photo: Low Ing Sind



Threats: Degradation of swamp forest.

Scientific Interest and Potential Value: Study of its ecology is imperative.

Conservation Measures: Continued protection of the nature reserves. A captive breeding program is recommended to further protect this species.

Scientific Name:

Theloderma horridum

Common Name:

Thorny Bush Frog

Order/Family:

Anura: Rhacophoridae

National Status: Critically Endangered (CR)

Habitat and Ecology: Known only from a handful of records from primary forests in Bukit Timah Nature Reserve, and a single record from Nee Soon swamp forest. Little is known about the ecology of the species, except that it breeds in wet tree-holes.

Distribution: Peninsular Malaysia, Borneo, Thailand, Indonesia, Singapore.

Photo: Low Ing Sind



Threats: Degradation of swamp forest.

Scientific Interest and Potential Value: Studies on its reproduction and ecology are imperative.

Conservation Measures: Continued protection of the nature reserves is needed. A captive breeding program is recommended to further protect this species.

Scientific Name:

Micryletta subaraji

Common Name:

Subaraj's Paddy Frog

Order/Family:

Anura: Microhylidae

Photo: Law Ing Sind



National Status: Critically Endangered (CR)

Habitat and Ecology: Known only from Kranji marshes and potentially a population may exist in the Central Catchment Nature Reserve. It is known to breed in puddles of water after heavy rain.

Distribution: Currently only known from Singapore where it was recently described.

Threats: Habitat degradation.

Scientific Interest and Potential Value: Studies on population, ecology and reproduction is necessary. Described from Singapore and currently known only as an endemic species, extinction at the type locality will be an issue for future taxonomic work.

Conservation Measures: Continued protection of Kranji marshes, which are currently managed as a nature park. A captive breeding program is recommended to further protect this species.

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Reptiles

NOEL J. THOMAS, LAW ING SIND

Scientific Name:
Cyclemys dentata

Common Name:
Asian Leaf Turtle

Order/Family:
Testudines: Geoemydidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Only four published records of this rare turtle are known, from the Western Catchment and the Central Catchment Nature Reserve. It is usually found in streams.

Distribution: Widespread throughout Malaysia, Indonesia, and Thailand.

Threats: Poaching for the pet trade and for food, habitat degradation plays a part in the decline of this species.

Photo: Law Ing Sind



Scientific Interest and Potential Value: Low population sizes in Singapore raise concern for the future of the species.

Conservation Measures: Captive breeding and further surveys to determine the current size of the population in Singapore. Continued habitat protection is needed.

Scientific Name:
Heosemys spinosa

Common Name:
Spiny Hill Turtle

Order/Family:
Testudines: Geoemydidae

National Status: Endangered (EN)

Habitat and Ecology: Found quite widely within Bukit Timah and the Central Catchment Nature Reserves, usually found around streams and swamps. This species feeds mainly on fallen fruits and rotting carcasses.

Distribution: Found in Indonesia, Malaysia, Thailand and Singapore.

Photo: Serin Subaraj



Threats: Poaching and habitat degradation.

Scientific Interest and Potential Value: This beautiful species is highly sought after in the pet trade.

Conservation Measures: Increased population surveys to identify important habitats for conservation. Continued habitat protection in the Nature Reserves and prevention of poaching are required.

Scientific Name:
Crocodylus porosus

Common Name:
Estuarine Crocodile

Order/Family:
Crocodylia: Crocodylidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Found mainly in Sungei Buloh Wetland Reserve, but scattered individuals have been known from Pasir Ris, Pulau Ubin, and Changi.

Distribution: Widespread across South East Asia, and into Australia.

Threats: Widely hunted for meat and leather; Persecuted by humans across its range.

Scientific Interest and Potential Value: Valued for leather and meat products, but undisturbed wild individuals are a major tourist attraction.

Photo: Noel Thomas



Conservation Measures: Population surveys are carried out to understand the carrying capacity of this large reptile in Singapore. Continued habitat protection, and safe distancing to minimise the possibility of human-wildlife conflict.

Scientific Name:
Cyrtodactylus consobrinus

Common Name:
Peter's Bent-toed Gecko

Order/Family:
Squamata: Gekkonidae

Photo: Noel Thomas



National Status: Critically Endangered (CR)

Habitat and Ecology: In Singapore it is known only from primary forest in Bukit Timah Nature Reserve. Found mostly on granite or rocky substrates in humid forests.

Distribution: Peninsular Malaysia, Sumatra, Thailand and Singapore.

Threats: Poaching and habitat degradation.

Scientific Interest and Potential Value: *C. consobrinus* is a species complex consisting of multiple species, on which further work on taxonomy is needed.

Conservation Measures: The known Singapore locality is a legally protected nature reserve; continued habitat protection is required, and captive breeding could be an option.

Scientific Name:
Cyrtodactylus majulah

Common Name:
Singapore Bent-toed Gecko

Order/Family:
Squamata: Gekkonidae

National Status: Endangered (EN)

Habitat and Ecology: Widespread in Bukit Timah and Central Catchment Nature reserves, it is also known from Admiralty Park. This species dwells in swamp forests adjacent to streams. Little else is known of its ecology.

Distribution: Singapore, and Pulau Bintan in Indonesia.

Threats: Habitat degradation and climate change.

Scientific Interest and Potential Value: The species is easily confused with the other members of the *C. quadrivirgatus* group, so further work is needed to fully

Photo: Noel Thomas



validate the occurrence of other species within the group in Singapore. Described from Singapore, extinction at the type locality would be an issue for future taxonomic work.

Conservation Measures: Population surveys and continued habitat protection. Two of its three known localities are fully protected by law.

Scientific Name:
Hemidactylus craspedotus

Common Name:
Frlly Gecko

Order/Family:
Squamata: Gekkonidae

Photo: Law Ing Sind



National Status: Critically Endangered (CR)

Habitat and Ecology: Known from Bukit Timah and Central Catchment Nature Reserves. Found clinging to large trees in primary forests, this species is cryptic and elusive.

Distribution: Indonesia, Malaysia, Thailand and Singapore.

Threats: Habitat degradation.

Scientific Interest and Potential Value: Investigations into the ecology of this species are needed.

Conservation Measures: Population surveys and continued habitat protection within the nature reserves.

Scientific Name:

Gekko kuhli

Common Name:

Kuhl's Gliding Gecko

Order/Family:

Squamata: Gekkonidae

National Status: Critically Endangered (CR)

Habitat and Ecology: In Singapore it is known only from Pulau Tekong.

Distribution: Indonesia, Malaysia, Thailand and Singapore.

Threats: Poaching and habitat degradation.

Photo: Law Ingg Thong



Scientific Interest and Potential Value: It is part of a species complex which comprises multiple species.

Conservation Measures: Population surveys are needed and may enable reintroduction into mainland Singapore.

Scientific Name:

Tytthoscincus temasekensis

Common Name:

Swamp Skink

Order/Family:

Squamata: Scincidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Known only from swamp forest habitats in Bukit Timah and the Central Catchment Nature Reserves. Little else is known about the ecology and habits of this rare species.

Distribution: Known only from Singapore and potentially at a single site in Peninsular Malaysia.

Threats: Habitat degradation.

Photo: Law Ing Sind



Scientific Interest and Potential Value: Described from Singapore, extinction at the type locality would be an issue for future taxonomic work.

Conservation Measures: Although its known localities in Singapore are legally protected, population surveys are needed, and would be useful in assessing the potential for captive breeding to boost numbers.

Scientific Name:
Varanus dumerili

Common Name:
Dumeril's Monitor

Order/Family:
Squamata: Varanidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Known only from a few records from Nee Soon Swamp forest. Ecological differences from other forest monitor lizards are poorly understood.

Distribution: Indonesia, Malaysia, Thailand and Singapore.

Threats: Poaching and habitat degradation.

Photo: Ali Ibrahim



Scientific Interest and Potential Value: The species is highly sought after in the pet trade.

Conservation Measures: Continued protection and management of Central Catchment Nature Reserve. Population surveys are needed and would be useful in assessing the potential for captive breeding to boost numbers.

Scientific Name:
Argyrophis muelleri

Common Name:
White-bellied Blind Snake

Order/Family:
Squamata: Typhlopidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Inhabits mature and secondary forest. Highly fossorial. Known to burrow through soil or decaying logs and rarely comes to the surface.

Distribution: In Singapore, known from the Central Catchment Nature Reserve and Pulau Ubin. Distributed throughout the Malay Peninsula, Sumatra, Borneo and Indo-China.

Threats: Habitat degradation.

Photo: Nick Baker



Scientific Interest and Potential Value: Despite its striking appearance, the ecology and habits of this secretive snake are poorly known.

Conservation Measures: Habitat protection. Its known localities in Singapore are within protected and managed areas.

Scientific Name:
Cantoria violacea

Common Name:
Cantor's Water Snake

Order/Family:
Squamata: Homalopsidae

Photo: Noel Thomas



National Status: Endangered (EN)

Habitat and Ecology: Inhabits mangrove forests and mudflats. It is aquatic, nocturnal and known to use mud lobster mounds and crab burrows. Feeds on crabs and shrimps.

Distribution: In Singapore, known from the mangrove systems of Pasir Ris, Lim Chu Kang and Sungei Buloh Wetland Reserve.

Threats: Habitat degradation.

Scientific Interest and Potential Value: Known to eat snapping shrimps. The extent to which it specialises on snapping shrimps and its feeding behaviour merit detailed investigation.

Conservation Measures: Protection of mangrove habitats where the species is known. The current localities are in protected areas or managed parks.

Scientific Name:
Ahaetulla fasciolata

Common Name:
Speckle-headed Whip Snake

Order/Family:
Squamata: Colubridae

Photo: Low Ing Sind



National Status: Critically Endangered (CR)

Habitat and Ecology: Inhabits forests. Arboreal and diurnal in habits and likely feeds on lizards.

Distribution: In Singapore, known from the Bukit Timah Nature Reserve and the Singapore Botanic Gardens. It occurs in the Malay Peninsula, Sumatra and Borneo.

Threats: Habitat degradation.

Scientific Interest and Potential Value: A poorly known and locally rare species whose ecology and behaviour merit investigation.

Conservation Measures: Continued habitat protection and management in the Central Catchment Nature Reserves.

Scientific Name:

Boiga drapiezii

Common Name:

White-spotted Cat Snake

Order/Family:

Squamata: Colubridae

National Status: Critically Endangered (CR)

Habitat and Ecology: Inhabits forests where it appears to be arboreal and nocturnal in habits.

Distribution: In Singapore, known only from the Central Catchment Nature Reserve. Widely distributed in the Malay Peninsula, Sumatra, Borneo, Java, the Philippines, and Vietnam.

Threats: Habitat degradation.

Photo: Noel Thomas



Scientific Interest and Potential Value: Rediscovered in Singapore in 2009.

Conservation Measures: Continued habitat protection and management in the Central Catchment Nature Reserves.

Scientific Name:

Dendrelaphis haasi

Common Name:

Haas's Bronzeback

Order/Family:

Squamata: Colubridae

National Status: Critically Endangered (CR)

Habitat and Ecology: Inhabits forests. Diurnal and mainly arboreal. Often encountered close to slow moving forest streams. Appears to feed on frogs and lizards.

Distribution: In Singapore, known only from the Central Catchment Nature Reserve. Widely distributed in the Malay Peninsula, Sumatra, Borneo and Java.

Threats: Habitat degradation.

Photo: Serin Subaraj



Scientific Interest and Potential Value: A poorly known species whose ecology and habits merit detailed investigation.

Conservation Measures: Continued habitat protection and management in the Central Catchment Nature Reserve.

Scientific Name:
Dryophiops rubescens

Common Name:
Keel-bellied Whip Snake

Order/Family:
Squamata: Colubridae

National Status: Endangered (EN)

Habitat and Ecology: Inhabits forests. Diurnal and arboreal but will come to ground to move between open stretches.

Distribution: In Singapore, recorded from the Bukit Timah and the Central Catchment Nature Reserves, Pulau Ubin, Pulau Tekong and the Western Catchment Area. Distributed in the Malay Peninsula, Cambodia, Sumatra, Java, Borneo and parts of the Philippines.

Threats: Habitat degradation.

Photo: Noel Thomas



Scientific Interest and Potential Value: A poorly known species whose ecology and habits are worth investigating. Closely related to the genus *Ahaetulla* which includes the Oriental Whip Snake, one of the commonest snakes in Singapore.

Conservation Measures: Habitat protection. The two nature reserves that it occurs in are already protected.

Scientific Name:
Lycodon subannulatus

Common Name:
Malayan Bridle Snake

Order/Family:
Squamata: Colubridae

National Status: Endangered (EN)

Habitat and Ecology: Inhabits mature forest. Nocturnal and appears to be both arboreal and terrestrial. Known to feed on lizards.

Distribution: In Singapore, known from the Central Catchment Nature Reserve and Pulau Tekong. Distributed in the Malay Peninsula, Borneo and Sumatra.

Threats: Habitat degradation.

Photo: Noel Thomas



Scientific Interest and Potential Value: Reasons for its apparent rarity in Singapore merit investigation.

Conservation Measures: Continued habitat protection.

Scientific Name:
Oligodon signatus

Common Name:
Barred Kukri Snake

Order/Family:
Squamata: Colubridae

National Status: Endangered (EN)

Habitat and Ecology: Inhabits mature forest and is primarily terrestrial.

Distribution: In Singapore, known from the Bukit Timah and Central Catchment Nature Reserves, as well as the Western Catchment Area and Bukit Batok Nature Park. Distributed in the Malay Peninsula, Sumatra and Borneo.

Photo: Low Ing Sind



Threats: Habitat degradation.

Scientific Interest and Potential Value: Singapore is the type locality of this poorly known species whose ecology and habits are worthy of investigation.

Conservation Measures: Continued habitat protection and management of the Bukit Timah and Central Catchment Nature Reserves.

Scientific Name:
Phytolopsis punctata

Common Name:
Blackwater Mud Snake

Order/Family:
Squamata: Homalopsidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Inhabits swamp forest. Aquatic and burrows well into soft mud. It feeds on fish.

Distribution: In Singapore, known from only one location within the Central Catchment Nature Reserve. This species occurs in peat swamps on the Malay Peninsula, Sumatra and Borneo.

Photo: Noel Thomas



Threats: Habitat degradation and fouling of streams.

Scientific Interest and Potential Value: First discovered in Singapore only in 2014. Its ecology and habits are poorly known.

Conservation Measures: Continued habitat protection and management in the Central Nature Reserves.

Scientific Name:
Bungarus fasciatus

Common Name:
Banded Krait

Order/Family:
Squamata: Elapidae

National Status: Vulnerable (VU)

Habitat and Ecology: Inhabits forests and scrubland. Locally it is found close to the coast and in mangroves. Terrestrial and nocturnal and feeds mainly on other snakes.

Distribution: In Singapore, it is found in Pulau Ubin, Pulau Tekong, Lim Chu Kang, Sungei Buloh and Khatib Bongsu. This species is widely distributed throughout Southeast Asia.

Photo: Noel Thomas



Threats: Habitat degradation.

Scientific Interest and Potential Value: High medical importance as it is a highly venomous snake.

Conservation Measures: Habitat protection and strict policing against illegal collecting and killing.

Scientific Name:
Ophiophagus hannah

Common Name:
King Cobra

Order/Family:
Squamata: Elapidae

National Status: Vulnerable (VU)

Habitat and Ecology: Inhabits forests and scrubland. Terrestrial and diurnal, its diet comprises largely of other snakes and monitor lizards. The female lays her eggs in a nest of vegetation and guards them till they hatch.

Distribution: In Singapore, known from many locations including the Bukit Timah and Central Catchment Nature Reserves, Sungei Buloh Wetland Reserve, Kranji, Sentosa and Pulau Tekong. A complex of several taxa, this species is widespread from India to Southern China and throughout Southeast Asia.

Photo: Noel Thomas



Threats: Habitat degradation. Individuals have been killed by vehicles on the roads. Their skin has been used for the making of belts and wallets and other parts of the snake are collected for food.

Scientific Interest and Potential Value: This is the longest venomous snake in the world. King Cobras are often a highlight in zoos and private herpetological collections.

Conservation Measures: Habitat protection and strict policing against illegal collection and killing.

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