

## THE LIZARDS OF INDIA: AN OVERVIEW

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Some 150 species referable to 8 families, namely Gekkonidae, Agamidae, Chamaeleonidae, Scincidae, Dibamidae, Lacertidae, Anguidae, and Varanidae comprise the saurian fauna of India.

**GECKOS** (Family Gekkonidae): Geckos are small, gentle lizards characterised by a soft dull skin and large unblinking eyes. They are the most abundant and familiar lizards in the tropics as the 'Nocturnal prowlers' in every house. Some have clinging pads on the underside of their toes which enable them to climb smooth surfaces. Geckos are found in the houses, on the ground, in the forests and on the tree-tops. They are the only reptiles to have a true voice, matching the calling notes of frogs and birds. Even their popular name 'gecko' is derived from the clicking sounds such as 'yecko' and 'gecko' produced by these house lizards by pressing the tongue against the roof of the mouth. They mostly feed on insects. All geckos are egg layers but not more than two eggs are laid by the female under the hollow of a tree, or under the ceiling or stones in the ground. The eggs of geckos are hard and brittle instead of being leathery like those of most lizards.

Some 51 species of geckos contained in 14 genera, namely *Eublepharis*, *Stenodactylus*, *Cyrtodactylus*, *Cnemaspis*, *Calodactylodes*, *Dravidogecko*, *Hemidactylus*, *Cosymbotus*, *Hemiphyllodactylus*, *Gekko*, *Ptychozoon*, *Phelsuma*, *Teratolepis*, and *Lophopholis* are known. The Fat-tailed gecko, *Eublepharis macularius*, is an inhabitant of the arid areas of northwest India. It is strictly nocturnal in its habits and is a voracious feeder. Several geckos are restricted to the hills and the forests. Of these, the commonest are the geckos of the genus *Cnemaspis* of South India. The Andaman Green Gecko, *Phelsuma andamanense*, found in and around Port Blair often enters the houses. Another interesting forest gecko is the so called 'Flying Gecko', *Ptychozoon kuhli*, which can parachute small distances by means of the membranous expansions on the sides of the animal's head, body, limbs and tail. This interesting gecko is confined to the Nicobar Islands. The Great House Gecko, *Gekko gekko*, which derives its common name, Tokay, because of its cry 'Touk-tay', is a giant among the geckos as it attains a length over 25cm. It is not a gentle creature, unlike the other geckos, as it occasionally gulps down a small rat or bird in its nocturnal rambles. When annoyed, this red or orange spotted house lizard raises its body and growls, holding its jaws wide open in defence. The Rock-geckos of the genus *Cyrtodactylus* found in the hills have clawed toes and laterally compressed bodies. Some ten species of the genus *Cnemaspis* are restricted to the hilly regions of South India. They are characterised by a granular or tuberculated body, a cylindrical tail, and a round pupil. The widespread and large genus *Hemidactylus* is represented by as many as thirteen species in India. Of these, the commonest forms are the Spotted House Gecko, *Hemidactylus brooki*, the Yellow-bellied House Gecko, *Hemidactylus flaviviridis*, and the Bark Gecko, *H. leschenaulti*.

**GARDEN LIZARDS** (Family Agamidae): The agamids are a large group of ground, rock, and tree-dwelling lizards although they are commonly referred to as the garden lizards. They are characterised by well-developed movable eyelids, pentadactyle limbs and a slender long tail. The terrestrial species have a flat body while the tree dwellers are slender. The skin is dull, rough or spinose and the tongue is broad and flat. A majority of the agamids are insectivorous and some are entirely herbivorous. The females lay eggs. Some forty species belonging to fourteen genera namely, *Draco*, *Sitana*, *Otocryptis*, *Ptycotolaemus*, *Goniocephalus*, *Mictopholis*, *Oriocalotes*, *Japalura*, *Salea*, *Calotes*, *Psammophilus*, *Agama*, *Phrynocephalus*, and *Uromastix* occur in India. The genus *Calotes* comprises the true garden lizards which are recognised by their compressed bodies, dorsal crests and a throat fan. The commonest Indian Garden Lizard, *Calotes versicolor*, is found among the bushes and shrubs near human dwellings. This harmless lizard is misappropriately labelled 'Blood Sucker' for an altogether harmless

trait. When it is excited or at the time of courting a female, its usually brownish body turns yellow while the throat, sides of the body, head, and neck turn scarlet in colour. The lizards of the *Calotes* complex are recognised by the crests on the neck and the dorsum, a gular sac in the males and an extremely long, slender tail. Though they are able to station themselves on the tree-tops even at a height of 8m, they are quite at ease on the ground. They feed mostly on insects, larvae and spiders. The female lays about a dozen eggs which hatch after two months. The Sita's Lizard, *Sitana ponticeriana*, has five toes on the hand and four on foot and is devoid of a dorsal crest. The male of *Sitana* has a throat-fan which is unfolded or contracted repeatedly when the animal is excited. It is a fast runner and adopts a bi-pedal mode of locomotion.

The Black and Orange Rock Lizard, *Psammophilus dorsalis* of the South Indian hills is often found on rocks matching its colour. It is a very agile creature disappearing at the first approach. The male is gorgeously coloured during the breeding season. Another beautiful agamid is the Himalayan Rock Lizard. *Agama tuberculata*, common in and around Simla, Garhwal, and Kumaon. The male displays a spectacular 'breeding dress' when its throat and belly turn bright blue. The genus *Draco* comprising the so called 'Flying Dragons' is represented in India by two species, namely, *Draco dussumieri* of South India and *D. novrilli* of Assam. These slender lizards have earned the dubious distinction of being the flying lizards because they are capable of gliding by means of "wings" or "patagia" which are folds of scaly membranes supported by six pairs of laterally movable and greatly prolonged ribs of the breast. The flying dracos measuring 24 cm can undertake sorties of more than 9-10 m in the forest in search of their staple diet-insects. The patagia of these tree lizards are beautifully patterned, on the basis of which their sex can be determined. The female lays two to five eggs at a time and buries them in the ground.

A curious looking agamid called the Spiny-tailed Lizard, *Uromastix hardwickii*, is found in the desert tracts of U.P., Rajasthan, and Punjab. It avoids the sun during the hottest part



Plate 1. *Uromastix hardwickii*

of the day by retiring into a burrow. It enters its dwelling hole head-first, and the spiny tail blocks the entrance in a most efficient manner. It feeds chiefly on flowers, blades of grass, and fruits and occasionally on insects. This lizard is gentle in disposition and is easily tamed in captivity.

**CHAMELEONS** (Family Chamaeleonidae): The Indian Chameleon, *Chamaeleon zeylanicus*, found mainly in the scrub and wooded districts, is recognised by its compressed body, watchspring-like tail, helmet-like knob on the head and the round bulging eyes which together give the lizard a grotesque shape among the entire clan of lizards. A chameleon can change its colour from green and brown to different shades of yellow, white and black in the space a few minutes. It is surmised that the colours of a chameleon are dependent largely upon a psycho-physiological stimulus and in moments of intense excitement sweep in a flush over the creature's body.

With all its unique features, a chameleon is a slow moving creature. When picked up, it hisses and can inflict painful bites. During courtship males fight among themselves. The female lays 10-30 eggs and deposits the eggs in loose earth below the surface. The period of incubation lasts from four to ten months.

**SKINKS** (Family Scincidae): Skinks are a group of heavily built lizards. The majority of them are ground dwellers while the rest are burrowers. They are recognised by their overlapping and smooth and shiny scales with symmetrical shields on the head, a broad flat tongue and movable eyelids. Some have blunt heads which is an adaptation for their subterranean life. The tail may be short or long but snap off to distract the enemy. The trend towards reduction of limbs and elongation of the body is so much pronounced in the skinks that they are often mistaken for snakes. However, the characteristic fusion of their lower jaw and the movable eyelids establishes their identity as lizards. The tongue of a skink is thick and fleshy like that of a frog or a toad. It is used both for eating and drinking. Skinks burrow in the sand without much effort.

A unique feature of some skinks is that their lower eyelids have transparent discs or 'windows' so that their vision is not obscured when the eyes are closed. Further, this disc protects their eyes against foreign particles. Skinks are primarily insectivorous while a few feed upon vegetable matter as they grow in size. They lack the ability to change colour but the males acquire red or orange hues during the breeding season. While a few skinks bring forth their young alive, the majority lay eggs. Some forty four species of these widespread lizards distributed among twelve genera, namely *Dasia*, *Sphenomorphus*, *Chalcides*, *Scincella*, *Riopa*, *Ablepharus*, *Ristella*, *Mabuya*, *Eumeces*, *Ophimorus*, *Barkudia*, and *Sesophis* are found in India. The genus *Ablepharus* is represented by a single species, *A. grayanus*, which occurs in north-western India. The eyelids of this degenerate species are fused to form a transparent disc. Its limbs are very feeble. The genus *Barkudia* includes the unique limbless skink, *B. insularis*, found on the Barkuda Island of Chilka, Lake Orissa, and in the sandy shores off the Andhra University, Waltair. It is much elongated in shape and burrows with unbelievable speed in the loose earth. Striped skinks of the genus *Mabuya* are common throughout India. These small to medium sized lizards can move with remarkable speed when pursued. Each species is characterised by a definite pattern of stripes or lines on the back and spots on the flanks. Some twelve species are described from several parts of India. Of these, the Common Skink, *Mabuya carinata*, and the Striped Grass Skink, *Mabuya dissimilis* are well known. The Yellow-bellied Mole Skink of Kashmir, *Eumeces taeniolatus*, is a secretive lizard as it remains hidden in the burrows or under the rocks for most of the day. The Indian Sandswimmer, *Ophimorus tridactylus*, a denizen of the desert, literally 'swims' its way under the surface of the sand and hence its Punjabi name 'Ret-mahi' which means a sand fish. It can burrow up to a depth of 30 cm under the sand from which it issues forth only after the sun rises. This lizard is captured in large numbers by the hakims for its visceral fat which is supposed to act as an aphrodisiac. The burrowing cat skinks of the genus *Ristella* are restricted to the hilly tracts of southern India. They have clawed digits and their lower eyelids are scaly. Their breeding habits are unknown. The genus *Riopa* includes the garden skins which are small but robust in form. The young of these ground dwelling lizards have definite colour pattern. The Himalayan skink, *Scincella himalayana*, avoids the light and lives in rather damp situations. It is found in abundance near the banks of the lake at Naini Tal and in the gardens of Simla. It brings forth its young alive.

**WORM LIZARDS** (Family Dibamidae): The glassy-scaled Indian Worm Lizard, *Dibamus novae-guineae*, found in the Nicobars, is a degenerate type of skink. In tune with its subterranean existence, it is blind and devoid of the fore-limbs which are modified into scaly flaps in the

male. The head is blunt and conical with a large cup-like shield on the snout. The tail is short and cannot be detached. It grows to length of 225 mm and resembles a slender worm. The origin of this lowly reptile is a mystery and very little is on record about its biology.

**LACERTIDS (Family Lacertidae):** Lacertids are an abundant group of lizards considered as typical forms because of their slender bodies, well developed legs and long pointed tails. One does not come across either the specialised or degenerate species among them. They are found in sandy, grassy and rocky areas. The fragile tail is easily shed and the broken part is regrown. The majority of the lacertids are insectivorous while a few are cannibalistic. All of them are egg-layers. Some nine species contained in five genera namely, *Acanthodactylus*, *Cabrita*, *Eremias*, *Ophisops*, and *Takydromus* occur in India. The Indian Fringe-toed Lizard, *Acanthodactylus cantoris cantoris*, has scales on its digits that project along the sides to form a comb-like fringe which facilitates the animal's movements in the sand. This lacertid, found in the sandy tracts of northern India, is brightly marked while young. It lives in the burrows under bushes and emerges in the bright sun. It is a very agile lizard, disappearing quickly into the bushes on the slightest alarm. The genus *Cabrita* is represented by two small sized lizards, *C. leschenaulti* and *C. jerdoni*, found in the forests of southwest India. The genus of snake-eyed lizards, *Ophisops* is represented by *O. jerdoni* and *O. beddomei*, found in northern and south India respectively. These moderately sized lacertids and the above mentioned species of *Cabrita* have transparent discs in the centre of the lower eyelids. The Long-tailed Lacertid, *Takydromus sexlineatus khasiensis*, is found in the Khasi Hills, Meghalaya. It grows to a length of 6 cm and its tail, measuring 3.5 cm, supports the weight of the animal in its leaps from stem to stem in the grassy areas.

**GLASS-SNAKE LIZARD (Family Anguillidae):** The Burmese Glass Snake, *Ophisaurus gracilis*, is the sole representative of the family Anguillidae in India. It is found in and around Darjeeling and the Khasi Hills, Meghalaya, often at higher elevations from 820 to 1500 m. It also is recorded from Simla and is said to be common in and around Shillong. The glass-snake, so called because of its brittle tail and the absence of limbs, glides like a serpent by lateral undulations. It probes its way employing its blackish tongue in a truly snake-like fashion. However, it can be recognised as a lizard because of its movable eyelids and the ear opening which are absent in the snakes. The body is coated with ring-like overlapping scales. It is a terrestrial species, hiding under logs and stones for most of the day. It is sluggish in disposition and becomes active only at night when it issues forth in search of its food consisting mostly of insects. It is quite harmless and does not bite when handled. When first caught, it feigns death. The female lays from 4 to 6 eggs. Probably it is the longest lived of all lizards as its life span is about 60 years.

**MONITOR LIZARDS (Family Varanidae):** The very appearance of a monitor lizard or varanid with its elongated head, an unusually long neck and tail, and a completely snake-like tongue is striking. Monitors, which are among the lizards close to the snakes, having been derived from a common ancestral stock, have naturally more serpentine features and that is why the young of these lizards in north India are called *biscobras*. Monitors are the world's heaviest and largest lizards. Despite their massive bodies monitors are good climbers, runners and swimmers. The long forked tongue is employed as a sensory organ and it can be withdrawn into a protective sheath as in the snakes. The monitors are not vocal but they can hiss loudly when cornered. Some of the largest individuals, reaching a length of 3m, are as powerful as crocodiles. In the face of a threat a monitor's first concern is to seek escape. Some head for water, others run to a safe retreat or some climb up trees. But if their passage is blocked, a monitor inflates its body, hisses loudly, and lashes its formidable tail vigorously, and puts its sharp claws on show. The food of monitors is varied as it includes crabs, molluscs, small rats, squirrels and carrion. They are particularly fond of hen's eggs, in search of which they often raid chicken houses. Monitors do not normally chew or crush their food as other lizards do, but swallow their prey as a whole or in large chunks. The female lays about 15-30 eggs and deposits them in termite mounds or such other secluded spots.

Of the four kinds occurring in India, *Varanus bengalensis* is the commonest form. It is found in the forested areas and on the outskirts of villages. It escapes notice because of its brownish hue which harmonises well with its surroundings. It is found frequently during and after the



Plate 2. *Varanus bengalensis*

monsoon. The Yellow Monitor, *Varanus flavescens*, is found in Bihar, U.P., Punjab, Bengal, and Orissa. It is dark brown in colour and the body is marked with yellow spots or bars. The Water Monitor, *Varanus salvator*, occurring in the coastal mangrove regions of Orissa, Sunderbans, and Andaman and Nicobar Islands, is the second largest lizard in the world, reaching a length of 2.5 m. It is blackish or dark brown above, with yellow spots. The Desert Monitor, *Varanus griseus*, is found in the arid zone of central and northwest India.

#### ECONOMIC IMPORTANCE

The presence of geckos in human habitations is to our advantage as these small lizards are efficient destroyers of harmful insects. The monitor lizards serve not only as useful scavengers but also as destroyers of the coconut pests like crabs, beetles and snails. Further, these lizards feed upon destructive rodents. The eggs of monitors are a great delicacy and the animals themselves provide a full meal. The Spiny-tailed Lizard is captured in large numbers by the desert people for its flesh. The spiny-tail is considered a great delicacy, and the meat is said to be excellent, like chicken. Preparations made from the fat of this and other desert dwelling lizards are said to be effective as aphrodisiacs. Oil extracted from the visceral fat of the monitors is used for treatment of eye problems of the aged.

The leather of monitors has been much sought after because of its reputedly high wearing quality, infinite variety of pattern and texture. Moreover, they can be finished off in any colour.

All the four monitor lizards of India and other kinds like the chameleon and spiny tails are now protected under the Wildlife Act of India.