



A NATURALIST'S GUIDE TO THE

REPTILES OF INDIA

Bangladesh, Bhutan, Nepal, Pakistan and Sri Lanka

Indraneil Das and Abhijit Das



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Front cover: ~~main image King Cobra (Abhijit Das); bottom row, left to right: Tokay Gecko (xxxxxx); Indian Flapshell Turtle (xxxxxx); Indian Chameleon (xxxxxx); Back cover: Indian Krait (xxxxxx); Title page: (Maria's Lizard (Abhijit Das); Contents page: River Terrapin (Indraneil Das).~~

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Dedication

We dedicate this volume to our respective families, friends and colleagues.

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INTRODUCTION

Known as the Indian subcontinent and the Indian Region, south Asia is home to one of tropical Asia's regions of the greatest biodiversity. The region includes the countries next to or in the proximity of the Indian Ocean, comprising Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka. The geographic barriers that impede faunal movement into or out of the area include oceans, mountains and floodplains, and justify the recognition of the region as a distinct biogeographic unit.

South Asia is exceptionally diverse in reptiles (more than 700 species). This richness is linked to the large size of the area, covering about 4.4 million square kilometres, and its location at the crossroads of two distinctive biogeographic realms, the Palaearctic and the Oriental. Consequently, there is much greater species diversity here than in even larger areas, such as China, North America north of the Rio Grande River, and Europe east of the Ural Mountains. The fauna of the Indian region is comparable to several tropical regions in the Indo-Pacific and Neotropical regions, such as Indonesia, Australia, Colombia and Brazil.

CLIMATE AND VEGETATION

The habitat range in south Asia includes coral reefs, mangrove swamps, closed-canopy rainforests, thorn-scrub vegetation and deserts. The region also includes several environments with physical extremes, such as the highest mountains and wettest locations on Earth. Human intervention has reduced both the extent and quality of natural areas worldwide, and south Asia has been particularly affected. Given below are the countries of the subcontinent and their major ecological regions.

Bangladesh

Bangladesh lies at between 21–27° N and 88–93° E, and is dominated by the floodplains of the Ganga and Brahmaputra Rivers. Mostly a low-lying, small (total land area 143,998km²) country, hilly areas occur only in the north-east (Sylhet) and south-east (Chittagong Hill Tracts), accounting for 10 per cent of the land area. The climate is subtropical, with an annual rainfall of 1,500–5,000mm, most of which comes during the south-west monsoon. Bangladesh has one of the world's densest human populations (9,388/1,000ha), and just 11 per cent of the land area remains under forest cover. Forest types represented include open deciduous forests, which occur on the dry, exposed southern slopes of the Chittagong Hill Tracts, moist deciduous forests, dominated by the Sal (*Shorea robusta*), and found throughout the plains, and finally the tidal forests, largely mangroves, that may be seen in the Sundarbans, the delta of the Ganga and Brahmaputra Rivers.

Bhutan

Bhutan is situated between 88° 45' and 92° 10' E and 26° 40' and 28° 15' N in the eastern Himalayas. Its 38,394km² territory is largely mountainous, though the southern parts include the northern plains of the Brahmaputra River. Altitudinally, habitats range from 200m to more than 7,500m, and the climate ranges from hot and humid in the south, to alpine in the north. Bhutan therefore shows greater than expected ecological diversity for

its size. Forest cover comprises 68 per cent of the land area, and forestry plays a major part in the economy.

India

India is a country with exceptional reptile diversity. With a land area of 3,287,263km² and a variety of ecological conditions, it abuts the Himalayan range and extend southwards to the tip of the peninsula.

There are several major ecophysiological regions in India.

The **Andaman and Nicobar archipelago** lies between 05° 40' N and 92° 10' E, in the Bay of Bengal. These islands form a chain of submarine mountains that sprawl in a crescent between Cape Negrais in Myanmar and Achin Head in Sumatra, Indonesia. The total land area of these islands is an estimated 8,293km². Average annual rainfall exceeds 3,000mm, and habitats represented include coral reefs, mangroves and rainforests on hills of up to 700m.

The **Deccan** is a flat plain comprising much of the Indian peninsula, excluding the hill ranges to the east and west, and south of the Himalayas. Until the Miocene and Pliocene Epochs (and perhaps as recently as the Late Pleistocene), evergreen forests were widespread here, and their transformation to deciduous forests was probably the result of the southern shift of the Equator, the uplift of the Himalayas and the rise of the Western Ghats, causing a reduction in rainfall, in addition to human activities over the past 10,000 years.

The **Eastern Ghats** represent a weathered relic of the peninsular plateau, marked by a series of low, isolated hills that run from the Khondal in the Baudh-Khondal region of Odisha State, southwards to central Tamil Nadu State, where they veer off towards the south-west to meet the Western Ghats in the Nilgiris. The northern and southern sections of the Eastern Ghats are separated by the Godavari delta, approximately 130km in width, with other important breaks including the Mahanadi and Krishna Rivers. The southern subzone is quite arid, with dry deciduous and thorn scrub, while the northern part is relatively moist, with both dry and moist deciduous forests.

The Himalayan mountain range includes some of the highest mountains on Earth. Several rivers, including the Ganga, Brahmaputra, Yangtze, Indus and Mekong, originate from this range. The Himalayas, including the Trans-Himalayas, cover an area of 236,300km², including parts of Pakistan, India, Nepal and Bhutan. Forest types represented range from moist deciduous, through subtropical broadleaved, to coniferous, mixed coniferous and alpine scrub forests, in addition to the *terai*, a swampy belt, the *bhabars*, which are deep, boulder deposits, and the *duns*, which are broad elevated valleys.

The **Eastern Himalayas** are wetter than the western part, receiving an annual average of at least 4,000mm of rainfall, and often much more. However, the winter months are relatively dry. At 4,000–5,000m are the alpine pastures, considered 'grasslands' though few grasses are represented, the dominant vegetation being perennial mesophytic herbs.

With rainfall exceeding 2,000mm, the **North-east** supports tropical and subtropical vegetation, including moist deciduous, semi-evergreen and temperate montane forests. Tropical evergreen forests in the region comprise forests with a three-tiered structure, the highest of which reach about 46m above the forest floor. Climatic fluctuations during the year are minimal, temperatures on average being 20–30° C in the plains.

The **North-west** includes the extreme western parts of India and the eastern districts of Pakistan, constituting the Western Himalayas, and is bounded by the Indus and Nara Valleys in the west, the Aravalis in the east and the Kachchh to the south. To the north lie the plains of the Sutlej and Chambal Rivers. The region is mostly composed of hills, stony plateaus and peneplains. Severe winters characterize the zone, which is outside the influence of the monsoons. Rainfall is 250–500mm annually, and the mean maximum temperature is more than 45° C. Thorny thickets are the common woody vegetation, and in the western parts, in the Nara region of Pakistan, the vegetation is sparse, consisting of xerophytic shrubs.

Zaskar, Ladakh and Karakorum dominate the landscape of the Trans-Himalayas (outer Himalayas). To the east, Zaskar and Ladakh reach down to the Tibetan plateau, where the region is marked with brackish marshes and bogs. The region is composed of mountains that are up to 6,600m high, and sandy valleys drained by the Indus. The dry landscape is due in part to the extreme low temperatures (below 0° C) that inhibit the absorption of water by roots of plants during the winter and early spring when occasional showers take place. The vegetation of the Trans-Himalayas includes coniferous forests as well as alpine steppe. In general, the rainfall increases along a west–east gradient, reaching 1,000mm in the Kumaon region. At higher altitudes, the vegetation is xerophytic.

The **Western Ghats** run along the west coast of peninsular India 50–100km inland, and are a series of hill ranges often isolated from each other by low-lying savannahs. The hill ranges of the Nilgiris, Anaimalais and Palnis are the highest, reaching 450–1,500m, and receive average annual rainfall in excess of 2,000mm.

The Maldives

This archipelago lies between 08° N to 01° S and 72–74° E, and extends 756km south-west of peninsular India. The archipelago has a land area of 298km², and is composed of interrupted double chains of 26 coral atolls, resting on a submerged mountain range. There are 1,192 islands; 202 are inhabited, and all are small (average size 0.7km², the largest 13km²), low lying and have average elevations of 1.5–2m. These islands are influenced by the two monsoons, the south-west in April–August and the north-east in October–February. Rainfall is evenly distributed throughout the year, averaging 1,950mm per annum. There is little seasonal variation in the temperature of between 24° C and 30° C. The island surface consists of coral sand with no topsoil, resulting in scrub vegetation. A few islands have large evergreen trees that form small, jungle-like growth. Small patches of pioneering mangrove species colonize the seaward side of these marshes on the inner edge of the lagoonal beach.

Nepal

Situated between 80–88° E and 26–30° 5' N, Nepal is between the Himalayas and the Indian peninsula, and covers a land area of 147,181km², which includes a vegetational and altitudinal range from lowland subtropical forests to the alpine forests associated with the highest mountain peak on Earth. Nepal consists of parallel physiographic zones from south to north that run the length of the country. The southernmost zone (elevation 80–300m) is the *terai*, an alluvial plain composed of sands, silts and clays. To its north lie the Churia Hills (average elevation 1,200m), which are primarily sedimentary rocks composed of sand, shale and gravels derived

from weathering of the northern ranges. Further north is the Mahabharat Lekh (elevation 600–4,500m), composed of metamorphic and igneous rocks. Within the range lie the Midlands, a large area of fertile valleys and ridges in central Nepal. Further north lies the Himalayan Range (average elevation 6,100m), which includes some of the highest mountain peaks in the world.

Pakistan

Pakistan stretches between 23° 4' N to 36° 55' N and 60° 52' E to 75° 23' E, and is the westernmost country of south Asia, covering a land area of 347,190km². The country stretches from the arid cliffs of the Arabian sea coast to the permanent snow fields of the Pamir Wakhan. Biogeographically, the two components of Pakistan are the North-west and the Trans-Himalayas. The former zone includes extreme western India, the areas of Pakistan included being the Indus and Nara Valleys. The region is composed primarily of hills, and stony plateaus or peneplains. The rainfall is 250–500mm a year, and the mean maximum temperature is more than 45° C. Thorny thickets are the common vegetation to be seen here. Annual rainfall in the desert peneplane is 250mm or less. In the western parts such as in the Nara region of Pakistan, the vegetation is sparse, consisting of xerophytic shrub-like forms.

The Zaskar and Ladakh Rivers reach down to the Tibetan plateau, where the region is marked by brackish marshes and bogs. The outer Himalayas is composed of mountains that are up to 6,600m high, and sandy valleys drained by the Indus River. The dry climate is due in part to the extreme low temperatures (below 0° C). The vegetation includes subtropical evergreen, coniferous forests and alpine steppe.

Sri Lanka

The 65,610km² continental island of Sri Lanka lies between 05° 55'–09° 51' N and 79° 41'–81° 54' E, and is generally divided into a dry zone, including the northern half and the east coast (65 per cent of land area); a wet zone including the south-west (23 per cent); and an intermediate zone, including the centre of the southern half of the island (12 per cent). The wet zone of Sri Lanka is the only climatically aseasonal area between Malesia and the eastern coast of Madagascar. Sri Lanka's connection to the mainland, for the first time during the Miocene Epoch and many times subsequently, has led to the invasion of many distinctly Indian taxa, although endemicity in the herpetofauna is high. The temperature range is 15–24° C in the southern highlands to 27–35° C in the northern and eastern plains. The wet zone, where most of the region's biodiversity is concentrated, is also the area that supports the greatest human population density (approximately two-thirds of the island's people).

CONSERVATION OF REPTILES

The Indian subcontinent harbours a rich reptile diversity. This follows from its long isolation from other land masses, the variety of tropical and temperate habitats it contains, and a network of protected areas. Two of the world's global hotspots of biodiversity fall within the region – the Eastern Himalayas (including north-east India, Nepal and Bhutan) and the Sri Lankan-Western Ghats hotspot. The biota of the region's dry zones show distinctive lineages, several of which are regional endemics.

South Asia is also home to some of the world's highest human densities, and as may be expected, anthropogenic pressures on natural habitats is immense. Species adapted to forested habitats are increasingly under pressure. Aquatic reptiles, on the other hand, are threatened by a number of factors, such as excessive fishing, pollution, and modification of habitats, including through the construction of dams, and mineral and petroleum extraction. Such activities have been linked to the destruction of Gharial- and turtle-nesting habitats. Shifting cultivation, as well as the establishment of monoculture plantation and encroachment, are some of the prime drivers of forest loss in this region.

Linear infrastructure projects, such as highways and railways, also pose an ever-increasing threat to wildlife, including that of reptiles. Such projects tend to bifurcate forested areas, including many that are protected, causing both habitat fragmentation and the removal of individuals as roadkills. Appropriate mitigational measures are thus urgently needed to enhance reptile conservation.

Several reptile species are persecuted out of fear and ignorance. During the wet season, many snakes encountered within human habitation are 'rescued' by well-meaning members of the public as well as by official governmental agencies (including local forest departments), but are unfortunately released in the nearest forest patches. The possible impact of such practices on snake populations, and on the local biodiversity, remains to be studied.

Turtles, tortoises, monitor lizards and snakes are subject to illegal trade in many parts of the region. Many are exploited for food and traditional medicine, especially to the east of the subcontinent, and most large-growing turtles have declined to the point of commercial extinction. A few of the more brightly coloured species, such as the Indian Star Tortoise and some of the tent turtles, are in demand from the international pet trade, and are harvested in vast numbers.

Many, if not all, snakes, monitor lizards, pythons and turtles are protected by law in the countries of the region. Killing, capture or removal are thus prohibited by law. One of the cornerstones in the conservation of reptiles is the spread of a protected areas network across the region, especially in India, which covers many distinct habitat types, including mangrove areas, alluvial grassland, marine and riverine areas, tropical evergreen forest, dry and mixed deciduous forests, and deserts. One hopes that such sites would provide appropriate habitats for the subcontinent's reptile fauna for the benefit of future generations.

SNAKE-BITE MANAGEMENT

A number of people, especially in rural areas of India, Sri Lanka and Bangladesh, are treated for snake bite annually. Indeed, a number of deadly snake species inhabit the region, both on land and in coastal areas. However, a majority of mortality is from species adapted to environments modified by humans, such as fields of rice paddy and rural areas, where rodents are prevalent. The main snakes responsible for nearly 90 per cent of all bites in the region are the Spectacled Cobra, Monocled Cobra, Saw-scaled Viper, Common Krait and Russell's Viper. Geographical variation in venom composition and effects remain poorly known, and additional species of venomous snake may await scientific description.

A majority of the region's snakes being non-venomous, and the chances of getting bitten being remote, it is important to be able to differentiate the venomous snakes from the harmless ones. Vipers (such as Russell's Viper) and 'green' pit vipers (like those in the genera *Parais*, *Popeia*, *Protobothrops* and *Trimeresurus*) are relatively slow-moving snakes, with narrow necks and enlarged heads, whose fangs can be folded when not in use. Cobras (*Naja* and *Ophiophagus*) are large, heavy-bodied snakes, with the ability to raise a hood; they have short, fixed fangs. Coral snakes (*Calliophis* and *Sinomicrosaurus*) and kraits (*Bungarus*) are close relatives of cobras, but cannot raise their hoods. Finally, sea snakes (including *Hydrophis* and *Laticauda*) are large, slender- or heavy-bodied snakes that live in the sea or in coastal areas (though a few can travel a few kilometres upriver). All sea snakes have short, fixed fangs.

Most non-venomous snakes (and all crocodilians, many lizards and turtles) can bite humans when cornered or inappropriately handled, which may lead to bleeding and secondary infection, and a bite from any large snake, be it a rat snake or a python, can be painful.

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

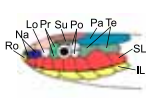
- Do not put your hands inside dark areas, such as cracks or holes that may shelter a snake.
- Wear shoes or ankle-length boots that conceal the lower foot, especially in areas with tall grass, where large vipers may shelter.
- Carry a reliable flashlight or wear a headlamp when moving in the dark.
- Keep snakes away from human residences by keeping your surroundings clean. Refuse attracts rats, which in turn attract rat-eating snakes such as cobras.
- Avoid attempting to kill or capture snakes (unless you have received appropriate training, in addition to holding permits/licenses from the relevant authorities).

Anti-venom sera is the only scientifically known cure for cases of envenomation by the region's medically important snakes. Most health centres stock anti-venom, especially in areas where snake bites are common. In the event of a venomous snake bite, the affected person needs to be kept calm and warm, and taken to a hospital as quickly as possible. The region around the bite should be immobilized with a stiff cloth bandage (*never* a tight tourniquet). A description or photograph of the snake with a mobile phone will help medical staff provide appropriate treatment, as the neurotoxic venom of cobras, kraits and coral snakes acts differently from the haemotoxic venom of vipers. It is important that the area affected is not cut or sucked, as such measures are likely to complicate the treatment.

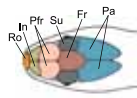
ABOUT THIS BOOK

This book discusses representative reptile species that an average visitor or a resident of India and the surrounding countries is likely to encounter. A number of the species are nonetheless rare, and are illustrated here for the first time in a printed work. The aim of this volume is to aid rapid field identification for anyone interested in snakes and other reptiles (such identification also being useful for biodiversity surveys, and necessary for conservation and management). For each species covered, the following details are provided:

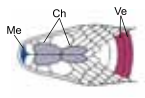
Typical Snakes



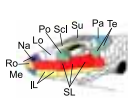
Lateral aspect of head



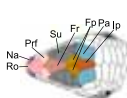
Dorsal aspect of head



Ventral aspect of head



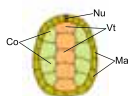
Lateral aspect of head



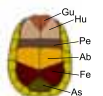
Dorsal aspect of head

Skins

Turtles, Terrapins & Tortoises



Carapace (Dorsal aspect)



Plastron (Ventral aspect)

Major scales in reptiles. Top row, from left to right: snake head from side, top and below. Top right from left to right: skink head from side and top; bottom row turtle shell from top and bottom.

PL. CHECK ABOVE

Key To Abbreviations

Ab abdominal scute, An anal plate, As anal scute, Ch chin shield, ~~Cl cloaca/vent~~, Co costal, Fe femoral scute, Fp frontoparietal, Fr frontal, Gu gular scute, Hu humeral scute, IL infralabial, In internasal, Ip interparietal, Lo loreal, Ma marginal scute, Me mental, Na nasal, Nu nuchal, Pa parietal, Pe pectoral scute, Po postocular, Pr preocular, Prfprefrontal, Ro rostral, Sc subcaudal, Scl supraciliary, SL supralabial, Su supraocular, Tetemporal, Ve ventral, Vt vertebral scute.

GLOSSARY

adult Sexually mature individual.

anterior Nearer the front (towards head).

aquatic Living in water.

arboreal Living in trees or in other vegetation away from the ground.

canopy Layer of vegetation above the ground, usually comprising tree branches and epiphytes.

clutch Total number of eggs laid by a female at a time.

clutch size Number of eggs in a nest.

courtship Behaviour preceding mating.

crepuscular Active during dawn and dusk.

depressed Flattened from top to bottom.

diurnal Active during day.

dorsum Dorsal surface of body, excluding head and tail.

endemic Restricted to a particular region.

femoral pores Pores on femoral region of some geckos.

fossorial Living underground.

infralabial Scales on lower lip.

keel Narrow prominent ridge.

lamella (pl. **lamellae**) Pad under digit in lizards (also **scansor**).

litter Detritus of fallen leaves, branches and bark that accumulates on the forest floor.

middorsal scales Scales around middle of body.

nocturnal Active during night.

oviparous Laying eggs.

ovoviviparous Form of reproduction when the eggs develop within the body of the mother, which does not provide nutrition other than the yolk.

posterior Near the back (towards tail).

preanal pores Pores situated in front of cloaca in geckos.

prefrontals Paired scales on anterior margin of orbit of eye, usually bounded by the frontal.

recurved Curved or bent.

reticulated Arranged like a net.

scansor Pads under digits in geckos (also **lamellae**).

scute Horny epidermal shield.

serrated With a saw-toothed edge.

subcaudal Scales below tail.

supralabial Scales on upper lip.

tubercle Knot-like projection.

tympanum Ear-drum.

ventral Scales under body, from throat to vent.

vermiculation Pattern consisting of vague, worm-like markings.

vertebral Pertaining to region of backbone.

viviparous Live bearing, whereby embryo obtains additional nourishment from mother, in addition to yolk.

zygodactylous Of feet; the toes of each foot are arranged in pairs opposing each other.

■ LAND TORTOISES ■

TESTUDINIDAE (LAND TORTOISES)

The family of true tortoises comprises 59 described species. Land tortoises are mostly herbivorous (but may scavenge on carrion). They have thick shells, columnar forelimbs, elephantine hindlimbs, fingers and toes without webbing, heavily scaled outer faces of forelimbs, and lack axillary and inguinal glands.

Indian Star Tortoise ■ *Geochelone elegans* 38cm

(Gujarati Khad No Kachba, Suraj Kachba, Zamin No Kachabo; Kannada Kal Aame; Marwari Khar Kachebo; Oriya Bali Kaichha; Rajasthani Bhumi Kachba; Sinhalese Hooniyan Ibba, Mal Ibba, Makaral Ibba, Taruka Ibba; Tamil Kal Amai, Kattu Amai; Telugu Meta Tabelu; Urdu Tariwala Kachua, Satara Kachoor)

DESCRIPTION Carapace elongated in adults, rounded in juveniles, domed dorsally; weak bicuspid or tricuspid upper jaw; several distinct conical tubercles on thigh; carapace and plastron star marked with pattern of dark brown or black on yellow or beige; superimposed dark colour especially prominent in juveniles. **DISTRIBUTION** North-western, south-eastern and southern India, eastern Pakistan, and northern and eastern Sri Lanka. **HABITAT AND HABITS** Found in scrub forests and edges of deserts, agricultural fields, teak forests, grassland and thorn scrub. Diet largely herbivorous; known to eat grass and flowers, and also scavenges on animal matter. Clutches comprise 1–10 eggs, 40–51 x 31–37mm. Incubation period 47–178 days.



Elongated Tortoise ■ *Indotestudo elongata* 33cm

(Assamese Halodia Kasso; Bengali Bon Kochchop, Gecho Kochchop, Pahari Haldey Kochchop; Hindi Parbati, Suryamukhi; Khasia Hunro; Nepali Ageri, Bhain Kachua, Padini; Oriya Mati Kaichha)

DESCRIPTION Carapace domed, highest point in vertebral III, flattened dorsally with arching sides; posterior marginals slightly flared and serrated (especially in juveniles); shell broadest posteriorly; plastron elongated, with deep notch posteriorly; limbs heavily scaled, club-like, bearing 5 claws each; nuchal scute long and narrow; carapace and plastron yellowish-brown or olive, with scattered black blotches; plastron sometimes unpatterned. **DISTRIBUTION** Northern to north-eastern India, Nepal, Bangladesh and Bhutan; also Southeast Asia. **HABITAT AND HABITS** Found in deciduous and evergreen forests. Diet includes leaves, fallen flowers and fruits, as well as fungi and occasionally, through scavenging, dead animals and slugs. Clutches comprise 1–7 eggs, 50 x 37mm. Incubation period 96–165 days. Hatchlings 49mm.



Travancore Tortoise ■ *Indotestudo travancorica* 33cm

(Kannada Betta Aame, Gudde Aame, Kadu Aame; *Kanis* Kal Ama, Vengala Amai; *Katumaran* Kar Aamai, Valli Aamai; *Malayalam* Churel Ama, Churelkata Amah; *Tamil* Peria Amai)

DESCRIPTION Carapace elongated, somewhat depressed, broader posteriorly in adults; shell relatively more rounded in juveniles; nuchal absent; tail ends in claw-like spur; shell olive or brown with black blotches on each scute. **DISTRIBUTION** Central and southern Western Ghats of south-western India. **HABITAT AND HABITS** Found in moist evergreen and semi-evergreen forests to an altitude of at least 1,000m. Mostly herbivorous, feeding on grass, fungi, bamboo shoots, fallen fruits and flowers, and also on insects, frogs and carrion. Clutches comprise 1–5 eggs, 40–58 x 31–44mm. Incubation period 146–149 days. Hatchlings 55–60mm.



Asian Giant Tortoise ■ *Manouria emys* 50cm

(Bengali Pahari Kochchop; *Chakma* Mon Dur; *Khasia* Phrau)

DESCRIPTION Carapace relatively low and rounded; vertebral region depressed; distinct growth rings on scutes of carapace; outer surfaces of forelimbs have large scales; paired tuberculate scales on thighs; carapace blackish-brown; plastron lighter; limbs dark brown to greyish-brown. **DISTRIBUTION** North-eastern India and Bangladesh; also southern China and Southeast Asia. **HABITAT AND HABITS** Found in evergreen forests, especially with hill streams and dense leaf litter. Largely herbivorous, though insects and frogs also eaten. Constructs mound nest by sweeping leaf litter, and lays 23–51 hard-shelled eggs of diameter 51–54mm. Guards nest, attacking egg predators. Hatchlings take 60–75 days to emerge, and measure 60–66mm.



Central Asian Tortoise ■ *Testudo horsfieldii* 22cm

(*Baluchi* Lach Pusht, Sang Toti, Tosh Bakke; *Pushtu* Sang Pusht; *Urdu* Bari Kachua, Sham Shatu)

DESCRIPTION Carapace rounded and domed, with depressed vertebral region; foot has 4 toes; tail ends in claw-like structure; carapace pale brown to olive, with dark blotches; plastron has large dark blotches; head and limbs greyish-yellow. **DISTRIBUTION** Balochistan and North-West Frontier Province in Pakistan; range extends west to shores of Caspian Sea. **HABITAT AND HABITS** Found in loamy and rocky, arid habitats, from plains to about 1,200m, though more dense around oases and in vicinity of wetlands. Excavates burrows 80–2,000cm in length, presumably critical for hibernation during winters and for avoiding the midday sun. Diet includes leaves, flowers and fruits. Clutches comprise 1–5 eggs, 42–43 x 30mm. Incubation period 62–82 days. Hatchlings 32–34mm.



GEOEMYDIDAE (POND TURTLES)

This is one of the largest and most diverse families of turtles, with 70 living species that may be aquatic or terrestrial, ranging in size from under 10cm to some that reach nearly a metre in shell length. Members of the family inhabit fresh waters, coastal areas and especially, lowland forests of the subtropics and tropics of Asia, Europe and North Africa, with a single genus in Central and South America. Morphological characters associated with the family include neck that is retracted vertically, carapace with 24 marginal scutes, lack of mesoplastron, and pectoral and abdominal scutes contacting marginal scutes. Eggs are hard shelled, elongated and buried along the banks of water bodies.

River Terrapin ■ *Batagur baska* 59cm

(Bengali Bala Katha; Bali Katha, Boro ketho, Pora Katha, Ram Kachim, Sona Katha, Sundhi)

DESCRIPTION Carapace domed, heavily buttressed; long plastron; head small with narrow, upturned snout; forehead covered with small scales; jaws serrated; 4 claws on each forelimb, which has wide webbing; carapace olive-grey or brown, and head similar coloured but lighter on sides; plastron unpatterned yellow; breeding males develop black



forehead and back of neck; front portion of neck bright red. **DISTRIBUTION** Estuaries such as the Sunderbans, Bhitarkanika and mouth of Subarnarekha River of India and Bangladesh. Also Myanmar. **HABITAT AND HABITS** Occurs in mouths of large rivers with mangroves. Fruits of *Sonneratia* are staple dietary item; leaves, stems and fruits also consumed, besides molluscs, crustaceans and fish. Nests on sea coasts. Clutches comprise 10–30 eggs, 69–75 x 39–45mm. Incubation period 65–66 days.

Three-striped Roofed Turtle ■ *Batagur dhongoka* 48cm

(Bengali Boro Katha, Sada Katha; Hindi Dhona, Dhoor, Dhor, Dhundi; Nepali Dhodari, Dond Chhane Kachhuwa; Tharu: Puberi)

DESCRIPTION Carapace elevated, oval, flaring at back, with rounded rim; keel ends in knob on third vertebral; snout slightly upturned; upper jaw has weak notch; digits entirely webbed; carapace brownish-grey, olive or greyish-yellow, with black or dark brown stripes on vertebral and pleural regions, as well as marginal edges; plastron yellow or cream; head and neck greyish-cream, with cream or yellow stripe from snout, across eyes and tympanum, to back of head. **DISTRIBUTION** River Ganga and its tributaries, including the Chambal, in northern India, Nepal and Bangladesh.



Female



Male

HABITAT AND HABITS Found in large rivers. Males omnivorous, eating water plants and molluscs; females take vegetable matter. Clutches comprise 21–35 eggs, 52–66 x 32–41mm. Incubation period 56–89 days.

Painted Roofed Turtle ■ *Batagur kachuga* 56cm

(Bengali Adi Kori Katha; Hindi Lal Tilakwala, Sal; Nepali Rangin Chhane Kachhuwa)

DESCRIPTION Carapace moderately domed, oval; posterior marginals of juveniles strongly serrated, forming 5–7 sharp spines; plastron narrow; snout slightly upturned; upper jaw weakly bicuspid; carapace brownish-olive in males, dark brown or black in females; plastron of both sexes cream or yellow; adult males have blue-black head, broad red patch from tip of snout to occiput, 2 yellow stripes on sides of head and 6 red stripes on cream-coloured neck; adult females have yellow or silvery mandibles and dark brownish-black heads. **DISTRIBUTION**



Female



Male

River Ganga and its tributaries in India, Bangladesh and Nepal. **HABITAT AND HABITS** Found in large rivers. Basks on sand banks, rocks and logs. Herbivorous, feeding on water plants. Clutches comprise 11–30 eggs, 64–75 x 38–46mm.

Malayan Box Turtle ■ *Cuora amboinensis* 21.6cm

(Assamese Jap Dura; Bengali Chapa Katha, Diba Kochchop; Car Nicobarese Penyt, Takurab, Ta-penyut; Central Nicobarese Uptepe; Manipuri Thanggu; Mising Kop-kadera; South Nicobarese Hetain/Itain)

DESCRIPTION Carapace high domed and smooth, with single keel in adults; juveniles have 2 additional keels; carapace olive, brown or nearly black; plastron yellow or cream, with single black blotch; face yellow striped. **DISTRIBUTION** North-eastern India and Nicobar Islands, Bangladesh and Bhutan; also Myanmar, Thailand, Indo-China, Indo-Malaya and the Philippines. **HABITAT AND HABITS** Found in lakes, small rivers, grassland, marshes, mangrove swamps and also agricultural areas. Primarily herbivorous, feeding on water plants and fungi; worms and aquatic insects also eaten. Clutches comprise 1–6 eggs, 40–55 x 25–34mm. Incubation period 45–90 days.



■ POND TURTLES ■

Keeled Box Turtle ■ *Cuora mouhotii* 18cm

(Assamese Siria Jap Dura)

DESCRIPTION Carapace elongated, flat topped, with 3 prominent keels; marginals serrated posteriorly, and sometimes anteriorly as well; weak hinge across plastron in adult females; upper jaw hooked; digits half webbed; tail extremely long in juveniles, relatively shorter in adults; carapace dark or light brown; plastron yellow or light brown, with dark brown blotches on each scute; iris red. **DISTRIBUTION** North-eastern India, Bangladesh and Bhutan; also Southeast Asia and eastern China. **HABITAT AND HABITS** Found in evergreen hill forests, and associated with leaf litter. Omnivorous. Clutches comprises 1–5 eggs, 40–56 x 25–27mm. Incubation period 90–101 days.



Gemel's Leaf Turtle ■ *Cyclemys gemeli* 25cm

(Bengali Sil Kathua; Manipuri Thanggu; Nepali Thateru)

DESCRIPTION Shell oval, depressed, bearing 3 keels; shell widest at marginal VIII area; posterior marginals weakly serrated; enlarged scales on forehead; plastron elongated, with hinge in adults at around 23cm shell length; carapace and plastron brown to olive-brown, with dark radiating lines; head brown to blackish-brown, without distinct stripes. **DISTRIBUTION** Northern to north-eastern India, Bangladesh, Bhutan and Nepal. **HABITAT AND HABITS** Found in streams, small rivers, and ponds in low hills and plains. Juveniles more aquatic than adults. Omnivorous, feeding on figs and invertebrates. Clutches comprise 2–4 eggs. Incubation period 75 days.



■ POND TURTLES ■

Spotted Pond Turtle ■ *Geoclemys hamiltonii* 41cm

(Assamese Nal Dura; Bengali Bagh Kathua, Bhuna Kaitta, Bhut Katha, Kalo Katha, Mogom Kathua, Pura Kaitta; Hindi Bhoot Katha; Mising Kop-kadera; Nepali Thople Pokhari Kachhuwa; Urdu Chitra Kachhuwa)

DESCRIPTION Carapace tricarinate, with 3 interrupted keels that have nodose prominences; posterior marginals serrated, especially in juveniles, becoming smooth with growth; plastron notched posteriorly and truncated anteriorly; head large, with short snout; digits entirely webbed; shell black with yellow streaks and wedge-shaped marks; head black with yellow spots; neck grey with cream spots; limbs have black-and-white spots. **DISTRIBUTION** Drainages of the Indus, Ganga and Brahmaputra, from India, Bangladesh, Nepal and Pakistan. **HABITAT AND HABITS** Found in oxbow lakes and other standing bodies of water. Omnivorous, diet including molluscs, crustaceans, fish, insect larvae, grasses, fruits and leaves. Clutches comprise 13–30 eggs, 41–51 x 24–28mm. Incubation period 23–76 days. Hatchlings 35–38mm.



Crowned River Turtle ■ *Hardella thurjii* 61cm (female); 17.5cm (male)

(Assamese Bor Dura; Bengali Boro Katha, Kali Katha/Kalo Katha; Bhind Kariha, Kariyon; Nepali Babune Khole Kachhuwa; Teor Kariha, Kariyon; Urdu Daryai Kachhuwa)

DESCRIPTION Carapace ellipsoidal, domed, fairly depressed, extensively sutured to plastron; buttresses strongly developed; vertebral keel interrupted; head large; digits entirely webbed; carapace dark brown with grey-black vertebral keel; yellowish-orange band usually present on pleuro-marginal area; plastron yellow, each scute with large, blackish-grey blotch; 4 yellowish-orange stripes on sides of head; limbs brownish-grey, edged with yellow. **DISTRIBUTION** Drainages of Indus, Ganga and Brahmaputra, in northern and north-eastern India, Bangladesh, Nepal and Pakistan. **HABITAT AND HABITS** Found in slow-moving rivers, marshes, estuaries and large standing bodies of water. Clutches comprise 8–16 eggs, 40–56 x 28–36mm. Incubation period 223–273 days. Hatchlings 41–46mm.



Arakan Hill Turtle ■ *Heosemys depressa* 24.2cm

DESCRIPTION Carapace elongated, flattened, with vertebral keel; weak pair of lateral keels; front and back marginals serrated; head broad with blunt snout; enlarged scales



on forelimbs; fingers and toes weakly webbed; carapace pale brown with dark streaks; plastron yellow with darker streaks and radiations. **DISTRIBUTION** Chittagong Hill Tracts, south-eastern Bangladesh; also adjacent western Myanmar. **HABITAT AND HABITS** Found in hilly rainforests, occupying both streams and leaf litter. Diet comprises fallen fruits and vegetables in the wild; insects, worms and fish accepted in captivity. Clutches comprise 2–6 eggs. Incubation period 120–130 days.

Tricarinate Hill Turtle ■ *Melanochelys tricarinata* 17.5cm

(Bengali Shila Kochchop; Nepali Padani Kachhuwa, Thotari; Tindharka Pahadi Kachhuwa)

DESCRIPTION Carapace elongated, tricarinate, keels low; shell arched with steep sides; snout short, truncate; fingers half webbed; toes almost free; outer surface of forelimbs has



enlarged scales; carapace dark olive, grey-black or reddish-brown, with pale yellow keels; plastron yellow or orange; head and limbs grey-black; yellow or red stripe may extend from nostrils to neck. **DISTRIBUTION** Himalayan foothills of northern India, to north-eastern India, Bangladesh, Bhutan and Nepal. **HABITAT AND HABITS** Terrestrial; associated with grassland, as well as adjacent hills. Crepuscular and omnivorous, feeding on fruits, earthworms, crabs, millipedes, beetles and termites. Clutches comprise 1–3 eggs, 38–47 x 23–25mm. Incubation period 60–72 days. Hatchlings 33–40mm.

Indian Black Turtle ■ *Melanochelys trijuga* 38.3cm

(Gujarati Kala Rang No Kachabo; Hindi Kala Kachua, Talao Kachua; Kannada Kare Aame, Murkate Aame, Neer Aame; Khasia D'kar; Marathi Kasav; Nepali Kalo Pani Kachhuwa, Thotari; Sinhalese Gal Ibba, Goo Ibba, Mada Kakkotta, Thumba Ibba, Valan Gibba; Tamil Kal Amai, Karuppu Amai, Kullathamai, Neer Amai, Pee Amai, Tanni Amai; Telugu Nuiye Tabelu)

DESCRIPTION Carapace elongated, tricarinate, fairly high in adults, depressed in juveniles; head moderate with short snout; upper jaw notched; toes fully webbed; carapace typically brown; plastron usually dark with pale yellow border that may be lost in old individuals; head colour variable, and forms basis of subspecific differentiation.

DISTRIBUTION Northern, peninsular and north-eastern India, Bangladesh, Bhutan, Maldives (probably introduced) and Nepal. Also Myanmar and Thailand. **HABITAT AND HABITS** Found in still waters with aquatic vegetation, and may also occur in small rivers. Omnivorous, eating prawns, grass, water hyacinth and fallen fruits, and scavenges far from water on dead animals. Clutches comprise 3–7 eggs, 44–49 x 26–28mm. Incubation period 76–149 days. Hatchlings 38–44mm.



Brown Roofed Turtle ■ *Pangshura smithii* 22cm (female); 13cm (male)

(Bengali Boro Kori Katha, Vaittal katha; Hindi Chapant/Chapatua; Haire Dhuri Kachhuwa; Nepali Kurdu Bhoora Daryai Kachhuwa)

DESCRIPTION Carapace elliptical, arched, with either smooth or slightly serrated posterior rim; medial keel weak, raised at posterior of vertebral scute; plastron long and narrow; second and fifth vertebrals broader than long; first, third and fourth vertebrals longer than broad; fourth vertebral tapering and pointed anteriorly. In subspecies *smithii*, carapace light green (males) or brown (females); plastron and bridge yellow with single large blotch on scute; head yellowish-grey or pinkish-grey, with distinct brick-red patch on temple; neck grey with yellow stripes; limbs grey. Subspecies *pallidipes* has reduced pigmentation on limbs and head, and pale yellow, unpatterned plastron, though there may be small black smudges on some marginals. **DISTRIBUTION** Pakistan, northern to north-eastern India, Bangladesh and Nepal. **HABITAT AND HABITS** Restricted to large and medium-sized rivers and their vegetation-choked backwaters. Consumes both water plants and fish. Clutches comprise 7–9 eggs, 22–25 x 40–42mm. Hatchlings 35.8mm.



■ POND TURTLES ■

Assam Roofed Turtle ■ *Pangshura sylhetensis* 20cm
(Assamese Phulen Dura; Bengali Kath Kathua, Sylhet Kori Kathua)

DESCRIPTION Carapace elevated, spike-like, especially in juveniles, serrated posteriorly even in adults; the only Indian freshwater turtle with 13 marginals; snout slightly projecting; upper jaw weakly hooked; carapace olive-brown with pale brown vertebral keel; plastron has large black blotches; red sinuous mark runs from eyes to middle of back of head, and another such mark runs along mandibles, curving to join tympanum; neck light striped. **DISTRIBUTION** Eastern and north-eastern India and Bangladesh. **HABITAT AND HABITS** Found in streams, small rivers in hills and foothills, and oxbow lakes. Clutches comprise 6–12 eggs, 34–45 x 21mm.



Indian Roofed Turtle ■ *Pangshura tectum* 23cm
(Assamese Futuki Salika Dura; Bengali Dora Kaitta, Kori katha; Gujarati Rangin Kachabo; Hindi Chandan Kachua, Pachauria, Tilhara; Nepali Darkhechuwa; Urdu Ari-pusht Daryai Kachhuwa)

DESCRIPTION Carapace elevated, oval, with distinct keel on third vertebral that is spike-like, especially in juveniles; head small with projecting snout; upper jaw unnotched, serrated; digits entirely webbed; first vertebral as long as wide or longer than wide; fourth vertebral longer than wide, flask shaped; skin of forehead has irregular scales; carapace brownish-olive, with light brown, red or orange stripe along first 3 vertebral scutes; marginals have narrow yellow border; plastron yellow or pink, with 2–4 black markings on plastral scutes; head has orange or red crescentic postocular markings from below eyes to forehead; neck dark grey with thin yellow or cream stripes. **DISTRIBUTION** Northern India, Bangladesh, Nepal and Pakistan. **HABITAT AND HABITS** Found in standing waters with macrophytes. Basks communally, and several turtles are usually seen basking on logs on sides of river. Omnivorous; juveniles more carnivorous than adults, which turn herbivorous. Clutches comprise 5–10 eggs, 37–45 x 21–24mm. Incubation period 70–78 days. Hatchlings 34–35mm.



■ SOFTSHELL TURTLES ■

TRIONYCHIDAE (SOFTSHELL TURTLES)

The trionychids include some of the largest freshwater turtles, with 32 living species. They are referred to as 'softshell turtles' due to the absence of scutes on their shells, the bones being clad with skin. The scientific name refers to their three-clawed limbs, another unique trait. They also have long necks and nostrils set on a fleshy proboscis.

Narrow-headed Softshell Turtle ■ *Chitra indica* 1.5m
(Assamese Baghia Kasso; Bengali Chitra, Chhim, Dhush Kachim, Gotajil, Shuwa Kasim, Thal Kasim; Hindi Chitra, Seem, Seonthar, Sewteree; Nepali Badar/Badhar, Chitra; Oriya Balera Kaichha, Chitra Kaichha; Urdu Tang-sar Prait)

DESCRIPTION Carapace oval and depressed; head extremely narrow; eyes small; shell of juveniles has numerous small tubercles and vertebral keel that disappears with growth; dorsum dull olive or bluish-grey, with dark wavy reticulation; carapace pattern continues to neck and outer surfaces of forelimbs; 'V'-shaped mark on nape extends to carapace; juveniles sometimes have 4 eye-like markings on carapace, or numerous black elongated spots; plastron cream or pale pink; head olive with dark-bordered yellow streaks. **DISTRIBUTION** Peninsular, northern and north-eastern India, Bangladesh, Nepal and Pakistan. **HABITAT AND HABITS** Found in sandy sections of rivers, and ambushes prey underwater by burying itself in sand. Diet includes fish and molluscs. Eggs laid between end of August and mid-September, in sandy or sandy-loam soils. Clutches comprise 65–193 eggs, 25–28mm. Incubation period 40–70 days. Hatchlings 39–43mm.



Sri Lankan Flapshell Turtle ■ *Lissemys ceylonensis* 37cm
(Sinhalese Alu Ibba, Kiri Ibba; Tamil Pal Amai)

DESCRIPTION Carapace oval, with 7 callosities on plastron; skin-clad, hinged anterior lobe of plastron closes completely; paired plastral flaps; carapace unpatterned greyish-olive; plastron cream coloured; forehead dark grey, lacking distinct patterns. **DISTRIBUTION** Sri Lanka. **HABITAT AND HABITS** Inhabits rivers, ponds, rice fields and canals in cities. Diet includes invertebrates as well as fish and frogs.



Indian Flapshell Turtle ■ *Lissemys punctata* 37cm

(Assamese Bagh Dura, Baminy Kasso; Bengali Chip Kathua, Chiti Kachim, Til Kachim; Gujarati Pani No Kachbo; Hindi Abhua, Matia, Sundri; Kannada Boli Aame, Laai Aame; Malayalam Vellayama; Oriya Panka Kaichha; Tamil Pal Amai; Telugu Neeti Tabelu; Urdu Moonji Kachhuwa)

DESCRIPTION Carapace oval, with 7 callosities on plastron; skin-clad, hinged anterior lobe of plastron closes completely; paired plastral flaps; carapace olive-green with dark yellow blotches in northern subspecies *andersoni*, unpatterned in southern *punctata*; plastron cream or pale yellow. **DISTRIBUTION** India, Bangladesh, Nepal and Pakistan; also Myanmar. **HABITAT AND HABITS** Found in salt marshes, rivers, ponds, oxbow

lakes, streams, rice fields and canals in cities. Active by day and night, feeding at dusk. Diet includes frogs, tadpoles,

fish, crustaceans, snails, earthworms, insects, carrion and water plants; may also scavenge. Clutches comprise 5–14 eggs, 24–30mm. Southern subspecies produces clutches of 2–8 eggs, 25–33mm. Incubation period 9 months. Hatchlings 42mm.



Carapace



Plastron

Indian Softshell Turtle ■ *Nilssonia gangeticus* 94cm

(Bengali Ganga Kachim, Kholua, Kocho; Gujarati Kachher, Moti Kachab; Hindi Khatawa, Patal; Nepali Abhinasha, Ghidiya, Kachhuwa, Seto Bahar; Oriya Bada Pani Kaichha, Chabeda Kaichha; Urdu Prait)

DESCRIPTION Carapace low and oval; snout slightly downturned; upper jaw without ridges; carapace has longitudinal series of warts in juveniles, smooth in adults; carapace greyish-black, grey or green, with darker reticulation; 3–6 eye-like, yellow-bordered markings on dorsum of juveniles; forehead green, with oblique black stripes on top and sides. **DISTRIBUTION** Northern to north-eastern India, Bangladesh, Nepal and Pakistan.

HABITAT AND HABITS Inhabits rivers, ponds, lakes and reservoirs. During droughts, buries itself in mud at bottoms of ponds and lakes. Frequently seen basking on sand banks, especially in winter. Diet includes water plants, invertebrates and vertebrates; also scavenges on carrion. Clutches comprise 13–35 eggs, 30–35mm.



Indian Peacock Softshell Turtle ■ *Nilssonia hurum* 60cm

(Assamese Bor Kasso; Bengali Bukum, Dhalua Kachim, Dhum Kachim; Hindi Morpanchi; Nepali Charthari, Katakhiri; Oriya Balikuno, Dhum Kaichha; Urdu Peeli Prait)

DESCRIPTION Carapace low and oval; head large with snout strongly downturned; distinct longitudinal rows of blunt tubercles on anterior of carapace; several longitudinal rows of tubercles on posterior of

carapace; carapace olive with yellow rim; juveniles have 4–6 dark-rimmed, yellow-bordered ocelli; plastron light grey; head and limbs olive; forehead has black reticulation and large orange or yellow patches across snout and on sides. **DISTRIBUTION** Northern and eastern India, Bangladesh and Nepal. **HABITAT AND HABITS** Found in rivers, ponds and reservoirs, frequently with dense macrophytic vegetation. Diet includes snails, fish and mosquito larvae. Clutches comprise 20–30 eggs. Hatchlings 46mm.



Black Softshell Turtle ■ *Nilssonia nigricans* 91cm

(Assamese Laomura; Bengali Bostami Kachim, Gazari, Madari)

DESCRIPTION Carapace low and oval; snout slightly downturned; upper jaw without ridges; carapace with longitudinal series of warts in juveniles, smooth in adults; carapace blackish-grey; 4 yellow-bordered, eye-like markings on dorsum of juveniles; forehead olive-grey with pale

areas. **DISTRIBUTION** North-eastern India and Bangladesh. **HABITAT AND HABITS** Found in rivers, oxbow lakes and tanks, some of which are man-made and associated with religious shrines. Diet includes both animal and plant matter. Clutches comprise 12–38 eggs, 32–36mm. Incubation period 73–108 days. Hatchlings 45–51mm.



Asian Giant Softshell Turtle ■ *Pelochelys cantorii* 1.5m
(Bengali Jata Kachim; Oriya Adithia Kaichha, Baligad/Baligado)

DESCRIPTION Carapace low and depressed, and elongated in young, oval in adults; juveniles have tuberculate carapace and low vertebral keel; proboscis short and rounded;



carapace olive or brown, spotted or streaked with lighter or darker shades, pale margined.

DISTRIBUTION India and Bangladesh; also Southeast Asia, including the Philippines, and central and southern China. **HABITAT AND HABITS** Found in coastal regions such as sea beaches, and also inland lakes and rivers. Diet includes fish, shrimps, crabs and molluscs, and sometimes aquatic plants. Known to share nesting beaches with Olive Ridley Sea Turtle (see p. 28); approaches nesting beaches from both river and sea. Clutches comprise 24–70 eggs, 30mm. Incubation period 60 days. Hatchlings 42mm.

CHELONIIDAE (MARINE TURTLES)

The family includes six living marine turtles, apart from the Leatherback Sea Turtle. They have a relatively more fusiform body shape. Adaptations to their aquatic habits are the lack of ability to retract their heads and limbs into their shells, the smooth shell surface and long forelimbs. Typically they come ashore only to nest.

Loggerhead Sea Turtle ■ *Caretta caretta* 1.2m

(Sinhalese Kannadi Kasbava, Olu Gedi Kasbava; Tamil Kadal Amai, Kili Chondan Amai, Nai Amai, Panguni, Perunthalai Amai, Ettu Panguni Amai)

DESCRIPTION Carapace elongated, with a tapering end; costals 5 pairs, the first contacting the nuchal; 3 or 4 infralabial scutes that lack pores; 13 marginal scutes; carapace reddish-brown, plastron yellowish-brown or yellowish-orange. Often confused with Olive Ridley Sea Turtle (see p. 28), but can be differentiated in having 5 (rather than 6) costals; bridge with 3 (not 4) inframarginals; and carapace reddish-brown (versus olive-green or greyish-olive). **DISTRIBUTION** Gulf of Mannar, India, Bangladesh and Sri Lanka. **HABITS AND HABITAT** Inhabits warm, subtropical seas, and known from bays, lagoons and estuaries. Diet consists of molluscs and crustaceans, the large jaws being adapted to crush their shells. Clutches comprise 23–178 eggs, 35–55mm, Incubation period 49–80 days. Hatchlings 44mm.



Green Turtle ■ *Chelonia mydas* 1.4m

(Bengali Sabuj Samudrik Kachim; Car Nicobarese Kap-chyoot, Kap-ke; Central Nicobarese Kap-ka; Gujarati Duryani Kachbi; Hindi Dudh Kachua, Samundrik Kachua; Lakshadweep Mirigham; Malayalam Kadal Aamah; Oriya Samudra Kaichha; Sinhalese Gal Kasbava, Mas Kasbava, Vali Kasbava; South Nicobarese Kauske; Tamil Pal Amai, Perr Amai, Thaen Amai)

DESCRIPTION Carapace heart shaped; scutes of carapace not overlapping; upper jaw lacks hook; forelimbs have single claw; carapace olive or brown, usually with dark radiating pattern; plastron pale yellow; adult males smaller than females, and possess relatively longer tails that project out of carapace rim. **DISTRIBUTION** Coastal India, including the Andaman Islands, Bangladesh, Pakistan and Sri Lanka. **HABITAT AND HABITS** Widely distributed in tropical regions, and common

around oceanic islands and along coasts with wide sandy beaches. Juveniles carnivorous, while adults consume only seagrass and seaweed. Clutches comprise 98–172 eggs, 41–42mm. Incubation period 60 days.



Hawksbill Sea Turtle ■ *Eretmochelys imbricata* 1m

(Car Nicobarese Kap-sah; Central Nicobarese Kap-kael; Hindi Kanga Kachua; Oriya Baja Thantia Kaichha, Chhanchana Tantia Kaichha; Sinhalese Pothu Kesbawa; South Nicobarese Kaengay; Tamil Alunk Amai, Nanja Amai, Ot Amai, Seep Amai)

DESCRIPTION Carapace heart shaped; 4 pairs of overlapping costal scutes; 2 pairs of prefrontal scales; upper jaw relatively narrow and elongate; upper jaw forwards projecting, to form bird-like beak; carapace olive-brown; juveniles have darker blotches than adults.

DISTRIBUTION India, including the Andaman Islands, Bangladesh, Pakistan and Sri Lanka. **HABITAT AND HABITS** Associated

with coral reefs, bays, estuaries and lagoons. Main diet consists of sponges, though algae, corals and shellfish are also eaten. Nesting varies with locality: August and January in the Andamans; June and October on Indian mainland. Clutches comprise 96–177 eggs, 30–35mm. Incubation period 57–65 days.



Olive Ridley Sea Turtle ■ *Lepidochelys olivacea* 80cm

(Bengali Faki Kochchop, Gola Kochchop, Samudrik Katha; Central Nicobarese Kap-ngal; Gujarati Daryani Kachbi; Hindi Gadha Kachua; Kannada Kardelu Aame; Lakshadweep Malaya Mirigham; Oriya Luni Kaichha, Soil Kaichha; South Nicobarese Karasara; Tamil Kadal Amai, Paingili Amai, Pul Amai, Sith Amai; Telugu Samudram Tabelu)

DESCRIPTION Carapace broad, heart shaped, posterior marginals serrated, with juxtaposed costal scutes; 5–9 pairs of costals; bridge with 4 inframarginals, each with pore; adult shell smooth; hatchling shell tricarinate, lateral and with vertebral keels that disappear with growth; upper jaw hooked, but lacks ridge; carapace olive-green or greyish-olive; plastron greenish-yellow; juveniles grey-black dorsally; cream coloured ventrally. **DISTRIBUTION** India, including the Andaman Islands, Bangladesh, Pakistan and Sri Lanka. **HABITAT AND HABITS** Nesting takes place in large aggregations (referred to as 'arribadas'), such as those seen on Gahirmatha and Rushikulya beaches, Odisha, on the east coast of India, where several hundred thousand turtles congregate to nest. Clutches comprise 50–160 eggs, 34–43mm. Incubation period 45–60 days. Hatchlings 38–50mm.



AGAMIDAE (AGAMID LIZARDS OR DRAGONS)

These sit-and-wait predators are part of a large lizard family (463 described species) from southern Europe, Africa, Asia and Australasia, which is related to the New World iguanas. They have well-developed limbs, non-autotomous tails, some capacity to change colours for social signalling or regulation of body temperature, and acrodont teeth (set on outer rim of mouth). They are diurnal and generally terrestrial or arboreal (the Laungwala Toad-headed Lizard being the only specialized burrower). Their diets range from arthropods such as insects and spiders, to birds and mammals. A few large-growing species include flowers, seeds and leaves in their diets. Most species are oviparous.

Laungwala Toad-headed Lizard ■ *Bufoinceps laungwalensis* 67mm (Rajasthani Girgit, Chipkali)

DESCRIPTION Body short and depressed; tiny external ear opening and deeply set tympanum; snout short, with nostrils set close together high on snout; dorsal scales small, uniform; tail short; no dorsal crest, gular sac, or femoral and preanal pores; digits bear fringes of flat, pointed scales; dorsum grey with red, orange, black and white spots; dark vertebral stripe sometimes present; distinct blue patch between shoulder and neck; belly white or cream coloured. **DISTRIBUTION** Western India and eastern Pakistan. **HABITAT AND HABITS** Found in sandy deserts at 139–290m.

Diurnal and active on subsurface of loose sand of shifting sand dunes, running for short distances and rapidly burrowing 2–3cm in sand, using lateral movements. Diet comprises ants, beetles, grasshoppers, flies and lizards. Reproductive habits unknown.



Lateral view



Dorsal view

Green Forest Lizard

■ *Calotes calotes* 130mm
(Sinhalese Kola Katussa, Pala Katussa; Tamil Pachchai Onnan, Pachchonthi)

DESCRIPTION Body robust; head large; cheek swollen in adult males; crest on head and body distinct; oblique fold in front of shoulder; throat sac not well developed; dorsal scales smooth or weakly keeled, pointing backwards and upwards; tail long and rounded; dorsum bright green, with 4–5 bluish-white or green cross-bars; belly pale green. **DISTRIBUTION** Southern peninsular India and Sri Lanka. **HABITAT AND HABITS** Found in moist deciduous and evergreen forests in mid-hills and plains. Arboreal; associated with shrubs and tree trunks. Diet consists of insects. Clutches comprise 6–12 eggs, 12–12.5 x 18–18.5mm. Incubation period 79–84 days.



Painted-lipped Lizard ■ *Calotes ceylonensis* 70mm
(Sinhalese Thola-visituru Katussa)

DESCRIPTION Body slender, compressed; head one and a half times width; tail long, slender, over twice head-body length; cheeks swollen; 2 separated spines above tympanum; nuchal crest of low spines; midbody scale rows 54–60; dorsum brown with indistinct brown bands; head and anterior part of body blackish-brown; bright red or reddish-orange stripe on upper lip extends to back of head; red dorsonuchal crest; throat of adult males black;



tail brown with dark bands; belly pale brown with darker bands. **DISTRIBUTION** Sri Lanka. **HABITAT AND HABITS** Found in semi-evergreen forests, plantations and home gardens in dry and intermediate zones, at 400m. Arboreal; active on tree trunks. Diet includes insects and other arthropods. Clutches comprise 5–10 eggs, 14.5 x 16.5mm.

Emma Gray's Forest Lizard ■ *Calotes emma* 115mm

DESCRIPTION Body robust; head short; dorsal scales point backwards and upwards; cheek swollen in adult males; large spine above eyes and 2 above tympanum; fold in front of shoulder; nuchal and dorsal crests continuous; dorsum olive-brown, with dark brown dorsal bars or transverse spots; dark radiating lines from eyes; red gular sac in breeding males; pale dorsolateral stripe; belly greyish-cream. **DISTRIBUTION** North-eastern India and Bangladesh; also southern China and Southeast Asia. **HABITAT AND HABITS** Found in forested mid-hills. Diet includes insects. Clutches comprise 4–12 eggs, 11 x 17mm.



Jerdon's Forest Lizard ■ *Calotes jerdoni* 100mm
(Bengali Sabuj Raktachosha; Angami Naga Sokru)

DESCRIPTION Body robust; head large; dorsal crest present; nuchal crest weak; distinct fold in front of shoulder; dorsal scales larger than ventrals; 2 parallel rows of compressed scales above tympanum; dorsum bright green, with paired, black-edged brown bands, and yellow, orange or brown blotches; black and brown morphs also known; tail dark banded or spotted. **DISTRIBUTION** North-eastern India and Bhutan; also southern China and Southeast Asia. **HABITAT AND HABITS** Inhabits forested low hills. Diet includes insects. Clutches comprise 12 eggs. Hatchlings 70mm.



Whistling Lizard ■ *Calotes liolepis* 85mm
(Sinhalese Kalae Katussa, Sivuruhandalana Katussa)

DESCRIPTION Body stout; head elongated; tail long, slender, nearly 2.5 times head-body length; series of spines on nape make up dorsonuchal crest in males; enlarged scales on dorsum of body; midbody scale rows 33–39; ventral scales as large as those on flanks; forehead pale brown with pale interorbital bands; dorsum pale grey with dark grey bands, numbering 4 on body; limbs and tail similarly dark banded. **DISTRIBUTION** Central hills of Sri Lanka. **HABITAT AND HABITS** Found in submontane forests below 1,000m. Diet comprises insects and ants. Reproductive habits unknown.



Maria's Lizard ■ *Calotes maria* 120mm

DESCRIPTION Head large; body stout, compressed; scales on body point backwards and upwards; 2 parallel rows of compressed scales above tympanum; gular pouch absent; nuchal and dorsal crests developed; dorsum green, with red streaks on flanks and red spots on limbs and tail; head of breeding males red; belly greenish-white.

DISTRIBUTION

North-eastern India and Bhutan; also Myanmar.

HABITAT AND

HABITS Found in low forested hills. Diurnal and arboreal. Diet comprises arthropods. Reproductive habits unknown.



Moustached Forest Lizard ■ *Calotes mystaceus* 140mm (Manipuri Numityoungbi Chum)

DESCRIPTION Body robust; head large; cheeks swollen; 2–3 spines behind eye; fold in front of shoulder; dorsum greyish-brown, turning bright blue to turquoise, with 3–5 large dark spots on sides, during breeding season; lips white; belly greyish-cream.

DISTRIBUTION

North-eastern India;

also Southeast Asia.

HABITAT AND

HABITS Found in evergreen forests, entering parks and gardens. Diet includes insects. Clutches comprise 7 eggs, 10–11 x 15–18mm. Incubation period 60 days. Hatchlings 26mm.



Black-lipped Lizard ■ *Calotes nigrilabris* 105mm (Sinhalese Kaludekupul Katussa, Kalu Kopul Katussa)

DESCRIPTION Body robust; head one and a half times width; row of spines above and at back of tympanum; adult males have swollen cheeks; gular sacs not developed; midbody scale rows 42–50; ventrals larger than dorsals; dorsum green, unpatterned or with black-edged, cream-coloured transverse bars or eye-like spots; head has black markings; belly pale green.

DISTRIBUTION

Sri Lanka.

HABITAT AND HABITS

Found in submontane forests at 1,000m and above. Associated with tree trunks, hedges and shrubs. Diet consists of insects and worms. Clutches comprise 2 eggs, 23 x 13mm. Hatchlings 30mm.



Garden Lizard ■ *Calotes versicolor* 140mm

(Assamese Tejpia; Bengali Girgiti, Raktachosha; Dhivehi Bondu; Gujarati Dol Kanchido, Sarado, Saradi; Kannada Hente Goda; Hindi Girgit; Malayalam Ohnthoo; Manipuri Numityoungbi Chum; Marathi Sarda/Seda; Oriya Endua; Rajasthani Kangetia/Kirkanthia; Sindhi Shyee; Sinhalese Gara Katussa; Tamil Onnan, Wona; Telugu Thonda, Thota Balli; Urdu Girgit/Girgitan, Kafir Girgit)

DESCRIPTION Body stout; head rather large; scales on body point backwards and upwards; no fold or pit in front of shoulders; 2 separated spines above tympanum; colouration variable and also changeable, the head becoming bright red, and black patch on throat appearing in displaying males, fading to dull grey at other times; females may become yellow, changing to dull greyish-olive after mating.

DISTRIBUTION

India, Bangladesh, Bhutan, the Maldives, Nepal, Pakistan and Sri Lanka; also Iran, Afghanistan and Southeast Asia.

HABITAT AND HABITS

Found in forests as well as shrubs and hedges around human landscapes. Diet consists of insects and other invertebrates; unripe seeds also consumed. Clutches comprise 6–23 eggs, 10–11 x 4–5mm. Incubation period 42–67 days.



Male in display (NE India)



Male in display (S India)

Rough-horned Lizard ■ *Ceratophora aspera* 35mm
(Sinhalese Punchi Ang Katussa, Ralu Angkatussa)

DESCRIPTION Body slender; 2 enlarged, conical ridged scales at back of head; 'X'-shaped dorsal ridge at back of head; tympanum hidden; weak dorsonuchal crest confined to neck region; gular fold absent; body slightly compressed; lamellae under fourth toe 11–14; dorsum of males dark brown or brick-red; females similar or lighter; some individuals have 4 diamond-shaped marks, and black spots or longitudinal lines on dorsum. **DISTRIBUTION** Sri Lanka. **HABITAT AND HABITS** Found in moist lowlands and submontane dipterocarp forests, below 900m. Diet unknown. Clutches comprise 2 eggs.



Rhinoceros-horned Lizard

■ *Ceratophora stoddartii* 85.6mm
(Sinhalese Kagamuva Angkatussa, Rhino Angkatussa)

DESCRIPTION Body slender; head oval, longer than wide; rostral appendage long, horn-like, and two-thirds length of snout in males, reduced or absent in females; dorsum brownish-green or yellowish-brown; tail has 10–16 dark brown bands; belly light brownish-grey. **DISTRIBUTION** Sri Lanka. **HABITAT AND HABITS** Found in montane forests. Associated with trees 1–2m above ground. Diet consists of arthropods. Clutches comprise 2–5 eggs, 7.6–8 x 13.5–14.5mm. Incubation period 81–90 days.



Leaf-nosed Lizard ■ *Ceratophora tennentii* 88.5mm
(Sinhalese Pathra Angkatussa, Pethi Angkatussa)

DESCRIPTION Body slender; head oval, longer than wide; rostral appendage fleshy, laterally compressed, with blunt conical scale at tip; dorsum reddish-brown to olive-green; flank scales more green; ocular region and sides of neck have dark markings; tail has 10 dark brown bands; belly cream coloured. **DISTRIBUTION** Knuckles Massif of Sri Lanka. **HABITAT AND HABITS** Found in submontane forests at 760–1,220m. Arboreal, associated with tree trunks. Diet includes insects and their larvae. Clutches comprise 3–4 eggs.



Pygmy Lizard ■ *Cophotis ceylanica* 60mm
(Sinhalese Kandukara Katussa, Kuru Bodiliya)

DESCRIPTION Body stout, compressed; head narrow; long dorsonuchal crest developed; temporal scales with 3–5 large, conical scales; tympanum absent; tail short and prehensile; dorsal scales enlarged; gular sac laterally compressed; preanal and femoral pores absent; dorsum olive-green, with darker markings forming 3 bands on body and more on tail; light spot on nape; broad stripe along anterior of body and one in front of eyes; limbs dark banded. **DISTRIBUTION** Sri Lanka. **HABITAT AND HABITS** Found in montane regions at 1,300–1,900m elevation. Diet unknown. Clutches comprise 4–5 live young, 47–50mm.



Bay Islands Forest Lizard ■ *Coryphophylax subcristatus* 100mm
(Karen Po-tenu)

DESCRIPTION Body slender; dorsal crest present; dorsal scales small, intermixed with larger scales; preanal and femoral pores absent; cheeks swollen in adult males; ventral scales strongly keeled; dorsum brownish-olive, unpatterned, spotted or striped with dark brown; juveniles more green than adults, with dark cross-bars; belly light brown.

DISTRIBUTION Andaman and Nicobar Islands, India.

HABITAT AND HABITS Found in lowland rainforests and plains, including edges of mangrove forests. Diet consists of insects. Clutches comprise a single large egg.



Norville's Flying Lizard

■ *Draco norvillii* 96mm

DESCRIPTION Body slender; nostrils directed upwards; tympanum covered with small scales; 5 ribs supporting wing membrane; males have tail crest; dorsum greenish-olive to pale green; wing membrane pale green towards body, darker on edges, with wide, dark grey bands; peripheral third of wing membrane orangish-red; belly yellow; gular pouch orangish-yellow; base grey with light spots at border with lateral pouches.

DISTRIBUTION North-eastern India; also adjacent Myanmar. **HABITAT AND HABITS** Inhabits evergreen and moist deciduous forests, and also plantations. Diet and reproductive habits unknown.

Anderson's Mountain Lizard ■ *Japalura andersoniana* 75mm

DESCRIPTION Body slender, compressed; tail long; tympanum concealed; enlarged scales on dorsum parallel to median row; nuchal crest distinct in adult males; throat-fold present; dorsum dark brown with dark, inverted 'V'-shaped pattern; dark ocular region; tan streak from eye to edge of mouth; throat of males variable, and may be orange confined within green spot, or blue-and-white stripes, with yellow with orange or green spot; belly cream coloured. **DISTRIBUTION** North-eastern India; also southern China. **HABITAT AND HABITS** Found in montane forests in hilly country, at 850–1,980m. Diet comprises insects. Reproductive habits unknown.



Kumaon Mountain Lizard ■ *Japalura kumaonensis* 60mm

(Urdu Kumaon Kirail)

DESCRIPTION Body slender, somewhat compressed; tail long; postorbital spine absent; tympanum exposed; preanal and femoral pores absent; enlarged scales on dorsum parallel to median row; throat-fold absent; dorsum greyish-brown with dark, inverted 'V'-shaped marks; sides with dark reticulation; forehead has dark cross-bars; belly cream coloured, sometimes with darker markings.

DISTRIBUTION Northern India and Nepal. **HABITAT AND HABITS** Found in montane forests in hilly country. Diet comprises insects. Reproductive habits unknown.



Smooth-scaled Mountain Lizard ■ *Japalura planidorsata* 50mm

DESCRIPTION Body slender, not compressed; dorsal and nuchal crests comprise spinose ridges; tail rounded; tympanum concealed; short axillary fold present; dorsum pale to mid-



brown, paler on vertebral region; lips cream or yellow; belly pale brown or cream. **DISTRIBUTION** North-eastern India; also Myanmar. **HABITAT AND HABITS** Found in forested hills and plains. Diet comprises insects. Reproductive habits unknown.

Kashmiri Rock Agama ■ *Laudakia tuberculata* 140mm (Nepali Cheparo, Pahari Chalwar; Urdu Neela Kirla)

DESCRIPTION Body robust, flattened; throat scales keeled; patch of enlarged scales on mid-flanks; tail has distinct segmentation, each segment composed of double whorls of scales; dorsum dark olive-brown, dark-spotted in juveniles, with spots broken up to form speckled pattern of dark brown and yellow; chest, shoulder and flanks have orange or yellow spots; belly brown or cream coloured. **DISTRIBUTION** Northern India, Nepal and Pakistan; also Afghanistan. **HABITAT AND HABITS** Found in rock crevices, in colonies or singly. Breeding males develop bright blue colouration, when they bob their heads. Diet consists of insects, spiders, millipedes, centipedes, butterflies and flower petals. Clutches comprise 6–13 eggs, 20–22 x 11–12mm. Incubation period 31 days.



Hump-nosed Lizard ■ *Lyriocephalus scutatus* 185mm (Sinhalese Karamal Bodiliya, Kandhu Bodiliya)

DESCRIPTION Body laterally compressed; distinct bony arch on head of adults, with pair of small spines; dorsonuchal crest developed; forehead scales keeled; tympanum absent; 'V'-shaped gular fold; large, keeled gular scales; tail short, compressed, with blunt tip; dorsum light green, throat yellow, belly cream coloured. **DISTRIBUTION** Sri Lanka. **HABITAT AND HABITS** Found in forests in wet lowlands and mid-hills, at 25–1,650m. Arboreal and semi-terrestrial; occurs on low trees as well as on the ground. Diet consists of earthworms, termites, butterflies and moths, and young shoots and buds. Clutches comprise 1–11 eggs, 12–13 x 20–22mm. Incubation period 35–36 days.



Sri Lankan Kangaroo Lizard ■ *Otocryptis wiegmanni* 69mm (Sinhalese Kala Katussa, Pinun Katussa, Thalli Katussa, Yak Katussa)

DESCRIPTION Body compressed; snout blunt; eyes large; weak dorsal crest on neck only; males have large gular sac but no gular fold; shallow pit in front of shoulder; tympanum hidden; limbs long and slender; tail rounded, long, nearly 2.5 times length of head and body; femoral pores absent; dorsum brown with lighter and darker markings. **DISTRIBUTION** Sri Lanka. **HABITAT AND HABITS** Found in lowlands and mid-hills, to 1,200m. Associated with leaf litter, particularly near forest streams. Diet includes insects and their larvae, and vegetation such as tender shoots. Clutches comprise 3–5 eggs, 7–7.5 x 10–17mm. Incubation period 57–70 days.



Caucasian Agama ■ *Paralaudakia caucasia* 153mm
(Urdu Kohkaf Ka Kirla)

DESCRIPTION Body robust; throat scales smooth; patch of enlarged scales on midflanks; tail has distinct segmentation, with each segment composed of double whorls of scales; dorsum olive, dark brown or yellow-ochre; head and tail lighter; dorsum has numerous dark-edged orange ocelli that are indistinct posteriorly; throat of males spotted



with bright yellow; belly unpatterned dark grey. **DISTRIBUTION** Northern India and Pakistan; range extends west to Turkey, Central Asia and Iran. **HABITAT AND HABITS** Found in rocky outcrops, including cliffs and boulders along river banks. Diurnal, basking on hot rocks during day. Diet consists of lizards and insects. Clutches comprise about 12 eggs.

South Indian Rock Agama ■ *Psammophilus dorsalis* 135mm
(Tamil Thendel)

DESCRIPTION Body robust, depressed; dorsal crest or gular sac absent; head large; limbs small; scales uniform, keeled; deep fold in front of shoulder; similar to **Blanford's Rock**



Agama *P. blanfordianus*, except has 115–150 scales around middle of body and is larger; dorsum of adult males brown, with dark brown or black stripe along flanks; belly yellow; juveniles and adult females olive-brown, with dark brown spots and speckles and white areas on sides of neck; upper body of adult males bright red or orange in breeding season. **DISTRIBUTION** Peninsular India. **HABITAT AND HABITS** Found in rocky biotopes in scrub country, as well as deciduous forests. Diet includes insects. Clutches comprise 7–8 eggs, 6 x 12mm.

Green Fan-throated Lizard ■ *Ptyctolaemus gularis* 80mm

DESCRIPTION Body slender, compressed; head long and slender; dorsal scales keeled; dorsal crest absent; 3 longitudinal folds on each side of throat curve to meet on back; gular sac; dorsum olive-brown; fold on back deep blue; 5 broad transverse bands on body; green dorsolateral band on front flanks; sides have network of dark brown enclosing rounded areas of green. **DISTRIBUTION** North-eastern India, Bhutan and Bangladesh; also southern China. **HABITAT AND HABITS** Found in submontane and lowland forests. Arboreal and diurnal. Diet consists of insects, spiders and soil arthropods. Clutches comprise 14–15 eggs, 7–12.5mm.



Hardwicke's Spiny-tailed Lizard ■ *Saara hardwickii* 350mm
(Gujarati Sandho, Sandno; Hindi Mehta, Sanda; Punjabi Salma, Sana, Sonder; Sindhi Sonder; Urdu Maidani Sanda)

DESCRIPTION Body stout and depressed; head large, tympanum large; tail thick at base, short, depressed, covered with large, squarish spinose scales, largest on sides; front teeth large; preanofemoral pores 12–18; dorsum yellowish-brown, with indistinct brown spots and reticulation; radiating dark streaks from eyes; belly cream coloured. **DISTRIBUTION** Western India and eastern Pakistan. **HABITAT AND HABITS** Found in desert edges, semi-deserts and scrub forests, especially on hard ground with compact loess. Diurnal and terrestrial as well as fossorial, burrowing up to 3m deep. Diet consists of grasses, and insects such as locusts and beetles. Clutches comprise up to 15 eggs, 20–30mm.



Horsfield's Spiny Lizard ■ *Salea horsfieldii* 250mm

DESCRIPTION Body robust, compressed; head large; dorsal crest distinct, discontinuous with nuchal crest; no fold in front of shoulder; dorsal scales equal; dorsum green or greyish-cream, with dark grey or dark brown cross-bars or irregular blotches on dorsum and flanks; dark band, edged with white, runs from eye to shoulder; belly cream coloured, spotted with brown. **DISTRIBUTION** Western Ghats of south-western India. **HABITAT AND HABITS** Found in submontane and lowland forests. Arboreal and diurnal. Diet includes insects. Clutches comprise 3–4 eggs.



Sri Lankan Fan-throated Lizard ■ *Sitana bahiri* 60mm

(Sinhala Pullibin Katussa, Vali Katussa; Tamil Visiri Wona)

DESCRIPTION Body slender; snout rather acute; tympanum present; hindlimbs elongated, with only 4 toes; scales keeled; femoral pores absent; tail long and slender; dewlap large, projecting, in males; gular fold absent; dorsum brown, with dark brown to greyish-brown, black-edged, diamond-shaped marks; tan-coloured stripe from tympanum to above axilla; mouth lining dark blue; dewlap blue on outer face, the rest cream coloured with large orange scales; belly cream coloured. **DISTRIBUTION** Northern and eastern Sri Lanka. **HABITAT AND HABITS** Found in coastal scrub forests. Diurnal and terrestrial. Diet includes arthropods. Reproductive habits unknown.



Eastern Fan-throated Lizard ■ *Sitana ponticeriana* 80mm

(Tamil Sit Wona, Thadi Onnan, Visiri Onnan)

DESCRIPTION Body slender; snout rather acute; tympanum present; hindlimbs have 4 toes; scales keeled; femoral pores absent; tail long and slender; dewlap large, projecting, in males; gular fold absent; enlarged scales of dewlap reach mid-belly; dorsum brown, with dark brown, black-edged, diamond-shaped marks; mouth lining dark blue; dewlap blue on tip, dark blue in middle and red at base; belly cream coloured. **DISTRIBUTION** Peninsular India. **HABITAT AND HABITS** Found in scrub forests and on sea beaches. Diurnal and terrestrial. Diet includes termites, beetles and bugs. Clutches comprise 6–8 eggs, 6 x 10mm.



Brilliant Ground Agama ■ *Trapelus agilis* 115mm

(Sindhi Karrun; Urdu Maidani Korh-kirla)

DESCRIPTION Body robust; head enlarged; dorsal scales subequal, with no enlarged scales; middorsal scale rows 60–76; dorsum grey, brown or sandy-yellow, with dark brown or red cross-bars, comprising vertebral and 1–2 dorsolateral light oval spots; throat of breeding males blue, their tails bright yellow with dark brown bands; flanks and belly marked with purple; belly of non-breeding males and females cream, streaked with brown. **DISTRIBUTION** Western India and Pakistan; range extends west to Russia, western China, Iran and Iraq. **HABITAT AND HABITS** Found in flat, dry alluvial or stony and sometimes hard soil, with prickly bush and scrub. Diurnal and terrestrial. Diet consists of grasshoppers. Clutches comprise 2 eggs.

