Abstract.- We present an inventory of the herpetofauna of the Nallamala Hills, Eastern Ghats, south-eastern India. The fauna, as currently known, includes 20 species of amphibians belonging to 14 genera in six families and 64 species of reptiles belonging to 42 genera in 15 families. Divided in habitat types, the herpetofauna can be classified into species tolerant of disturbed habitats; exclusively scrub species (and for reptiles, from rocky biotopes); scrub and bordering agricultural fields; and exclusively mesic forest species. For one species, lack of ecological information precludes its allocation to a specific habitat category. Significant diversity of squamates (including gekkonids, scincids, and colubrids) are known from these ranges, several of which endemic or largely restricted to scrub forests of Peninsular India. Mesic forests remain poorly explored, and support hitherto undescribed species among the herpetofauna. Adaptations seen amongst the herpetofauna of the Nallamala Hills include a diversity of dietary and habitat types, including, among amphibians, ant specialists; predators of small vertebrates; folivores; fossorial; terrestrial; aquatic or aquatic-margin; and arboreal forms. Amongst reptiles, adaptive types includes ant- and worm-eaters; predator of crop pests; predator of small or medium-sized vertebrate prey; egg-predators; fish-eaters; frog- and toad-eaters; and one near-exclusive snake-eater. In terms of habitat usage, reptiles exceed amphibians in species richness, on account of their greater capacity of surviving in relatively arid regions.

The Eastern Ghats contributes significantly to both species richness and endemicity of the Indian region, including representatives of endemic genera and species. Nonetheless, these hills continue to receive less attention for conservation compared to the relatively better-known Western Ghats.

Keywords.- Amphibians, reptiles, biodiversity, ecology, Nallamala Hills, Eastern Ghats, India.

Introduction

Nallamala Hills (14° 26′ – 16° 31′ N and 78° 30′ – 80° 10′ E) are a group of low hill ranges with an average altitude of ca. 500 m in the central Eastern Ghats complex in the state of Andhra Pradesh, south-eastern India (Fig. 1). From the Palnad Basin in the north to the Tirupati Basin in the south, the Nallamala Hills runs for a distance of ca. 430 km with an average width of 30 km (Anon, 1965; Srinivasulu and Nagulu, 2002). An unbroken chain of rugged hills with precipitous cliffs covering an area of ca. 7,640 km², it encompasses six districts (Nalgonda, Mahbubnagar, Kurnool, Cuddapah, Prakasam and Guntur) in Andhra Pradesh State. Running parallel to it in the south-eastern side is the Balapalli and Palakonda Ranges, while on the western side, towards the north, are the Erramala Range. The vegetation is typically of the southern tropical dry deciduous and southern tropical moist deciduous forest types intermingled with scrub (Champion and Seth, 1968), although the Nallamalas show representatives of many vegetation types known from the Eastern Ghats, including dry deciduous, moist deciduous, dry evergreen, riverine and scrub forest (see R. K. Rao, 1998; R. S. Rao, 1998). Dry deciduous forests are dominant. Common species found here include Antidesma acidum, Canthium parviflorum, Cerisoides turgida, Cissus pallida, Dalbergia lanceolaris, Dalbergia paniculatum, Diospyros melanoxylon, Ehretia laevis, Lagerstroemia parviflora, Pterocarpus marsupium, Syzygium alternifolium, and Tamilnadia uliginosa. A forest type with Boswellia serrata and Chloroxylon swietenia as the dominant species occurs near Chalama, a Terminalia coriacea and Anogeissus latifolia type occur in eastern Nallamala, a Phoenix type with Phoenix loureivie as the dominant species forming a pure stand on rocky substrata occur between Ramannapenta and Gundla Brahmeshwaram Metta Wildlife Sanctuary (GBM). Moist deciduous forests are restricted to sheltered sites with high rainfall such as GBM, upper Ahobilam and Iskagundam; common species include: Careya arborea,
Dillenia pentagyna, Ficus hispida, Barleria strigosa, Adiantum lunulatum, Oroxylon indica, Trema orientalis and Pimpinella wallichiana. The Nallamalas are home to many endemic species of Eastern Ghats including: Andrographis nallamalayana, Ericaulon lushingtonii, Dicliptera beddomei, Premna hamiltonii, Euphorbia linearifolia var. nallamalayana, Rostellularia vahlii, Andrographis beddomei, Rostellularia vahlii var. rupicola, Boswellia ovalifoliata, Cycas beddomei, Chaemaesyce linearifolia, Chaemaesyce senguptae, Crotalaria madurensis, Crotalaria paniculata nagarjunakondensis, Indigofera barberi, Pterocarpus santalinus, Albizia sikharamensis, and Eriolaena lushingtonii. Pterocarpus marsupium and Cycas beddomei are well known endemics. Another interesting feature of the flora is the exhibition of gigantism as exemplified by the shrubby climber Marsdenia tenacissima, the leaves of which measure up to 32 cm. Other climbers such as Bauhinia vahlii and Entedra pursetha are dominant over other vegetation. The climate is generally hot and dry with temperatures rising up to 43–45°C during May and dropping to 8–12°C in December. The Nallamala Hills receive an average 900–1,000 mm rainfall annually.

The Nallamala Hill Range has been conveniently divided into three zones (Fig. 1): i.) the Northern Nallamala Hills (the expanse of hill ranges between the Palnad Basin and the River Krishna that flows approximately 130 km through the hills); ii.) the Central Nallamala Hills (the expanse of hill ranges between the River Krishna and the British railway track between Nandyal and Guntur passing through Chalama, Bogada, and Diguvametta); and iii.) the Southern Nallamala Hills (the expanse of hills between the British railway track and the Tirupati basin near Rajampet (14° 11’ N and 79° 10’ E). Two contiguous protected areas, the Nagarjunasagar Srisailam Tiger Reserve and the Gundla Brahmeshwaram Metta Wildlife Sanctuary (with a collective area of 4,762 km²) have been set aside to conserve the rich biodiversity of this tract.

The first of the faunal surveys conducted in the Nallamala Hills dates back to 1930 when the ornithologist, Sálim Ali (1896–1987), of the Bombay Natural History Society, collected bird specimens from Mannanur and Farahabad on the Amrabad Plateau in the Northern Nallamala Hills during the Hyderabad State Ornithological Survey (see Lozupone et al., 2004, for a gazetteer of localities; Srinivasulu and Nagulu, 2002).
Subsequently, the Zoological Survey of India conducted two faunistic surveys to collect vertebrate fauna in the vicinity of the area in the Northern Nallamala Hills that was to be submerged due to the construction of the Nagarjunasagar Dam on River Krishna. Between 1980 to present date many surveys and other studies (Agrawal and Bhattacharyya, 1976; Bhushan 1986, 1994; Murthy, 1968, 1986; Nagulu et al., 1998; Rao et al., 1997; Rao et al. 1999; Rao et al., 2005; Rao et al., 2004a, b, c, d; Reddy et al., 2004; Sharma, 1969, 1971, 1976; Srinivasulu and Nagulu, 2002; Srinivasulu and Rao, 1999; Srinivasulu and Rao, 2000; Srinivasulu, 2001b, 2002, 2003) have been conducted documenting the faunal elements found in the Nallamala Hills.

**History of Herpetofaunal Studies**

The earliest zoological collections from these hill ranges were made by Thomas Claverhill Jerdon (1811–1872), a member of the Asiatic Society, and also an important contributor to mammalogy, ornithology, and herpetology (see Das, 2004, for a brief biographic account). Jerdon’s papers were published in the Journal of the Asiatic Society of Bengal. As Civil Surgeon of Nellore in 1842, Jerdon collected extensively in the then poorly-known region between Madras and Nellore, discovering many novelties amongst the vertebrate fauna, and most famously, the Jerdon’s courser, *Rhinoptilus bitorquatus* (see an account in Bhushan, 2003). As a result of his collections during the time, the following now familiar herpetological species were described by Jerdon himself: *Microhyla rubra* (Jerdon, 1854), *Hoplobatrachus crassus* (Jerdon, 1854), *Hemidactylus subtriedrus* Jerdon, 1853, and *Oligodon taeniolatus* (Jerdon, 1853).

The Zoological Survey of India undertook the first herpetological survey of the Nallamala Hills, between 1962 and 1963 (reported by Murthy, 1968; Sharma, 1969; 1971; 1976). As part of the Eastern Ghats Herpetological Survey, Dr. Hem Singh Pruthi (1906–1953), Plant Protection Adviser to the Government of India and entomologist with the ZSI (see Lal, 1954, for an obituary), collected herpetofauna from the Nallamala Hills in 1929 which were identified by Dr. Malcolm Arthur Smith. Under the State Faunal Diversity Documentation Project, initiated by the Survey, additional specimens were collected from localities in the Nallamala Hills (Murthy, 1986; Sanyal et al., 1993; Sarkar et al., 1993).

The first author of the present report made observations on the herpetofauna of Northern and Central Nallamala Hills between late 1995 and early 2000. A research team from the Department of Zoology, Osmania University, Hyderabad, also documented the herpetofaunal diversity while executing an Andhra Pradesh Forest Department-sponsored project on the effects of man-made barriers on wildlife in Gundla Brahmeshwaram Metta Wildlife Sanctuary in the Central Nallamala Hills, between 1998 and 2000. Observations on the herpetofauna diversity made during these two studies between 1995 and 2000 have been listed in an unpublished document (Srinivasulu, 2001a). The Andhra Pradesh Forest Department, in collaboration with Department of Botany, Sri Krishnadevaraya University, Anantapur (for flora) and Department of Zoology, Osmania University, Hyderabad (for fauna) initiated All Taxa Biodiversity Inventorization Project in 2001 (Rao et al., 2004e) in which the first author was involved. Voucher specimens of amphibians and reptiles collected during this project have been deposited in the State Forest Department’s Eco-Resource Monitoring Lab, located in Sunnipenta, Kurnool District. Between 3 – 16 June 2003, CS along with a research scholar from Zoological Survey of India, Hyderabad, and other volunteers visited Nagarjunasagar Srisailam Tiger Reserve to study the voucher specimens of the herpetofauna in Eco-Resource Monitoring Lab, Sunnipenta and collect fresh voucher specimens to be deposited in the National Zoological Collection housed at the Freshwater Biological Station of the Zoological Survey of India, Hyderabad, India (Srinivasulu et al., 2006).

**Materials and Methods**

Literature review and faunistic surveys by the first author for acquiring voucher specimens, both for the Andhra Pradesh Forest Department (January 2001 to June 2003) and the Zoological Survey of India (June 2003), and records of observations made by the first author between December 1995 to December 2004 in the Nallamala Hills form the basis of the diversity of herpetofauna reported here. Voucher specimens collected following techniques detailed in Heyer et al. (1994), including collections along 100–200 m transects and sampling within 50 sq m quadrats, at elevations between 150–570 m ASL. Vegetation in the area of sampling is dry deciduous and scrub forest types. Several moist deciduous forest patches were also surveyed, including along seasonal streams, particularly for amphibians. Specimens were preserved and were deposited both at the State Forest Department Collection housed at ERM Labs, Sunnipenta, Kurnool District and the National Zoological Collection at the Freshwater Biological Station, Zoological Survey of India, Hyderabad. Certain large-growing (and threatened/protected) species considered easily-identifiable in the field (e.g., *Crocodylus palustris* and *Python molurus*) were not collected. Photographic vouchers were deposited in the Natural History Museum at the Department of Zoology, Osmania University, Hyderabad. All records from the southern Nallamala Hills are based on sight records.
The annotated lists of amphibians and reptiles provided below include information on their distribution in the Nallamala Hills, their habitat and qualitative impressions of abundance. Details of the vouchers are also provided. If the voucher specimen/s and/or photographic voucher are present, they are indicated by [S] or [P] followed by abbreviation of the place where housed. Abbreviations used include: ZSIK (National Zoological Collection, Zoological Survey of India, Kolkata), ZSIH (National Zoological Collection, Freshwater Biological Station, Zoological Survey of India, Hyderabad), ERM (Eco-Resource Monitoring Lab, Andhra Pradesh Forest Department, Sunnipenta), and NHMOU (Natural History Museum, Department of Zoology, Osmania University, Hyderabad). Nomenclatural remarks concerning species are for those names that are different from that generally prevailing in the literature in Indian herpetology, especially the Fauna of British India volumes by Smith (1931–43).

**Results**

The herpetofauna of the Nallamala Hills, as currently known, includes 20 species of amphibians belonging to 12 genera in four families and 64 species of reptiles belonging to 42 genera in 15 families. Recently, Rao et al. (2005) published an account of herpetofauna of the Nallamala Hills putting on record about 66 species of herpetofauna (including 18 species of amphibians in 11 genera in 4 families and 48 species of reptiles in 34 genera in 12 families) based on collections made from 16 locations between 15° 35'N (Isukagundam) to 16° 37' N (Vijayapuri) and 78° 39'E (Saileshwaram) to 79° 17' E (Vijayapuri) between November 2001 and September 2004. Rao et al.’s (2005) paper suffers from numerous problems (including misidentifications and erroneous nomenclature, in addition to dubious first record claims), and grossly under-represents the herpetofauna of the region, while ignoring to emphasize the endemic reptiles of the Nagarjunasagar area.

Of the herpetofaunal species listed in this work, voucher specimens of 76 species are either at the National Zoological Collection of the Zoological Survey of India, at Kolkata (48 species) and Hyderabad (20 species) or in the Eco-Resource Monitoring Laboratory, Sunnipenta (62 species). Vouchers of 11 species are at Kolkata, and 14 are at Sunnipenta. Eight taxa listed in this report are either based on literature reports or on sightings.

### Annotated List of Amphibians

**Order: Anura**

**Family: Bufonidae**

1. *Bufo stomaticus* Lütken, 1862
   Northern (Sarkar et al., 1993; Srinivasulu et al., 2006), Central (Srinivasulu et al., 2006) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Common. [S] ZSIK (A1844, A1141), ZSIH (ZSI/FBS/N/1148, 1150–1153).

2. *Bufo scaber* Schneider, 1799
   Northern (Srinivasulu et al., 2006), Central (Rao et al., 2005; Srinivasulu et al., 2006) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Uncommon. [S] ERM (ERMA–5a); [P] NHMOU (NHMOU.Amph.P.1–03).
   Remarks: First record claim from the region by Rao et al. (2005) is erroneous as it has been already reported from the Nallamala Hills by Subba Rao et al. (1994). Dubois and Ohler (1999) showed that *Bufo scaber* Schneider, 1799 has priority over *Bufo fergusonii* Bouleneger, 1892.


**Family: Dicroglossidae**

4. *Euphylyctis cyanophlyctis* (Schneider, 1799)
ERM (ERMA–3a); [P] NHMOU (NHMOU.Amph.P.7–03).
Remarks: *Euphlyctis* Fitzinger, 1843 was revived from synonymy of *Rana* Linnaeus, 1758 by Dubois (1992).

5. *Euphlyctis hexadactylus* (Lesson, 1834)
Northern (Rao et al., 2005; Srinivasulu et al., 2006), Central (Rao et al., 2005; Srinivasulu et al., 2006) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Abundant. [S] ERM (ERMA–10a); [P] NHMOU (NHMOU.Amph.P.8–03).

6. *Fejervarya cf. limnocharis* (Gravenhorst, 1829)
Remarks: *Fejervarya* Bolkay, 1915 was recognized as a subgenus of *Rana* Linnaeus, 1758 by Dubois (1992), and as a genus by Iskandar (1998).

7. *Hoplobatrachus crassus* (Jerdon, 1854) Jerdon’s Bull Frog
Northern (Sanyal et al., 1993; Srinivasulu et al., 2006), Central (Rao et al., 2005) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Abundant. [S] ZSIK (A1843, A6945, A8409–14), ERM (ERMA–13a); [P] NHMOU (NHMOU.Amph.P.10–03).
Remarks: *Hoplobatrachus* Peters, 1863 was revived from synonymy of *Rana* Linnaeus, 1758 by Dubois (1992). See also Grosjean et al. (2004).

8. *Hoplobatrachus tigerinus* (Daudin, 1803)
*Rana tigerina* F.-M. Daudin. 1803. Hist. Nat.: 64; Pl. XX.
Northern (Sanyal et al., 1993; Srinivasulu et al., 2006), Central (Rao et al., 2005; Sanyal et al., 1993; Srinivasulu et al., 2006) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Abundant. [S] ZSIK (A6944, A8443–45, A1138–39, A1995), ZSIH (ZSI/FBS/N/1145), ERM (ERMA–12a);

9. *Sphaerotheca breviceps* (Schneider, 1799)
Northern (Srinivasulu et al., 2006), Central (Rao et al., 2005; Sanyal et al., 1993; Srinivasulu et al., 2006) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Abundant. [S] ZSIK (A8400, A8448, A1940), ZSIH (ZSI/FBS/N/1143, 1144, 11461, 1147, 1155–58), ERM (ERMA–12a); [P] NHMOU (NHMOU.Amph.P.11–03).
Remarks: Rao et al. (2005) included an erroneously identified photograph (image 13 at www.zoosprint.org/), which is, in fact, that of *Sphaerotheca dobsonii*, a taxon that also is present in the Nallamala Hills (see below). In support of long-separated evolutionary lineages, representing distinct monophyletic radiations of the Africa, Madagascar and southern Asia, Vences et al. (2000) argued for the partition of *Tomopterna* into three lineages. Thus, the earliest available name for the Asian species is *Sphaerotheca*.

10. *Sphaerotheca dobsonii* (Boulenger, 1882)
*Rana dobsonii* G. A. Boulenger. 1882. Cat. Bat. British Mus.: 32; Pl. 3, Fig. 1.
Northern (Srinivasulu et al., 2006), Central (Srinivasulu et al., 2006) and Southern Nallamala Hills. Scrub, open forests. Uncommon. [P] NHMOU (NHMOU.Amph.P.12–03).

11. *Sphaerotheca rolrandae* (Dubois, 1983)
Remarks: Rao et al.‘s (2005) claim of this taxon (as *Tomopterna rolrandae*) as the first record from Andhra Pradesh is based on erroneous identification. The voucher specimen and the photograph included in the report are that of *Sphaerotheca breviceps* (image 14 at www.zoosprint.org/).

Family: Microhylidae

12. *Kaloula taprobanica* Parker, 1934
Remarks: The first record of its occurrence in Andhra Pradesh reported by Rao et al. (2005) is erroneous, as Sivakumar et al. (2003) had reported its occurrence in the State from Sriharikota Island Nellore District. Rao et al. (in review, a) puts on record for its occurrence in the Nallamala Hills.
13. Microhyla ornata (Duméril and Bibron, 1841)

14. Microhyla rubra (Jerdon, 1854)
Northern (Srinivasulu et al., 2006), Central (Rao et al., 2005; Sarkar et al., 1993; Srinivasulu et al., 2006) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Uncommon. [S] ZSIK (A8403), ZSIH (ZSI/FBS/N/1140, 1161), ERM (ERMA–11a); [P] NHMOU (NHMOU.Amph.P.14–03).

15. Ramanella variegata (Stoliczka, 1872)
Central (Srinivasulu et al., 2006) and Southern Nallamala Hills. Scrub and open to close forests. Uncommon. No vouchers, based on sightings.

16. Uperodon globulosus (Günther, 1864)
Central (Rao et al., 2005; Sanyal et al., 1993; Srinivasulu et al., 2006) Nallamala Hills. Scrub and open forests. Rare. [S] ZSIH (ZSI/FBS/N/1138), ERM (ERMA–7a); [P] NHMOU (NHMOU.Amph.P.4–03).

17. Uperodon systoma (Schneider, 1799)
Northern (Rao et al., 2005; Srinivasulu et al., 2006), Central (Rao et al., 2005; Sanyal et al., 1993; Srinivasulu et al., 2006) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Common. [S] ZSIH (ZSI/FBS/N/1142, 1149, 1154), ERM (ERMA–2a); [P] NHMOU (NHMOU.Amph.P.6–03).

18. Indirana leithii (Boulenger, 1888)
Northern (Srinivasulu et al., 2006) and Central (Srinivasulu et al., 2006) Nallamala Hills. Scrub forests. Rare. [S] ERM (ERM/A24).
Remarks: Indirana Laurent, 1986 was revived from synonymy of Rana Linnaeus, 1758 by Dubois (1992). This species had been sighted on two occasions near Rollapenta in Central Nallamalla Hills and on one occasion near Ahobilam in Southern Nallamala Hills by the first author (Srinivasulu et al., 2006), who has also studied a single specimen in the collection of ERM Labs (ERM/A24), Sunnipenta that had been identified by Varad Giri of the BNHS.

Family: Ranidae

19. Hylarana sp.
Central (Rao et al., 2005; Rao et al., in review, b) Nallamala Hills. Riparian forest. Rare. [S] ERM (ERMA–14a).
Remarks: The systematic status of the population, referred to Rana temporalis (Günther, 1864) by previous workers, is under study by the second author, who assigns it to Dubois’ (1992) subgenus Sylvirana, elevated to generic rank in Frost et al. (2006). Currently this generic name is a synonym of Hylarana (See Frost et al., 2007).

Family: Rhacophoridae

20. Polypedates maculatus (Gray, 1834)
Hyla maculata J. E. Gray. 1834. Ill. Indian Zool.: Pl. LXXXII; Fig. 1.
Northern (Rao et al., 2005; Sanyal et al., 1993; Srinivasulu et al., 2006), Central (Rao et al., 2005; Sanyal et al., 1993; Srinivasulu et al., 2006) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Abundant. [S] ZSIK (A8403), ZSIH (ZSI/FBS/N/1140, 1161), ERM (ERMA–11a); [P] NHMOU (NHMOU.Amph.P.14–03).

Annotated List of Reptiles

Order: Crocodilia

Family: Crocodylidae

1. Crocodylus palustris Lesson, 1831
Northern Nallamala Hills. Under the Central Government sponsored crocodile rehabilitation programme, some crocodiles were reintroduced both at backwaters of Nagarjunasagar Reservoir in Vijaypuri vicinity, Srisailam Reservoir and Ethipothala (described by Srinivas et al., 1999). Their numbers have dwindled due to poaching, but some crocodiles do survive in both these areas. No vouchers, based on the literature and indirect evidence.
**Order: Chelonia**

**Family: Geoemydidae**

2. *Melanochelys trijuga* (Schweigger, 1812)

Northern, Central and Southern Nallamala Hills. Waterbodies, streams and rivers. Uncommon. No vouchers, based on sightings.
Remarks: Assumed, on the basis of locality, to belong to the nominotypical form.

3. *Pangshura tentoria* (Gray, 1834)

Northern, Central and Southern Nallamala Hills. Waterbodies, streams and rivers. Uncommon. No vouchers, based on sightings.

**Family: Testudinidae: Tortoises**

4. *Geochelone elegans* (Schoepff, 1795)

*Testudo elegans* J. D. Schoepff. 1795. Hist. Test. 3: 111; Pl. XXV.
Remarks: First reported from the Nallamala Hills by Subba Rao et al. (1994).

**Family: Trionychidae**

5. *Nilssonia gangetica* (Cuvier, 1825)

Remarks: The generic nomen *Aspideretes* Hay, 1904, was revived from the synonymy of *Trionyx* Geoffroy Saint-Hillaire, 1809 by Meylan (1987). Praschag et al. (2007) placed *Aspideretes* in the synonymy of *Nilssonia*, but provided an incorrect (feminine) termination of the species name.

6. *Nilssonia leithii* (Gray, 1872)

Northern (Sharma, 1971; Sanyal et al., 1993) and Southern Nallamala Hills. Waterbodies, streams and rivers. Uncommon. [S] ZSIK (R21403).

7. *Lissemys punctata* (Bonnaterre, 1789)

Northern (Sanyal et al., 1993), Central and Southern Nallamala Hills. Waterbodies, streams and rivers. Common. [S] ZSIK (Specimen not traceable).

**Order: Squamata**

**Family: Agamidae**

8. *Calotes rouxii* (Duméril & Bibron, 1837)


9. *Calotes versicolor* (Daudin, 1802)

*Agama versicolor* F.-M. Daudin. 1802. Hist. nat. Rept. 3: 395; Pl. XLIV.

10. *Psammophilus blanfordanus* (Stoliczka, 1871)


11. *Psammophilus dorsalis* (Gray in Griffith & Pidgeon, 1831)


12. *Sitana ponticeriana* Cuvier, 1829

Northern (Rao et al., 2005; Sharma, 1971; Sanyal et al.,

Family: Chamaeleonidae

13. *Chamaeleo zeylanicus* Laurenti, 1768

Family: Gekkonidae

14. *Cnemaspis* sp.
Remarks: An unidentified species of *Cnemaspis* was encountered in Central and Southern Nallamala Hills. Three specimens that were collected by the first author, deposited in the Eco-Resources Monitoring Labs, Sunnipenta in March 2002, were lost due to attack by ants. Specimens were collected from the leaf litter in a dry stream near Chinnarutla. Rare. [S] ERM (Lost). *Cnemaspis otai* Das and Bauer (2000) is known from Vellore region, in extreme northern Tamil Nadu State, adjacent to Andhra Pradesh, and the Nallamala specimens may be either this nominal species, or an undescribed species.

15. *Hemidactylus bowringii* (Gray, 1845)
*Doryura bowringii* J. E. Gray. 1845. Cat. Lizards British Mus.: 156.

16. *Hemidactylus brookii* (Gray, 1845)
Northern (Rao et al., 2005; Sharma, 1971; Sanyal et al., 1993), Central (Rao et al., 2005) and Southern Nallamala Hills. Open forests, old temples, also human commensal, found in houses and other dilapidated man-made structures. Abundant. [S] ZSIK (R21240–44, R24669, R21404–05, R23237, R24435, R20179, R23687, R23699), ZSIH (ZSI/FBS/N/1174), ERM (ERM–2a).

17. *Hemidactylus flaviviridis* Rüppell, 1835
*Hemidactylus flaviviridis* E. Rüppell. 1835. Neue Wirbelth.-Fauna Abyss., Amph. 18: Pl. 6; Fig. 2.
Northern, Central (Rao et al., 2005) and Southern Nallamala Hills. Human commensal, found in houses and other man-made structures. Uncommon. [S] ZSIK (ZSI/FBS/N/1173), ERM (ERM–3a).

18. *Hemidactylus frenatus* Duméril & Bibron, 1836
Northern (Sanyal et al., 1993), Central (Rao et al., 2005) and Southern Nallamala Hills. Open forests, old temples, also human commensal, found in houses and other dilapidated man-made structures. Common. [S] ZSIK (R23700), ERM (ERM–30a).

19. *Hemidactylus giganteus* Stoliczka, 1871
Northern (Rao et al., 2005; Sanyal et al., 1993), Central (Rao et al., 2005) and Southern Nallamala Hills. Open forests, old temples, also human commensal, found in houses and other dilapidated man-made structures. Uncommon. [S] ZSIK (R21411–12), ZSIH (ZSI/FBS/N/1167, 1168), ERM (ERM–1a).

20. *Hemidactylus leschenaultii* Duméril & Bibron, 1836
Northern (Rao et al., 2005; Sanyal et al., 1993), Central (Rao et al., 2005) and Southern Nallamala Hills. Open forests, old temples, also human commensal, found in houses and other dilapidated man-made structures. Common. [S] ZSIK (R20180, R23693, R24458, R24466, R24660, R24510, R24513), ERM (ERM–4a).

21. *Hemidactylus reticulatus* Beddome, 1870

22. *Hemidactylus triedrus* (Daudin, 1802)
Northern (Rao et al., 2005; Sanyal et al., 1993), Central (Rao et al., 2005) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Common. [S]
ZSIK (21239, R24509, R24512), ERM (ERMR–7a).

**Family: Lacertidae**

23. *Ophisops jerdoni* (Blyth, 1853)


Northern (Rao et al., 2005; Sanyal et al., 1993; Sharma, 1971), Central (Rao et al., 2005) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Abundant. [S] ZSIK (R21302–14, R21381–92, R21440, R24661, R24670), ZSIH (ZSI/FBS/N/1176–1178), ERM (ERMR–18a).

24. *Ophisops leschenaultii* (Milne-Edwards, 1829)

*Lacerta leschenaultii* H. Milne-Edwards. 1829. Ann. Sci. nat. 16: 86; Pl. VI; Fig. 9.


25. *Ophisops minor* (Deraniyagala, 1971)

*Cabrita jerdoni minor* P. E. P. Deraniyagala. 1971. Ceylon J. Sci. 32(1): 104; Fig. 1.


**Family: Scincidae**


27. *Lygosoma guentheri* (Peters, 1879)


30. *Eutropis macularia* (Blyth, 1853)


Northern (Sanyal et al., 1993; Rao et al., 2005), Central (Sanyal et al., 1993; Rao et al., 2005) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Rare. [S] ZSIK (R21292–93, R21373–75, R21437, R21437, R24438, R24457, R24463, R23694, R24511), ZSIH (ZSI/FBS/N/1179, 1180), ERM (ERMR–15a); [P] NHMOU (NHMOU.Rep.P.4–03).

Remarks: Mausfeld et al. (2002) suggested partitioning the genus *Mabuya* Fitzinger, 1826 into several genera, allocating the Asian species to *Eutropis* Fitzinger, 1843.

**Family: Varanidae**

32. *Varanus bengalensis* (Daudin, 1802)


Northern (Rao et al., 2005; Sanyal et al., 1993; Sharma, 1971), Central (Rao et al., 2005) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Rare. [S] ZSIK (R21173–77, R21179).
Remarks: For a history of the name Varanus monitor Linnaeus, 1758, a junior synonym of Tupinambis bengalensis Daudin, 1802, see Mertens (1946; 1956; 1957) and Sprackland (1982).

**Family: Boidae**

33. *Eryx conicus* (Schneider, 1801)

34. *Eryx johnii* (Russell, 1801)

**Family: Pythonidae**

35. *Python molurus* (Linnaeus, 1758)

37. *Amphiesma stolatum* (Linnaeus, 1758)
Remarks: The gender of *Amphiesma* Duméril, Bibron and Duméril, 1854 has been treated erroneously treated as feminine since it was resurrection by Malmate (1960). Toriba (1994) showed that the genus is neuter, and the termination of the species name should therefore be *stolatum* (see also David et al., 1998).

38. *Argyrogena fasciolata* (Shaw, 1802)
Remarks: Revived from the synonymy of *Coluber* for *C. fasciolata* Shaw, 1802, by Wilson (1967).

39. *Atretium schistosum* (Daudin, 1803)

40. *Boiga forsteni* (Duméril, Bibron & Duméril, 1854)

41. *Boiga trigonata* (Schneider in Bechstein, 1802)
*Coluber trigonatus* J. G. Schneider in: J. M. Bechstein. 1802. La Cepede’s Nat. Amphib.: 256; Pl. 40; Fig. 1. Northern (Sanyal et al., 1993; Sharma, 1971), Central (Rao et al., 2005) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Common. [S] ZSIK (R21457), ERM (ERMR–37a).

42. *Coelognathus helena* (Daudin, 1803)
Remarks: *Coelognathus* Fitzinger, 1843, was revived from the synonymy of *Elaphe* Fitzinger in: Wagler,
1833, by Helfenberger (2001a; b), based on visceral and vertebrae morphology and allozyme variations.

43. **Coluber bholanathi** Sharma, 1976


44. **Dendrelaphis tristis** (Daudin, 1803)


45. **Enhydris enhydris** (Schneider, 1799)


46. **Liopeltis calamaria** (Günther, 1858)


47. **Lycodon aulicus** (Linnaeus, 1758)


48. **Lycodon striatus** (Shaw, 1802)


49. **Lycodon travancoricus** (Beddome, 1870)


50. **Macropisthodon plumbicolor** (Cantor, 1839)


51. **Oligodon arnensis** (Shaw, 1802)


52. **Oligodon taeniolatus** (Jerdon, 1853)


53. **Oligodon travancoricus** (Beddome, 1877)


54. **Ptyas mucosa** (Linnaeus, 1758)


55. **Sibynophis subpunctatus** (Duméril, Bibron & Duméril, 1854)

56. *Xenochropis piscator* (Schneider, 1799)

**Family: Elapidae**

57. *Bungarus caeruleus* (Schneider, 1801)

58. *Calliophis melanurus* (Shaw, 1802)
Northern (Sanyal et al., 1993; Sharma, 1971) Nallamala Hills. Scrub forests. Rare. [S] ZSIK (R21460).

59. *Naja naja* (Linnaeus, 1758)
*Coluber naja* C. Linnaeus. 1758. Syst. Nat. 10th ed. 1: 221.
Northern (Rao et al., 2005; Sanyal et al., 1993; Sharma, 1971), Central (Rao et al., 2005) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Common. [S] ZSIK (R21461), ERM (ERMR–33a); [P] NHMOU.

**Family: Typhlopidae**

60. *Grypotyphlops acutus* (Duméril, Bibron & Duméril, 1844)

61. *Ramphotyphlops braminus* (Daudin, 1803)

**Family: Viperidae**

62. *Daboia russelii* (Shaw & Nodder, 1797)

63. *Echis carinatus* (Schneider, 1801)
Northern (Rao et al., 2005; Sanyal et al., 1993; Sharma, 1971), Central (Rao et al., 2005) and Southern Nallamala Hills. Scrub, open forests and near agricultural fields. Common. [S] ZSIK (R21342, R21401–02, R24461) ERM (ERMR–23a).

64. *Trimeresurus gramineus* (Shaw, 1802)

**ERRONEOUS OR DOUBTFUL RECORDS**

In addition to the records presented in the preceding pages, the following species have been recorded from the Nallamala Hills in the literature. These have been shown to be in error, stemming from the use of incorrect names or from misidentifications.

*Bufo hololius* Günther, 1876, which had been reportedly collected by Pillai and Murthy (1983) from Nagarjunasagar area (also cited by Sarkar et al., 1993), has not been included in this list as this taxon is known only from type specimen and all other specimens assigned to this nomen need reevaluation, according to Dubois and Ohler (1999).
Polypedates leucomystax (Gravenhorst, 1829), has been recorded from the Nallamala Hills by Rao et al. (2005), and earlier, from the Eastern Ghats, by Pillai and Murthy (1983). The records possibly refers to either P. maculatus or another member of this complex, since Gravenhorst's species (type locality: Java) is a mesic area frog, approaching the present study area only in the northeast of the country (see Dutta, 1997).

In a series of papers dealing with the ecology and physiology of squamate reptiles, Subba Rao (1970; 1972) and Subba Rao and Rajabai (1972a; 1972b; 1974) recorded Calotes nemoricola from Tirupati, and Subba Rao (1994) recorded this species from the Nallamala Hills. Whitaker and Das (1990) showed this to be erroneous identifications for the widespread Calotes versicolor (Daudin, 1802).

Subba Rao et al. (1994) reported Eutropis beddomei (Jerdon, 1870) from all districts encompassing the Nallamala Hills range. Recently Rao et al. (2005) also reported it from Vijayapuri and Mallelatheertham in Northern Nallamala Hills. This nominal species is restricted to the Western Ghats of south-western India and south-central Sri Lanka (Smith, 1943). As mentioned earlier, Rao's (2005) image 30 represents Eutropis nagarjuni Sharma, 1969.

Rao et al. (2005) listed Cerberus rynchops (Schneider, 1799) from Sundipenta/Sikharam, within the Nallamala Range. This is an estuarine/coastal species (see Das, 2002b; Whitaker and Captain, 2004), and its record in the literature from the Eastern Ghats Complex (e.g., Pillai and Murthy, 1983) may be from the plains.

Sibynophis sagittarius (Cantor, 1839) was reported by Rao et al. (2005), based on a specimen collected from Sunnipenta. This taxon was previously reported from the area southeast of the Nallamala Hills, from Sriharikota Island, Nellore District, by Rao and Sekar (1993). Sibynophis subpunctatus (Duméril, Bibron & Duméril, 1854) was recently resurrected from the synonymy of S. sagittarius (Cantor, 1839) by Captain et al. (2004) for this population. A record of this species from East Godavari District by Sanyal et al. (1993) is erroneous, as the specimen is from Godaveri (27° 34′ N and 85° 22′ E), 10 km southeast of Kathmandu, central Nepal.

**Remarks on Habitat Use**


In summary, all six microhylids, two bufonids, five ranids, one rhacophorid, in addition to one agamid, five gekkonids and one colubrid are human commensals. Human activities may promote creation or maintenance of certain habitats conducive for these species (e.g., perennial water sources, in the form of wells, drainage areas, etc.). Low amphibian diversity characterize scrub forests, where community members are such as *Bufo scaber, Sphaerotheca breviceps, S. dobsonii* and *S. rolandae* show xeric-region and/or fossorial adaptations (e.g., thickened skins and burrowing adaptations, such as enlarged metatarsal tubercles on pes) and adaptations for retaining moisture.

All turtles and crocodilians reported from the Nallamala Range are associated with wetlands. The sole non-aquatic species (*Geochelone elegans*) is a scrub forest dweller. Significant diversity of gekkonids (*Hemidactylus reticulatus* and *H. giganteus*), scincids
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In terms of habitat usage, reptiles exceed amphibians in species richness, on account of their greater capacity of surviving in relatively arid regions. The regional gekkonid diversity, within the genus Hemidactylus includes arboreal (H. bowringii, H. brookii, H. flaviviridis, H. frenatus, and H. leschenaultii), terrestrial (H. triedrus) and semi-fossorial (H. reticulatus) types. Usage of specific habitat types include walls of houses (Hemidactylus bowringii, H. brookii, H. flaviviridis, H. frenatus, and H. leschenaultii), rupicolous habitats such as rocky boulders (Psammophilus blanfordanus and P. dorsalis); fossorial habits in terms of usage of soft substratum for burrowing (Grypotyphlops acutus and Ramphophyphlops braminus); and arboreal species, utilizing trees or some sort of vegetation (Ahaetulla nasuta, Boiga forsteni, B. trigonata, Dendrelaphis tristis, Lycodon aulicus, Calotes roxii, Chamaeleo zeylanicus, and Lycodon travancoricus); the typhlpid Ramphophyphlops braminus is also known to occasionally ascend trees in search of prey. Other adaptive types shown by the fauna include vegetation mimics (Chamaeleo zeylanicus and Ahaetulla nasuta); Batesian mimicry is shown by Sibynophis subpunctatus (for which the model presumably is Calliophis melanurus); bipedal locomotion (Sitana ponticeriana); and side-winding (Echis carinatus, when moving on sand or other loose substrate).

**Remarks on Adaptive Types**

Adaptations seen amongst the amphibians of the Nallamalla Hills include a diversity of dietary and habitat types. Representatives of ant specialists include all the microhyloid and most bufonid species locally represented. Additional categories include: predators of small vertebrates (Polypedates maculatus) and folivores (Euphyctis hexadactylus and some E. cyanophlyctis). In terms of gross habitat usage are the fossorial (Kaloula taprobanaica, Microhyla ornata, M. rubra, Uperodon globulosus, and U. systoma), terrestrial (Duttaphrynus melanostictus, B. scaber, and B. stomaticus), aquatic or aquatic-margin (Euphyctis cyanophlyctis, E. hexadactylus, Fejervarya cf. limnocharis, Haplobatrachus crassus, and H. tigrinus) and arboreal (Polypedates maculatus and sometimes Ramanella variegata) species. At least three species enter bathrooms of human dwellings (Ramanella variegata, Kaloula taprobanaica, and Polypedates maculatus) and one (Polypedates maculatus) is known to apply a coat of protein on the surface of its body prior to emerging for foraging, to prevent evaporative water loss. Skittering on the water surface is known for two species (E. cyanophlyctis and juvenile E. hexadactylus).

Adaptive types among the reptiles, when classified by diet, include eaters of soft-bodied (e.g., ant- and worm) prey (Grypotyphlops acutus and Ramphophyphlops braminus); predators of crop pests, such as rodents (Argyrogena fasciolata, Ptyas mucosa, and Varanus bengalensis); predator of small or medium-sized vertebrate prey (Python molurus, Crocodylus palustris, Ptyas mucosa, Daboia russelii, Trimeresurus grahaminus, and Echis carinata); egg-predators (Oligodon arnensis, O. taeniolatus and O. travancoricus); primarily fish-eaters (Crocodylus palustris, Nilssonia gangetica, N. leithii, Atretum schistosum, Enhydris enhydris, and Xenochrophis piscator); frog- and toad-eaters (Macropisthodon plumbicolor and Dendrelaphis tristis) and near-exclusive snake-eaters (Bungarus caeruleus and Calliophis melanurus).

**Biogeography of the Eastern Ghats**

The Eastern Ghats remain the poor sister of the more well-known Western Ghats, a recognized global hotspot of biological species diversity (e.g., Ward, 2002). Inger (1999) lamented about the low species richness of the amphibian fauna of the Eastern Ghats (21 species), while Das (1996) reported 84 species of reptiles, both significantly different from the known diversity of the Western Ghats, which has seen an explosion of new as well as spectacular species discoveries in recent years (see Biju, 2001; Biju and Bossuyt, 2003). Nonetheless, enough documentation exists to reveal a highly diverse biota of the hill ranges that run approximately parallel to the east coast of India.

The range itself is a weathered relict of the peninsular plateau, characterized by a series of low hills that extend from the Khondmal Hills of Orissa State, south to the Shevaroys of central Tamil Nadu, where they meet the Western Ghats in the Nilgiris region (descriptions in Das, 1996; Mani, 1995). The northern and southern sections of the Eastern Ghats are separated by the delta of the River Godavari, which is approximately 130 km in width. Other important breaks are formed by the drainages of the rivers Mahanadi and Krishna. The Biligirirangan Hills, at 1,750 m, is the highest range in the Eastern Ghats. Moisture regimes show a general gra-
dient, from a relatively mesic northern range, with dry and moist deciduous forests, to a relatively dry southern subzone, with dry deciduous and thorn scrub (vegetational analysis in LeGriss and Meher-Homji, 1983). Detailed analysis of faunal relationships along these hill ranges, including comparative diversity of lineages as an effect of breaks in the continuity of the ranges, humidity, and elevational effects remain to be conducted.

We adopt Wikramanayake et al.’s (2002) ecoregional approach to interpreting the distribution of the regional herpetofauna. These workers have classified the Indo-Pacific Region (stretching from Afghanistan in the west to New Guinea and the Solomons to the east), recognizing 129 ecoregions on the basis of vegetation, geology and geological history. Within this framework, the Nallamala Range falls within the Deccan Thorn Scrub zone (Ecoregion 23), abutting (and being influenced by) Ecoregions 21 (Central Deccan Plateau Dry Deciduous Forest); Ecoregion 22 (South Deccan Plateau Dry Deciduous Forest); and Ecoregion 6 (East Deccan Dry-Evergreen Forest). Although the Nallamala Hills also are adjacent to Ecoregion 34 (the Godavari-Krishna mangroves), herpetofaunal influences are absent, on account of geological-vegetational differences.

The herpetofauna of the Eastern Ghats has a long history of exploration, commencing with Patrick Russell (1727–1805), the first Western herpetologist in India, and medical doctor and naturalist with the British East India Company, based at Vizagapatam (at present Visakhapatnam). Russell explored the herpetofauna, primarily snakes, of that region and produced a two volume folio of water colors of snakes (also including mammals, of that region and produced a two volume folio of water colors of snakes (also including insects). The collection of herpetofauna was published in 1796 and 1801–1802.

Collections for faunistic inventories within the Eastern Ghats complex have also been made by McCann (1945), Pillai and Murthy (1983), Daniels and Ishwar (1993), besides the contributions of the Zoological Survey of India in the Nallamala Hills referred to earlier. Rao and Rao (1998) studied the ecology of Barkudia melanosticta (as B. insularis); Bauer and Das (2000) studied the ecology of Calodactylodes aureus in Vellore; Das and Chanda (1998) described a new species of Philautus from the Visakhapatnam region; Dutta (2003) described a new Philautus from Simlipal Hills; and Das and Bauer (2000) described two new species of gekkonid lizards of the genus Cnemaspis from the Eastern Ghats.

Although less species rich than the more mesic adjacent regions, Ecoregion 23 supports a distinctive herpetofauna, including arid region representatives whose relatives are Eurasian and Afro-Ethiopian (e.g., Chamaeleo, Ophisops, Eryx, and Echis) and the region also supports lineages that may be termed distinctly autochthonous (i.e., Indian lineages, such as the genera Uperodon, Ramanella, Indirana, Sphaerotherca, Melanochelys, Pangshura, Nilssonia, Psammophilus, Sitana, Argyrogena, Atreitum, and Grypotyphlops). The presence of representatives of Indo-Malayan elements represented here (e.g., Kaloula, Hylarana, Calliophis, and Trimeresurus) are explainable using Hora’s (1949) Satpura Hypothesis model, of emigration of the biota of the Indo-Malayan region westwards. Alternative models are available to explain the presence of these taxa in the Eastern Ghats, including a more mesic climate in the Indian Subcontinent up to the Eocene (van der Hammen, 1983). The climatic changes were perhaps accelerated by widespread agriculture, specifically through the cultivation of graminaceous crops (Misra, 1983), helping further in the conversion of what was once tropical subhumid and dry deciduous forests into savannas.

Within the Eastern Ghats herpetofauna, endemic genera include the limbless skinks, Barkudia (with two species, B. insularis and B. melanostictus; see Das, 2000) and Sepsophis (a monotypic genus, containing S. punctatus). A number of species hitherto considered endemic to the Western Ghats have in recent years been found within the Eastern Ghats complex, including Indirana leithii (this report), Hylarana malabarica (Tschudi, 1838) by Daniel and Selukar (1963), a member of the genus Hylarana (this report) and Lygosoma guentheri (Peters, 1879) (this report). Balachandran and Pittie (2000) reported the occurrence of Draco from these hills, that they allocated to D. dussumieri Duménil & Bibron, 1837, a Western Ghats species. Eastern Ghat endemics found in the Nallamala Range include Hemidactylus reticulatus, Eutropis nagarjuni, Lygosoma ashwamedhi, and Coluber bholanathi. New species have been described from these ranges in recent years, including the geckos Cnemaspis otai and C. yercaudensis (see Das and Bauer, 2000).

Several species known from the Eastern Ghats have not (yet) been recorded from the Nallamala Ranges. Some may be regional endemics or appropriate habitats may be missing on the site under study, although the absence of some (e.g., Calodactylodes aureus), that are known from both north and south of the range here reinforce the argument for more sampling of the fauna. Other Eastern Ghat endemics (e.g., Barkudia, with two species, the monotypic Sepsophis, and Hemiphylodactylus aurantiacus) among the reptiles, and Philautus terabrani and Ichthyophis peninsularis occur in adjacent ranges of the Ghats (see Das and Chanda, 1998; Pillai and Murthy, 1983), and with further collection, may prove their presence here, or be represented by hitherto unknown sister species.
CONSERVATION AND MANAGEMENT

Parts of the Nallamala Range are within the Protected Areas System, the levels of protection for each component varying from Forest Reserves, that lie within the jurisdiction of the Andhra Pradesh Forest Department, to National Park, that are gazetted and their protection implemented by the Central (= Federal) Government. The most well-known of the protected areas is the Nagarjunasagar Srisailam Tiger Reserve and the recently gazetted Gundla Brahmeshwaram Metta Wildlife Sanctuary.

Conservation of amphibians and reptiles represent special challenges, for which reason, arguments have been made to move away from species-based conservation strategies, to that addresses entire landscapes. Given the large number of known components of the biodiversity of these Protected Areas, especially non-hoemoeothermous members (or non-mammal and bird species), and the general lack of expertise to identify, let alone understand, conservation requirements, this is apparently a safer approach to the conservation of biodiversity. The situation is not unique to the Eastern Ghats: in the Indo-Pacific region, centinelan extinction (or species loss even before their formal description) is known for both amphibians and reptiles (Das, 2002a; Erdelen, 2002).

A handful of the recorded species from the Nallamala Range are human commensals, or so-called 'weed-species', including, amongst amphibians: Duttaphrynus melanostictus, B. stomaticus, Kaloula taprobanica, Microhyla ornata, M. rubra, Uperodon globulosus, U. systoma, Ramanella variegata, Eaphylyctis cyanophlyctis, E. hexadactylus, Fejervarya cf. limnocharis, Hoplobatrachus crassus, H. tigrinus, and Polypedates maculatus. Scrub species of amphibians include: Bufo scaber, Sphaerotheca breviceps, S. dobsonii, and S. rolandae). Human-commensals among the reptiles include: Melanochelys trijuga, Lissemys punctata, Calotes versicolor, Hemidactylus bowringii, H. brookii, H. flaviviridis, H. frenatus, H. giganteus, H. leschenaultii, Lygosoma punctata, Eutropis carinata, Amphisbaena stolatum, Dentrelaphis tristis, Lycodon aulicus, Ptyas mucosa, Naja naja, and Ramphothephlops braminus. Scrub species of reptiles include: Geochelone elegans, Sitana ponticeriana, Chamaeleo zeylanicus, Hemidactylus reticulatus, H. triedus, Ophisops jerdoni, O. leschenaultii, O. minor, Lygosoma ashwamedhi, L. guentheri, Eutropis nagarjuni, Coluber bholanathi, Liopeltis calamaria, Calliophis melanurus, Daboia russellii, and Echis carinatus. Two species are exclusively rupicolous (Psammophilus blanfordus and P. dorsalis). And only two species are considered mesic region taxa, in that their respective congeners are exclusively distributed in such areas (e.g., Hylarana and Cnemaspis).

Human-commensals generally refer to species tolerant of environments altered by humans. However, many still have life histories intimately dependent on certain habitat features, such as ponds or other standing bodies of water, substrates that serve as burrowing refugia, etc. Changes from rural to urban environments are known to cause local extinction of amphibian species (including Sphaerotheca), through the removal of such habitats, as observed in the Chennai region (Das, unpubl.).

Three herpetofaunal species from the Nallamala Hills are recognised as threatened, under the Red List categories of the IUCN (World Conservation Union; see Hilton-Taylor, 2000). These include the turtles, Nilssonia gangetica and N. leithii, and the crocodilian, Crocodylus palustris (all in the 'Vulnerable' category).

In the end, species protection in countries such as India, where the pressure on land and water are large, can only be assured in areas within protected areas. It is therefore imperative to bring additional areas of these hills with high diversity and/or faunal endemism into the country's protected areas system.

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