



## Rescue and Rehabilitation of Urban Snakes in Western Rajasthan with their Account

Akhlaq Husain<sup>1</sup> and Sharad Prohit<sup>2</sup>

<sup>1</sup>(Former Scientist E, Zoological Survey of India) 41, Hari Vihar, Vijay Pak, Chakrata Road, Dehra Dun – 248001 (Uttarakhand), India.

<sup>2</sup>Inside Jalorigate, Janwari Bazar, Near Bholi Baai Mandir, Jodhpur-342001 (Rajasthan), India.

(Corresponding author: Akhlaq Husain)

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**ABSTRACT:** Studies on faunal diversity of snakes have attracted the attention of various herpetologists/naturalists/workers during the past but very little has been done on their survival and conservation. In view of this an attempt has been made on these aspects in western Rajasthan and 14 species of snakes, both venomous and non-venomous, occurring in Jodhpur-Jaisalmer area were rescued and rehabilitated successfully to natural environment which has been reported here with their classification, common and vernacular names, diagnostic features, distribution, habitat, food & feeding, breeding, nature and conservation status for general information and guidance.

**Keywords:** Rescue and rehabilitation of snakes in Rajasthan.

### I. INTRODUCTION

The existence and survival of reptiles, especially snakes, has been under great threat as their habitat deterioration and alterations have made them to live with urban environment. It has caused much conflict with human and eventually and get killed whenever spotted due to fear of their bite which is one of the factors in depletion of their population. This killing is due to ignorance on environmental conservation, laws on their protection and importance in nature. Lack of knowledge, fear and misbeliefs among people on snakes could be some of the reasons for their unnecessary killings. In view of this, the conservation of snakes is important like other wild animals, especially in urban and other human habitations, is most essential and in this regard rescue and rehabilitation operations are taken up by the concerned forest departments and local bodies from time to time.

Nande and Deshmukh (2007) rescued 32 species of snakes in Amravati district including Melghat Tiger Reserve (Maharashtra) [20]. Viyas (2013) reported the rescue of 22 species of snakes from various cities in Gujarat [28]. Jagadeesh *et al.*, (2015) rescued 22 species of snakes from Shimoga district (Karnataka) [15]. Roshnath (2017) rescued 16 species of snakes in Kannur (Kerala) and translocated them to natural environment [24].

Wildlife SOS organisation is doing good rescue and rehabilitation work at Agra and Mathura (U. P.), Bengaluru (Kar.), Bhopal (M. P.), Defence Colony (Delhi), Khamgaon (Maha.) and Pattan (J. & K.). Rescue operations are also done by snake catchers at Ahmednagar (Maharashtra).

The rescue operation of snakes in Rajasthan was not done earlier and hence taken up here.

In all, 14 species of snakes belonging to 13 genera and 6 families, occurring in Jodhpur-Jaisalmer urban area of western part, were rescued and rehabilitated successfully to their natural environment.

### II. EQUIPMENTS AND METHODOLOGY

**1. Equipments:** 1.25-1.50 m long metallic (aluminium, alloy or iron) rod with a hook at the tip coated with rubber or other soft material and a long cotton/jute bag fixed on a triangular frame with long rod.

**2. Methodology:** At first on locating the snake, it is hooked by the expert and then tactfully transferred in the bag for rehabilitation to wild, their safe, fieldom (A-D).



(A) Rescue operation, Black-headed Royal Snake, black morph



(B) Rescue operation- Spectacled Cobra



(C) Preparing for rehabilitation after rescue- Spectacled Cobra



(D) Ready for rehabilitation (Sharad Prohit with learner)

### III. SNAKES RESCUED AND REHABILITATED

Following species of snakes, found in Jaisalmer-Jodhpur urban area in Western Rajasthan were rescued from various localities/habitations/residential areas and rehabilitated to their natural environments saving them and human life as well.

Class: Reptilia Laurenti, 1768

Order: Squamata Oppel, 1811

Suborder: Serpentes Linnaeus, 1758

Family: Boidae Gray, 1825

#### 1. *Eryx johnii* (Russell, 1801)

*Boa johnii* Russell, 1801. *Indian. Serp.*, 2: 18, 20 (type-locality: Tranquebar, Tanjore district, SE Madras).

**Common Names:** Brown Sand Boa, Indian Sand boa, John's Earth Boa, Red Sand Boa.

**Vernacular Names:** *Chitti, Damoi, Domuhi, Do-moo samp, Do-muha, Dumai, Mathu, Mitti wala saap* (Hindi), *Mannulipampu, Mannunnipampu* (Malayalam); *Durkya ghonas* (Marathi), *Pard* (Rajasthani).

**Diagnostic Features:** Cylindrical and thick bodied, head wedge-shaped, not distinct with mental groove, eyes small with 6 vertical pupil, tail blunt, rounded, not distinct from rest of body.



Fig. 1. *Eryx johnii*, the Brown Sand Boa

**Colouration:** Body colour variable, reddish-brown, dark brown, dull yellow tan, yellowish, speckled grey or black; tail sometimes black banded; underside whitish, spotted with brown or entirely brownish.

**Scalation:** Dorsals 53-67 rows, ventrals 190-210, anal tripartite, subcaudals 20-34, entire; Supralabials 12-14/10-12; interorbitals 6-9; circumorbitals 10-15/10-11 [30].

**Length:** Adult 75 cm -1 m, juvenile 22 cm [30], 61-91 cm, 1.2 m, male shorter [12]; 90 cm/3 ft [21]; adult rarely exceed 61 cm with tail (Wikipedia).

**Altitudinal Range:** Up to 600 m [12, 13].

#### **Distribution:**

Rajasthan: Ajmer, Bikaner, Jaipur, Jaisalmer, Jodhpur and Pali districts. Rajasthan (area not mentioned) [13]; reptile-database).

Rest of India: Andhra Pradesh (Thummalapalle), Delhi, Gujarat (Junagarh; Kutch; Taranga Hill Forest, Satlasana), Himachal Pradesh, Karnataka (Malebennur; Shimoga), Kerala, Madhya Pradesh, Maharashtra (Nagpur; Sinnar), Puducherry (Osudu Lake area), Punjab, Tamil Nadu (Kundadam; Madura; Thiruvannamalai), Uttarakhand (Dehra Dun: Siwalik and Wildlife Institute of India Campus), Pauri and Nainital districts; Rajaji Tiger Reserve; Corbett Tiger Reserve), Uttar Pradesh (Junpat village, Greater Noida) and Western Ghats.

Elsewhere: Afghanistan, Nepal and Pakistan.

**Habitat:** Burrows in arid regions and rocky dry low hills.

**Food & Feeding:** Insects, reptiles (lizards and other snakes), birds and rodents (rats, mice, squirrels).

**Breeding:** Ovo-viviparous, female gives birth to 10-12 [13], 6-8 [30] or 14 (Wikipedia) young at a time.

**Nature:** Nocturnal and burrowing nature. Non-venomous.

**Etymology:** Named after German naturalist C. S. John who was missionary in India.

**Conservation Status:** IWPA- Schedule IV; IUCN Red List Category- Near Threatened/Least Concern; CITES: Appendix II.

(IWPA= Indian Wildlife (Protection) Act, 1972; IUCN= International Union for Conservation of Nature; CITES= Convention on International Trade in Endangered Species of Wild Fauna and Flora)

Genus: *Gongylophis* Wagler, 1830.

## 2. *Gongylophis conicus* (Schneider, 1801)

[Boa] *Conica* Schneider, 1801. *Historiae Amphibiorum naturalis et literariae. Fasciculus secundus continens Crocodilos, Scincos, Chamaesauras, Boas. Pseudoboas, Elapes, Angues. Amphibaenas et Caecilias*. Frommanni, Jena: 268 (type-locality: India oriental= Tranquebar vide Bauer, 1998).



**Fig. 2.** *Gongylophis conicus*, the Common Sand Boa

*Gongylophis conicus*, Wagler, 1842; Boulenger, 1890. *Faun. Br. India, Reptilia and Batrachia*: 247, fig. 75.

*Gongylophis (Gongylophis) conicus*, Tokar, 1989. *Vestnik Zoologii, Kiev*, 4: 46-55; Tokar, 1995. *Tropical Zoology*, 8(2): 347-360.

**Common Names:** Common Sand Boa, Indian Sand Boa, Rough-scaled Sand Boa, Rough-tailed Sand Boa, Russell's Boa.

**Vernacular Names:** *Chitti*, *Mathu*, *Mitti wala Samp* (Hindi), *Durkya Ghonas* (Marathi), *Mannuilipampu*, *Mannunnipampu*, *Payyanipampu* (Malayalam).

**Diagnostic Features:** Body short, thick and robust with small head (not very distinct from neck), without mental groove; anterior maxillary and mandibular teeth longer than posterior ones; eyes small with vertical pupil; tail very short, thick and pointed, slightly prehensile.

**Colouration:** Body marked with irregular dark patches (usually continuous) above on pale brown, white or

yellow ground colour, also smaller patches on sides, belly yellowish-white with or without dark patches.

**Scalation:** Scales highly small keeled (mainly on head and posterior part of body) all over body, smooth on dorsal rows, underside of head also covered with small scales, tail covered with highly keeled dry-look scales, belly scales much narrower.

Dorsals in 40-55 rows, ventrals 162-196, narrow, anal tripartite or pentapartite (large median scale with one smaller scale on each side), sub-caudals 16-24, undivided/17-24 [7].

Supralabials 12-14, interorbitals 8-10, circumorbitals (scales around eye) 10-15, eyes separated from labials by 1-2 rows of scales

Length: Adults 50 cm-1 m, juveniles 12.5 cm [30]; 99 cm including tail measuring 7.6 cm Wikipedia; thereaderwiki.com) [12].

**Altitudinal Range:** Plain to 900 m [12].

### **Distribution:**

Rajasthan: Jaisalmer, Jodhpur and Pali districts.

Rest of India: Andaman & Nicobar Islands (Guptapara), Andhra Pradesh, Bihar (Andhana; Dasturpar; Kagzhi Mohalla, Bihar Sharif), Chattisgarh, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka (Maharajpet; Shivanahalli), Kerala (Poozhikuth, Varanakara), Madhya Pradesh (Indore, Jabalpur), Maharashtra (Aarey Milk Colony, Goregaon East, Mumbai; Banachiwadi; Mumbai-Pune Expressway, Isambe), Odisha, Puducherry, Punjab, Tamil Nadu (Mahabalipuram; New Perungalathur; Uganiyam), Telangana (Nagarjuna Sagar Road), Uttarakhand, Uttar Pradesh (Vasant Kunj, Lucknow), West Bengal and Western Ghats (Konkan, Ghatmatha and Mawal area).

Elsewhere: Bangladesh, Nepal, Pakistan and Sri Lanka.

**Habitat:** Agriculture fields, gardens, deserted sandy soil land, cracks, holes, mounds, brick and rock piles.

**Food and Feeding:** Reptiles (geckos, other snakes), birds and rodents (mice, rats) and other small mammals, birds.

**Breeding:** Ovo-viviparous, young ones develop in egg sac and incubated inside female and hatch live after a gestation period of four months inside mother's body who gives birth to 5 to 12 juveniles (thereaderwiki.com)/6-8 during summer months [30].

**Nature:** Nocturnal and burrowing, also come out during day time for foraging and preying, very slow and lethargic in motion, usually non-offensive and try to escape, coils to hide its head in defence, on aggression flattens body and strikes, bite painful. Non-venomous.

**Conservation Status:** IWPA- Schedule IV; IUCN Red List- Near Threatened.

**Threats:** Generally road kills, during digging for various purposes and also for edible use.

**Remarks:** Sri Lankan form was considered *Eryx conicus brevis* Deraniyagala, 1951.

Family: Colubridae Opperl, 1811

Genus: *Boiga* Fitzinger, 1826.

### 3. *Boiga trigonata trigonata* (Schneider, 1802)

*Coluber trigonatus* Schneider in Beschtein, 1802. *Bechst. transl. Lacep.*, 4: 256, pl. 40, Fig. 1 (type-locality: Visakhapatnam vide) [17].



**Fig. 3.** *Boiga trigonata trigonata*, the Common Cat Snake (Courtesy: Dharmendra Khandal, Mumbai)

**Common Names:** Cat-eyed Snake, Common Cat Snake, Indian Cat Snake, Indian Gamma Snake.

**Vernacular Names:** *Kar Samp* (Bengali), *Chitti Samp* (Gujarati), *Maanjrya* (Marathi), *Billi Samp* (Rajasthani).

**Diagnostic Features:** Head triangular, broader than neck; eyes large with vertical pupil; tail long, thin and pointed tipped.

**Colouration:** Y-shaped light colour mark on head, dorsal side brown marked with black and white irregular markings.

**Scalation:** Dorsals smooth in 21: 21: 15 rows, ventrals 206-256, anal undivided, subcaudals 75-96, paired, supralabials 8 (3rd to 5th in contact with eyes), preocular 1, loreal 1; post-ocular 2;

**Length:** Adults 65 cm-1.25 m [12]; S-V 91.5 m, tail 17.8, male shorter than female [12]; av. 70 cm, maximum 1.25 m (Indiansnakes.org); 91 cm, tail 18 cm (Wikipedia).

**Altitudinal Range:** Plains to 1,500 m [12, 13]; adults 65-1.25 m, juveniles 25 cm [30]; plains to 914 m/3,000 ft [29].

#### **Distribution:**

Rajasthan: Jaipur, Jaisalmer and Jodhpur districts.

Rest of India: Andhra Pradesh (Diguvaalem, Thettu, Chittoor; Thummalapalle), Chhattisgarh (Bisrampur), Gujarat (Dang; Kutch; Taranga Hill Forest, Satlasana), Himachal Pradesh, Kerala (Kannur; Thiruvananthapuram), Madhya Pradesh (Jabalpur), Maharashtra (Aarey Milk Colony, Goregaon, Mumbai; Nagpur; Wardha; Amby valley road, Lonavla), Punjab, Sikkim, Tamil Nadu (Frith Hall Estate, Nilgiris dist.; Pilloor; Thiruvannamalai), Telangana (near Narkatpalli), Uttarakhand (Wildlife Institute of India Campus, Dehra Dun; Singuini), Uttar Pradesh (Faizabad) and West Bengal (Tindharia) and Western Ghats.

Elsewhere: Bangladesh, Nepal and Sri Lanka.

**Habitat:** Arboreal, frequenting bushes, scrub, trees and barks, under stone piles and thatched roofs.

**Food & Feeding:** Feeds on amphibians (frogs and toads), reptiles (lizards), small birds and rodents (rats and mice), uses its mild venom for paralysing the prey.

**Breeding:** Oviparous. Female lays 3-11 elongated eggs during or after rains.

**Nature:** Nocturnal. Mildly-venomous.

**Conservation Status:** IWPA- Schedule III; IUCN Red List- Least Concern.

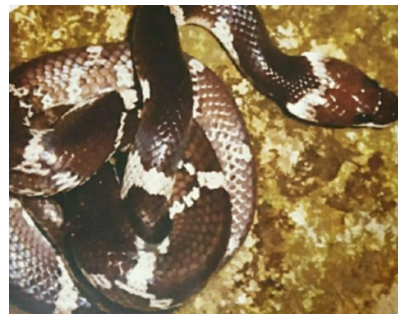
**Remarks:** Often mistaken for deadly venomous *Echis carinatus*, the Saw-scaled Viper, for its triangular head and vertical pupil and colouration.

Subspecies *B. trigonata melanocephala* (Annandale, 1904) is found in Afghanistan, Iran, Pakistan, Tadjikistan, Turkmenistan and Uzbekistan.

Genus: *Lycodon* Fitzinger, 1826.

### 4. *Lycodon aulicus* (Linnaeus, 1758)

*Coluber aulicus* Linnaeus, 1758. *Syst. Nat.*, Ed. 10: 220 (type-locality: 'America' in error; India vide [17]).



**Fig. 4.** *Lycodon aulicus*, the Common Wolf Snake

**Common Names:** Common Wolf Snake, Indian Wolf Snake.

**Vernacular Names:** *Garar*, *Kauriwala*, *Sankhra* (Hindi), *Vellivarayan pampu*, *Chuvar pampu Chennai thalayan* (Malayalam), *Kavdya* (Marathi).

**Diagnostic Features:** Slender with smooth & shiny scales with flattened head, broader than neck.

**Colouration:** Brown, brownish-grey or reddish with yellow or yellowish-white 9-25 cross bands present on dorsal side of body from behind neck, enclosing dark eyelets, becoming faint on tail region or rarely entirely absent, bands narrow above and wider on sides; head brown anteriorly, upper lip white or spotted with brown; underside whitish; juveniles with prominent collar on neck which become narrow in adults.

**Scalation:** Dorsals smooth with 17:17:15 rows, with single apical pit on each scale; ventrals 172-214, strongly angulate laterally; anal divided; sub-caudals 57-80, paired; supralabials 9 (3rd to 5th in contact with eyes), pre-ocular 1, loreal 1 (in contact with inter-nasals), post-oculars 2, temporals 2+2 or 2+3.

**Length:** adults 30-80 cm, juveniles 14 cm [30]; S-V 63.5 cm, tail 10 cm, male longer [12]; 91 cm-1 m /3-3.5 ft [21]; av. 51 cm, maximum 60-84 cm, hatchlings 14 cm (Indiansnakes); 71 cm, tail 11 cm (Wikipedia).

**Altitudinal Range:** Up to 2,000 m [12, 13]; 1,829 m/6,000 ft [29].

#### **Distribution:**

Rajasthan: Ajmer, Jaisalmer and Jodhpur districts.

Rest of India: Andhra Pradesh, Assam, Bihar, Chhattisgarh (Bisrampur), Gujarat (Halol), Himachal Pradesh, Jharkhand, Karnataka (Hodonahalli), Kerala, Lakshadweep, Madhya Pradesh, Maharashtra, Odisha,

Punjab, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh, West Bengal and Western Ghats.

Elsewhere: Bangladesh, Bhutan, China, Myanmar, Nepal, Pakistan and Sri Lanka.

**Habitat:** Around caves, wells, brick and stone piles, tree hollows and human dwellings.

**Food & Feeding:** Feeds on other reptiles (lizards and skinks).

**Breeding:** Oviparous. Female lays 5-7 eggs during summer months in north [30].

**Nature:** Nocturnal. Bites when handled. Non-venomous.

**Conservation Status:** IWPA- Schedule IV; IUCN Red List- Least Concern.

**Remarks:** Killed on getting confused for Common Krait.

Genus: *Lytorhynchus* Peters, 1862.

### 5. *Lytorhynchus paradoxus* (Gunther, 1875)

*Acontiophis paradoxus* Gunther, 1875. *Proc. Zool. Soc. London*, 1875: 232 (224-234) (type-locality: Rajasthan).

**Common Names:** Long-nose Sand Snake, Sind Awl-headed snake, Sind Long-nose Sand Snake.

**Diagnostic Features:** Head slightly broader than neck, snout pointed and depressed, covered with a tough rostral scale, nostrils narrow and slit-like, eyes large with vertically elliptical pupil; tail short, triangular and pointed.

Colouration: Body (slightly triangular in cross section) with H or X-shaped black spots throughout on grey or pale brown dorsal surface separated by white, sides with smaller spots alternating with dorsal spots, belly whitish and without any spots, upper lip white, a thick streak behind eyes and a short one below it, dorsum of head greyish-brown with large dark brown covering.



**Fig. 5.** *Lytorhynchus paradoxus*, the Long-nose Sand Snake.

Scalation: Scales smooth. Dorsals in 21/23: 19/21 (rarely): 15 rows, ventrals 169-185, angulated laterally, anal divided, subcaudals 40-53, paired; supra-labials 8 (5<sup>th</sup> in contact with eyes), loreal 1, pre-oculars 2, temporal 2+2 or 2+3, mental with small projection (fitting in notches of rostral base).

Length: S-V 36 cm, tail 5.8 cm [6]; maximum 38 cm [30]; S-V 35.6 cm, tail 5.0-7.6 [12]; 25-30 cm [21] av. 25 cm, maximum 38 cm (Indian snakes).

### **Distribution:**

Rajasthan: Barmer, Jaisalmer (Neemba village in Fatehgarh) and Sikar districts.

Endemic to Thar Desert.

Rest of India: As above.

Elsewhere: Pakistan (Thar Desert part).

**Habitat:** Sand dunes and base of plants in arid areas.

**Food & Feeding:** Feeds on geckos/lizards.

**Breeding:** Oviparous. Female laid 2 eggs in captivity during early summer [30].

**Nature:** Nocturnal. Sand-burrowing. Non-venomous.

**Conservation Status:** IUCN Red List- Not Evaluated.

**Remarks:** Bhide *et al.* (2004) found only one specimen in Rajasthan but during present study good number from Barmer, Jaisalmer and Sikar districts of the state [5].

Genus: *Platyceps* Blyth, 1860

### 6. *Platyceps ventromaculatus* (Gray, 1834)

*Coluber ventromaculatus* Gray, 1834. *Ill. Indian Zool.*, 2: pl. 80, fig. 1 (type-locality- upper and lower Indus Valley).

**Common Names:** Glossy-bellied Racer, Gray's Racer, Hardwick's Rat Snake.

**Vernacular Names:** *Sagi* (in Hindi).

### **Diagnostic Features:**

Colouration: Dorsal ground colour greyish-white, pale-sandy, yellowish-olive, brownish-grey or reddish-white with up to at least 74 transverse blotches throughout on main body and a lateral series of spots or oblong bars usually alternating with median markings, tail without pattern and often lighter than body, sometimes a distinct yellowish band (interrupted by somewhat broader blackish spots) or dark line along centre of back; ventral side yellow or ivory with pearly iridescence and lateral sides may be irregularly spotted with black dots; fronto-parietal region with a black transverse bar, a dark spot below eye and an oblique stripe on temple, usually with a short dark nuchal streak or a broad transverse collar.



**Fig. 6.** *Platyceps ventromaculatus*, the Glossy-bellied Racer

Scalation: Supra-labials 8, rarely 9 (5<sup>th</sup> and 6<sup>th</sup> touching eye, 6<sup>th</sup> highest), sublabials 10 (9), rarely 11, 4 in touch with 1<sup>st</sup> inframaxillary, 6<sup>th</sup> (5<sup>th</sup>) largest; rostral as broad as high or little higher, pre-oculars 2, postoculars 2-3; temporal 2+3; dorsals smooth in 19:19:13 or 15 rows; ventrals 194-207 (male), 199-214 (female), angulated

laterally; anal divided; subcaudals paired, 106-124 (male), 97-115 (female).

Length: Very young 20.3 cm [27]; 1.2 m (Ingolby & Procter, 1923); 1.26 m male, 91.3 cm female, 28-29 cm smallest [19]; longest specimen 85.2+30.8 cm [25]; maximum 1.26 m [30]; 1.1 m, female slightly shorter [12].

**Altitudinal Range:** Below 500 m throughout most of its range [25]; at low altitudes, usually below 200 m [30].

**Distribution:**

Rajasthan: Bikaner, Jaisalmer (Roopsi; Shahgarh), Jaipur, Jodhpur and Sikar districts.

Rest of India: Gujarat (Kutch), Maharashtra, Punjab and Uttar Pradesh.

Elsewhere: Afghanistan, Iran (possibly south-eastern part) and Pakistan (Baluchistan).

**Habitat:** Low bushes, sandy deserts and scrub areas.

**Food & Feeding:** Reptiles (geckos, lizards), rodents (mice and rats), chiropterans (bats) and eulipotyphla (shrews).

**Breeding:** Oviparous. Female lays 6-10 eggs during summer months which hatch out in rainy season.

**Nature:** Diurnal, occasionally seen at night. Mildly venomous, bites may be painful with swelling.

**Conservation Status:** IWPA- Schedule IV; IUCN Red List- Least Concern.

Genus: *Ptyas* Fitzinger, 1843

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

*Coluber mucosus* Linnaeus, 1758. *Syst. Nat.* Ed. 10: 226 (type-locality: India).

**Common Name:** Indian Rat Snake, Oriental Rat Snake.

**Vernacular Name:** *Bairokh* (Assamese), *Dharaj*, *Darash* (Bengali), *Dhaman*, *Ghora-pachhar* (Hindi); *Jerothana* (Kannada), *Deevod* (Konkani), *Chera*, *Manja-chera* (Malayalam), *Dhaaman* (Marathi), *Dhaman* (Nepali), *Dhamanaa Sanp* (Odiya), *Saarai-pambu* (Tamil), *Jerri-goddu* (Telugu).



**Fig. 7.** *Ptyas mucosa*, the Indian Rat Snake

**Diagnostic Features:** Body slender and long, head broader than long, snout obtuse, eyes large with round pupil, lip scales demarcated by black lines.

Colouration: Varies from pale yellow, brown or grey with distinct black cross bands on posterior part including tail, juveniles with light cross bands on anteriorly in arid regions to nearly black in moist forest areas, yellowish below, posterior ventrals and subcaudals edged black.

Scalation: Scales smooth or upper rows distinctly keeled. Dorsals in 17, 18 or 19: 17 or 16: 14 rows, ventrals 190-213, anal divided, subcaudals 95-146, paired, rostral broader than than deep, loreals 2-3,

presuboculr 1, subocular 1, postoculars 2, temporal 2+2.

Length: Maximum length 4 m, females shorter than males [12,13]; adults 2.0-3.5 m, juvenile 32-47 cm [30]; total length 1.5-1.9 m, exceeding 2 m, record size 3.7 m [1, 10].

**Altitudinal Range:** Up to 4,000 m [13, 30]; plains to 3,600 m [12].

**Distribution:**

Rajasthan: Ajmer, Barmer, Bikaner, Ganganagar, Jaisalmer, Jodhpur, Pali and Sirohi districts.

Rest of India: Uttarakhand (Chamoli, Dehra Dun, Pauri and Tehri in Grahwal Division, Uttarkashi; Almora, Nainital and Pithoragarh in Kumaon Division; Rajaji Tiger Reserve).

Elsewhere: Afghanistan, Bangladesh, Cambodia, S. China, Indonesia, Iran, Laos, W Malaysia, Myanmar, Nepal, Pakistan and Sri Lanka, Taiwan, Thailand, Turkmenistan and Viet Nam.

**Habitat:** Arid and hilly areas, fields, tall grass, trees, forests, holes, termite mounds, grain stores and human habitations.

**Food & Feeding:** Feeds on amphibians (frogs and toads), reptiles (lizards, snakes and tortoises), birds and rodents (rats, mice and squirrels).

**Breeding:** Oviparous. Female lays 8-22 eggs [30]/6-15 (Wikipedia) in clutches during summer season.

**Nature:** Diurnal. Very active and fast moving. Non-venomous.

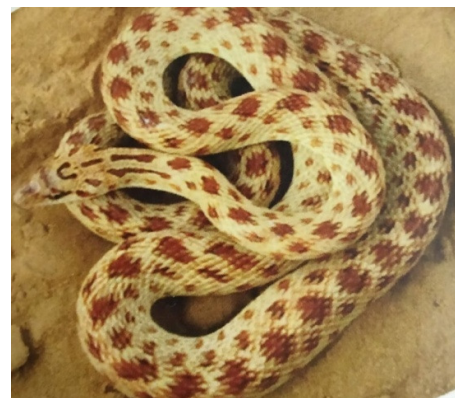
**Conservation Status:** IWPA: Schedule II; IUCN Red List- Near Threatened; CITES- Appendix II.

**Remarks:** As per International Code for Zoological Nomenclature *Ptyas* being a feminine word, the proper form of the species name is *mucosa*.

Genus: *Spalerosophis* Jan, 1865.

**8. *Spalerosophis arenarius* (Boulenger, 1890)**

*Zamensis arenarius* Boulenger, 1890. *Faun. Brit. India*, Reptilia and Batrachia: 329 (type-locality: Karachi and Sind, restricted to Karachi by Marx, 1959).



**Fig. 8.** *Spalerosophis arenarius*, the Red-spotted Royal Snake (Courtesy: Karan Soni, Bikaner)

**Common Names:** Red-spotted Diadem Snake, Red-spotted Royal Snake.

**Diagnostic Features:** Head long, broad and distinct from neck; snout obtusely pointed; eyes with round pupil

Colouration: Cream, pale buff or ashy grey above, with reddish-brown spots arranged quincuncially, in -7 alternating series which merge to form stripes on tail; upper surface of head with curved reddish-brown markings; a darker stripe on sides and top of neck; white below.

Scalation: Scales weakly keeled, more distinct on mid-dorsal.

Dorsals 25 : 25 or 27 : 17 rows, ventrals 226-257, anal single, entire; subcaudals 71-86. Paired; supralabials 9-11, separated from eye by a series of small suboculars; rostral single, narrow, longer than broad, separating internasals for half or more than half their length; prefrontals divided into 3-4 small shields; loreals 2; preoculars 2; postoculars 2-3; anterior temporal 3, small.

Length: Maximum length 1.28 m [30]; S-V 93, tail 17.15 cm [12]; total length including tail about 1 m (Boulenger, 1893/wikipedia), juveniles measure 15 cm at birth (wikipedia).

**Distribution:**

Rajasthan: Barmer, Bikaner, Jaisalmer (Ganeshdas ki Dhani), Jodhpur and Sikar districts.

Rest of India: As above.

Elsewhere: Pakistan.

**Habitat:** Arid and sandy environment.

**Food & Feeding:** Adults feed on reptiles (lizards), birds and their eggs and rodents (mice); juveniles feed on lizards or small rodents (rats, mice).

**Breeding:** Oviparous. Female lays 7-10 eggs in a clutch during summer months and burrow at laying site, eggs hatch out in about two months time.

**Nature:** Good climber. On disturbing, may hiss and strike.

**Conservation Status:** IUCN Red List- Vulnerable.

**9. *Spalerosophis atriceps* (Fischer, 1885)**

*Zamenis diadema* var. *atriceps* Fischer, 1885. *Jahrb. Hamburg. Wiss. Anst.*, 2: 82-121 (type-locality: Himalaya).



**Fig. 9.** *Spalerosophis atriceps*, the Black-headed Royal Snake

**Common Names:** Black-headed Royal Snake, Diadem Snake, Royal Snake, Royal Diadem Rat Snake.

**Vernacular Name:** *Rajatvanshi* (Rahasthani).

**Diagnostic Features:** Head distinct from neck, eyes with rounded pupil.

Colouration: Head partly or fully blue-black or reddish with blue-black markings, nape and sides of head dark red; body yellowish-brown, orange or pink with irregular blue-black or dark brown patches on back,

glossy pink below; juveniles pale with or without black markings.

Black morph also occurs there.

Scalation: Scales obtusely/weakly keeled. Dorsals 27-29-31/33 rows at mid-body, 2 or 4 less on neck and 21 or 19 posteriorly; ventrals broad 261-250 (sometime up to 278), anal usually divided, subcaudals 82-112 paired; loreals 2, preoculars 2, postoculars 3-4, supralabials 10-13, separated from eye by suboculars, anterior temporal 3-4, small.

Mid-dorsals 29-30 [3]/ 27-31 [19], ventrals 230-252 [3], 2008/232-254 [19], subcaudals 100-112 [3]/94-114 [19].

Length: Snout-vent length 2 m [9]; adults 1.5-2.0 m, juveniles 25-47 cm [30], snout to vent 1.4 and total length 1.8 m [3]; 2.25 m, males shorter than females [12, 13]; up to 1.524-1.829 m/5-6 ft [21]

**Altitudinal Range:** Up to 2,000 m [13, 30]; plains to 1,800 m [12].

**Distribution:**

Rajasthan: Jodhpur and Jaisalmer (present); Thar Desert; Nagaur [3,12].

Rest of India: Gujarat (Kutch), Himachal Pradesh, Jammu & Kashmir, Punjab and Uttarakhand (Dehra Dun).

Elsewhere: Nepal and Pakistan (Cholistan Desert).

**Habitat:** Holes, crevices, arid and rocky sites, scrub forest, trees and bushes.

**Food & Feeding:** Reptiles (lizards, small snakes), birds and rodents (rats, mice).

**Breeding:** Oviparous, female lays about 6/3-8 eggs in a clutch during early winter [9, 13].

**Nature:** Nocturnal. Good racer and climber. On getting disturbed coils, emits loud hiss and may bites.

**Conservation Status:** Not available.

Family: Elapidae Boie, 1827

Genus: *Bungarus* Daudin, 1803.

**10. *Bungarus caeruleus* (Schneider, 1801)**

*Pseudoboia caerulea* Schneider, 1801. *Hist. Amphib.*, 2: 284 (type-locality: Vizagapatam, Andhra Pradesh, India; India orientali according Bauer, 1998).



**Fig. 10.** *Bungarus caeruleus*, the Common Krait

**Common Names:** Common Krait, Indian Krait.

**Vernacular Names:** *Domnaciti*, *Kalach*, *Shah-kanon*, *Shiyal-chanda*, *Shiyar-chiti*, *Shongkhini* (Bengali); *Katta-kadambale* (Dravidian/Tulu); *Kala-taro*, *Kalotaro* (Gujarati); *Kala-gandait*, *Kariyat*, *Maneer* (Hindi); *Ettati-viran*, *Samkhu-varayan*, *Kattige-havu* (Kannada); *Kalho-agyov* (Konkani); *Samkhu-varayan*, *Vellikketan* (Malayalam); *Kanadar*, *Manyar* (Marathi);

*Ghor-karait*, *Karait*, Karet (Nepali); *Ghor-karait*, *Karait*, *Sakhra* (North India); *Karait*, *Peewna*, *Peewano* (Rajasthan); *Chiti* (Odia); *Katla-pamu* (Telugu); *Sang-choor* (Urdu).

**Diagnostic Features:** Head flat slightly broader than neck which is hardly evident, body cylindrical, tail short, eyes small and black with rounded pupil, tongue pinkish-red.

**Colouration:** Body black, brownish-black, bluish-black or bluish-grey above with paired thin cross bands (about 40), may be faded or absent on anterior part; glossy white or yellowish below. Juveniles banded all over.

In older individuals, bands appear as a series of connected spots with a prominent spot on vertebral scale row, often a white preocular spot, upper lips and belly whitish [11].

**Scalation:** Scales smooth, glossy, vertebral row scales hexagonal and larger than that of adjacent row. Dorsals 15: 15: 15, ventrals 200-217 (sometimes 234), anal undivided, subcaudals 33-52 entire; preocular 1, postoculars 2, loreal absent, supralabials 7 (3<sup>rd</sup> and 4<sup>th</sup> touching eye), temporal 1+2.

Dorsals 15-17 rows, ventrals 185-225, caudals 37-50 [11].

**Length:** 2 m in length, females shorter than males [13]; Adults 1-1.75 m, juveniles 25-28 cm [30]; av. 1 m [12]; maximum length 1.2 m [21]; av. length 90 cm but can attain 1.75 m, males longer with comparatively longer tail than that of female (Wikipedia).

**Altitudinal Range:** Plains and hills up to 1,700 m [13, 30]; plains to 1,800 m [12]; 1,600 m (Wikipedia).

**Distribution:** Rajasthan: Ajmer, Bikaner, Jaisalmer and Jodhpur districts and Todgarh-Raoli Wildlife Sanctuary (spread over Ajmer, Pali and Rajsamand districts).

Rest of India: Andhra Pradesh (Thummalapalle), Chhattisgarh (Bisrampur; Mungeli), Goa (Bhagwan Mahavir Wildlife Sanctuary), Gujarat (Kutch; Taranga Hill Forest, Satlasana), Karnataka (Avaremla; Hospet; Kudermukh; Kyathsandra; Malebennur; Navangeri; Shimoga distt.), Kerala (Ettumanoor; Kannur; Hope Estate, Wayanad; Travancore), Madhya Pradesh (Indore), Maharashtra (Matheran; Mumbai; Nagpur; Pune-Sinhgad road), Punjab, Tamil Nadu (Annamalai Tiger Reserve, Coimbatore dist.; Eriyannur; Kalakkad-Mundathurai Tiger Reserve, Tirunelveli dist.; Madras Crocodile Bank, Mamallapuram), Uttarakhand (Dehra Dun; Doon Valley; Forest Research Institute Campus; Wildlife Institute of India Campus; Rajaji Tiger Reserve; Corbett Tiger Reserve), Uttar Pradesh (Faizabad; Katarniaghat Wildlife Sanctuary, Bahraich), Tamil Nadu (Chennai/Madras; Rock-wood Estate, Gudalur, Nilgiris; Thiruvannamalai), West Bengal and Western Ghats (Konkan, Ghatmatha and Mawal area). Elsewhere: Afghanistan, Bangladesh, Nepal, Pakistan and Sri Lanka.

**Habitat:** Gardens, Burrows, termite mounds, piles of bricks, stones and rubble, ruins and near water points.

**Food & Feeding:** Basically ophiophagous as feed on snakes (including blind worms) and cannibalise on other kraits; also feed on amphibians (frogs and toads),

other reptiles (lizards) and rodents (rats, mice etc.). Juveniles and young feed on insects and other arthropods.

**Breeding:** Oviparous. Female lays a clutch of 8-12 [30]/ 6-15 [13]/ 12-14 (under genus *Bungarus*, Wikipedia) eggs in pile of leaf litter during summer period which hatch out in about two months, female remains with eggs all through.

**Nature:** Nocturnal, active and fond of water. Deadliest venomous.

**Conservation Status:** IWPA- Schedule IV; IUCN Red List- Near Threatened.

Genus: *Naja* Laurenti, 1768.

### 11. *Naja naja* (Linnaeus, 1758)

*Coluber naja* Linnaeus, 1758. *Syst. Nat.*, Ed. 10: 221 (type-locality: India orientali).

**Common Names:** Asian Cobra, Common Cobra, Indian Cobra, Spectacled Cobra, Binocellate Cobra.

**Vernacular Names:** *Phetigom* (Assamese); *Gokhra* (Bengali); *Nag* (Gujarati; Marathi); *Nag* male and *Nagin* female (Hindi); *Nagara-haavu* (Kannada); *Moorkhan* (Malayalam); *Goga Ji*, *Kalandar*, *Naag* (Rajasthan); *Nalla-pambu* (Tamil); *Nagu-paamu* (Telugu).

**Diagnostic Features:** Head broad.

**Colouration:** Body colour variable (yellow, brown, grey or black), hood with characteristic spectacled mark (sometimes may be absent).

**Scalation:** Dorsal scales smooth, glossy and strongly oblique. Mid-body scales in 23 rows (21-25), ventrals 171-197; anal shield single; subcaudals 48-75, divided; upper labials (3<sup>rd</sup> largest and touching nasal anteriorly, 3<sup>rd</sup> and 4<sup>th</sup> touching eye), lower labials 9-10 (smaller angular cuneate scale present between 4<sup>th</sup> and 5<sup>th</sup> lower labial); preocular one in contact with internasals; postoculars 3; temporal 2+3.



**Fig. 11.** *Naja naja*, the Spectacled Cobra

Male- Dorsals 23-37 (at 10<sup>th</sup> ventral), 19-25 (at 20 of ventrals), 21-25 (at 40 of ventrals), 19-23 (at 60 of ventrals), 13-18 (at 80 of ventrals), 15-18 (at vent); ventrals 171-197; subcaudals 53-67. Female- Dorsals 23-37 (at 10<sup>th</sup> ventral), 19-25 (at 20 of ventrals), 20-25 (at 40 of ventrals), 17-24 (at 60 of ventrals), 15 -17 (at



80 of ventrals), 15-18 (at vent); ventrals 178-196; subcaudals 50-65 [30].

Length: 2.25 m, females slightly shorter than males [13]; 1-1.5 m, some Sri Lankans may grow to 2.1-2.2 m [31]; adult 1-2.22 m, juvenile 25-30 cm [30]; 1.9-2.4 m [12]; maximum up to 1.6 m [21]

**Altitudinal Range:** Plains to 3,658 m/12,000 ft [29]; 3,650 m [13]; sea level to 2,000 m [30]; plains to 3,600 m [12]; up to 3,650 m.

**Distribution:**

Rajasthan: Ajmer, Ganganagar, Jaipur, Jaisalmer, Jodhpur, Nagaur and Pali districts; Todgarh-Raoli Wildlife Sanctuary (spread over Ajmer, Pali and Rajsamand districts) [12].

Rest of India: Andhra Pradesh (Thummalapalle), Assam (Kokrajhar; Manas National Park, Barpeta), Chhattisgarh (Bisrampur; Mungeli), Goa (Bhagwan, Mahavir Wildlife Sanctuary; BITS Pilani, Goa Campus, Zuarinagar; Khotigao), Gujarat (Kutch; Taranga Hill Forest, Satlasana; Vallabh Vidiyanagar, Anand), Karnataka (Agumbe-Udupi Highway; Aigalkurve; Bellary; Bengaluru; FRLHT Campus, Yelahanka, J. P. Nagar, Siddivinayeka Layout, Rajiv Gandhi Nagar, Srimapura, Jakur, Virupakshapura and NCBS, Bengaluru; Karyannagady Belvai; Kunderamukha; Kunigal; Malebennur; Shimoga), Kerala (Ettumanoor; Hope Estate, Wayanad; Kannur; Travancore), Madhya Pradesh (Hitkarini Dental College & Hospital, Priyadarshni Colony and Netaji Subhash Chandra Medical College Doctors Colony, Jabalpur), Maharashtra (Ambyvalley road, Lonavala; Arey Colony, Goregaon, Mumbai; Melghat Tiger Reserve, Jawaharkund; Murbad; Nagpur; Nashik; Pune-Tamhini road; Solapur; Trimbakeshwar; Yavor Hills, Upvan, Thane dist.), Odisha (Angul; Cuttack), Puducherry (Osudu Lake are), Punjab, Tamil Nadu (Annamalai Tiger Reserve, Coimbatore dist.; Ayyampalayam; Chennai; Cherambadi; Ennur near Chennai; Kalakkad Mundathurai Tiger Reserve, Tirunelveli dist.; Kalvarayan Hills, Thekambattu village; Megamalai; Pilloor; Poothurai; Rookery Estate, Kotagiri; Thiruvannammalai), Telangana (LaCONES Campus, Hyderabad); Uttarakhand (Dehra Dun: Siwalik; Dehra Dun; Forest Research Institute Campus; Wildlife Institute of India Campus, Dehra Dun; Corbett Tiger Reserve, Rajaji Tiger Reserve; Pauri, Tehri, Uttarkashi, Almora, Nainital and Pithoragarh districts), Uttar Pradesh (Faizabad; Katarniaghat Wildlife Sanctuary, Bahraich), West Bengal (Gairkata, Jalpaiguri; Siliguri) and Western Ghats.

Elsewhere: Bangladesh, Bhutan, S China, Nepal, Pakistan, Philippines and Sri Lanka.

**Habitat:** Fields, forests, brick and rock piles, tree hollows, tangle of roots at base of trees, dens, holes, termite mounds, ruined buildings, old thatched roofs, around human-habitations, grain stores, stream sites etc.

**Food & Feeding:** Rodents (rats, mice, squirrels), small birds, reptiles (lizards, other snakes), and amphibians (frogs and toads).

**Breeding:** Oviparous. Female lays 12-30 [30]/8-40, usually 12-20 [13] oval eggs in single clutch during summer months in hollows of tree stumps, rat holes or termite mounds and stays with eggs till they hatch out in about two months.

**Nature:** Diurnal. Water loving. Active and alarm may raise anterior part of body and open hood, hiss and strike. Highly venomous.

**Conservation Status:** IWPA- Schedule II; IUCN Red List- Near Threatened; CITES- Appendix II.

Family: Lamprophiidae Fitzinger, 1843

Genus: *Psammophis* Fitzinger, 1826

**12. *Psammophis schokari* (Forsk., 1775)**

*Coluber schokari* Forskal, 1775. *Descriptiones animalium, avium, amphibiorum, piscium, insectorum, vermium; quae in itinere Orientali observavit Petrus Forskal*. Moller, Haunia: xxxiv + 164 (type-locality: Hodeida, Yemen).



**Fig. 12.** *Psammophis schokari*, the Schokari Sand Snake (Courtesy: Dharmendra Khandal, Mumbai)

**Common Names:** Afro-Asian Sand Snake, Forskal's Sand Snake, Schokari Sand Racer.

**Diagnostic Features:** Body long and slender with long tail, head elongate, taper towards front, slightly broader than neck and having distinct ridge between top and sides, eyes large with rounded pupil, maxillary teeth 13 or 14 (2 in middle, very enlarged), last two enlarged, grooved and pointed backward.

**Colouration:** Usually crème, pale brown or greyish, back with four broad, ribbon-like dark brown stripes along entire length of body including tail; head with dark brown markings and stripe between snout tip and entire side of it; lip scales white and spotted with black; yellowish below with thin black line paired spots, middle part may be bluish-grey, reddish or blackish. Colouration may vary variously. Juveniles resemble adults.

**Scalation:** Scales smooth, outer edges of belly scales rounded. Dorsals 15, 16 or 17: 17: 11, 13 or 15 rows; ventrals 164-187, rounded; anal entire or paired; subcaudals 118-134, paired; nasal divided, supralabials 8 (4<sup>th</sup> and 5<sup>th</sup> touching eye) or 9 (5<sup>th</sup> and 6<sup>th</sup> touching eye); loreal elongate; preocular 1 (touching long frontal); postoculars 2 or 3; temporal 2+2 or 2+3.

Length: Maximum 1.28 m [30]; male 42 cm, female 45 cm without tail [12]; 1.4-1.5 m [21].

**Distribution:**

Rajasthan: Bikaner [12], Jaisalmer and Jodhpur districts.

Rest of India: Jammu & Kashmir and Punjab.

Elsewhere: Afghanistan, Algeria, Egypt (including Sinai and Suez area, as *P. s. hierosolimitana* Jan, 1863), Eritrea, Ethiopia, Iran (Kavir desert), Iraq, Israel (Jerusalem), Jordan, Kuwait, Libya, Mali, Mauritania, Morocco, Nigeria, Oman (Dhofar), Pakistan, Palestine, W Sahara, Saudi Arabia (including Farasan Islands), Somalia, Sudan, Syria, Tunisia, S Turkmenistan, United Arab Emirates and Yemen.

**Habitat:** Under rocks, base of bushes in dry/arid areas like sandy deserts with scanty vegetation.

**Food & Feeding:** Reptiles (geckos, lizards), rodents (mice, rats) and small birds.

**Breeding:** Oviparous. Female lays 4-10 eggs during March-July [30].

**Nature:** Basks on low bushes in morning. Fast moving. Mildly –venomous with two grooved fangs in rear part of mouth, bite may cause pain and swelling with bleeding.

**Conservation Status:** IWPA- Schedule IV; IUCN Red List- Near Threatened.

**Remarks:** More closely related to Elapidae than to Colubridae [22].

Subspecies *Phasmmophis schokari aegypticus* has been elevated to species level (reptile- database). Kark *et al.*, 1997 observed three pholidotically indistinguishable morphs in Israel and Sinai Egypt, viz. (i) striped with four dark longitudinal stripes, (ii) non-striped, plain or slightly dotted and (iii) rear-striped, dark stripes on posterior part, merging anteriorly [16]. Family: Typhlopidae Merrem, 1820

Genus: *Indotyphlops* Hedges *et al.*, 2014

### 13. *Indotyphlops braminus* (Daudin, 1803)

*Eryx braminus* Daudin, 1803. *Hist. Nat. Rept.*, 7: 279 (type-locality: Vizagapatnam, India).



**Fig. 13.** *Indotyphlops braminus*, the Brahminy Worm Snake

*Ramphotyphlops braminus*, Whitaker & Captain, 2004. *Snakes of India: The Field Guide*: 46, fig. 47; Nussbaum, 1980. *Herpetologica*, 36 (3): 215-221.

*Indotyphlops braminus*, Spawls *et al.*, 2018. *Field Guide to East African Reptiles*: 354.

**Common Names:** Boot-lace Snake, Common Blind Snake, Flower-pot Snake, Brahminy Blind Snake, Brahminy Worm Snake, Hawaiian Blind Snake, Island Blind Snake.

**Vernacular Names:** *Andha Samp*, *Keet Samp*, *Telia Samp* (in Hindi), *Andha Samp* (Gujarati), *Poyien* (Bengali), *Vala* (Marathi), *Keet Sarp* (Rajasthani).

**Diagnostic Features:** Small, cylindrical and worm-like.

Scalation: inferior nasal suture in contact with pre-ocular shield; superior nasal suture extending to snout to contact rostral; mid-dorsal scales more than 270

(290-350), ventrals indistinct from other body scales, subcaudals 8-15.

Colouration: Glossy black or reddish-brown.

Length: Adults 12.5-23.0 cm, juveniles 3.5 cm [30]; 5.1-10.2 cm, uncommonly 15 cm (Wikipedia); 17 cm [21]; maximum 20 cm, av. 12 cm, mature at 9.5 cm (Indian snakes).

**Altitudinal Range:** Up to 1,000 m [12,13] 1,200-1,500 m (Wikipedia); 1,515 m (2,600 m in Papua New Guinea) (Indiansnakes).

#### **Distribution:**

Rajasthan: Ajmer, Bharatpur (Keoladeo National Park), Bikaner, Jaisalmer, Jodhpur and Mount Abu.

Rest of India: Andaman & Nicobar Islands, Arunachal Pradesh (Miao, Changlang distt.), Assam (Dibrugarh; Manas National Park, Barpeta), Bihar (Andhana), Delhi (Manju ka Tila, New Aruna Nagar, New Delhi), Gujarat (Jamnagar), Himachal Pradesh, Karnataka (Karkala; Sompura; Indian Express Layout road, Virupakshapura, Bengaluru), Kerala (Ettumanoor; Methala, Trissur dist., Ponmudi), Lakshadweep (introduced), Madhya Pradesh (Jhabua), Maharashtra (Dodamarg; Nagpur; Pune), Puducherry (Osudu Lake and around), Punjab, Tamil Nadu (Cooperative Colony, Valparai; Thiruvannamalai), Uttarakhand (Forest Research Institute Campus, Dehra Dun; Haridwar; Pauri) and Uttar Pradesh (Faizabad; Daliganj, Reserve Forest, Hardoi road, Vasantkunj, Kukrail Gharial Centre, Lohia Gomti Nagar and Nai Basti, Nabiullah Road, Lucknow) and West Bengal (Diamond Harbour, New Mans Park, Colony, South 24 Pargana dist.) Indian Express Layout Rd, Dhanalakshmi Layout, Virupakshapura, near Silver Oak Apartments, Bengaluru).

Elsewhere: Afghanistan, American Samoa, Australia, Bahrain, Bangladesh, Belize, Benin, Bhutan, Borneo, British West Indies, Burkina Faso, Cambodia, Cameroon, Central African Republic, China, Christmas Island, Cocos Islands, Comoro Islands, Congo Demo. Rep., El Salvador, Egypt, Equatorial Guinea, Federated States of Micronesia, Gabon, Guatemala, Hong Kong, Indonesia, Iran, Iraq, Ivory Coast, Japan, Kenya, Kiribati, Kuwait, Laos, Lesser Antilles, Libya, Macau, Madagascar, Madeira, Malaysia, Maldives, Marianas, Marshalls, Mascarene Islands, Mauritania, Mauritius, Mexico, Midway, Mozambique, Myanmar, Nauru, Netherlands Antilles, Nepal, New Caledonia, New Guinea, New Zealand, Nigeria, Nosy Be Island, Pakistan, Philippines, Portugal, Reunion, Rodrigues Island, Senegal, Seychelles, Singapore, Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, Taiwan, Tanzania, Thailand, Togo, United Arab Emirates (including Dubai), Vanuatu, Vietnam, Yemen and Zanzibar.

Introduced: Oman, Saudi Arabia, Australia, Oceania (Fiji, Guam, Hawaiian Islands, Palau and Tahiti in French Polynesia), USA (Arizona, California, Connecticut, Florida, Hawaii, Louisiana, Massachusetts and Texas), Barbados, Caicos Islands, Cayman Islands, Colombia, Guatemala, Mexico and Turks; Spain's Canary Islands of Tenerife and Gran Canaria.

**Habitat:** Lives underground in ant holes and termite mounds, around roots, decayed wood logs, decayed moist leaves, agriculture areas, gardens, flower beds and pots, stones and humus in forests.

**Food & Feeding:** Eggs, larvae and pupae of ants and termites and other insects [13].

**Breeding:** Parthenogenetic, lays 2-7/8 elongate, self-fertilised eggs or bear live young (Wikipedia) [13, 30]. All females and genetically identical (Wikipedia)

**Nature:** Non-venomous and harmless.

**Conservation Status:** IWPA- Schedule IV; IUCN Red List: Least Concern (Near Threatened, in: BCPP-CAMP Report, 1997).

(BCCP=Biodiversity Conservation Prioritisation Project, India; CAMP= Conservation Assessment and Management Plan Workshop).

Family: Viperidae Opperl, 1811

Genus: *Echis* Merrem, 1820

#### 14. *Echis carinatus sochureki* Stemmler, 1969

*Echis carinatus sochureki* Stemmler, 1969. *Aquaterra*, 6: 118-125 (type-locality: West Pakistan, Ban Kushdil Khan bei Pishin, Rand eines Staueses).

**Common Name:** Eastern Saw-scaled Viper, Sochurek's Saw-scaled Viper.

**Vernacular Names:** *Fursa-boda sap* (Bengali); *Tarachha*, *Udaneyn*, *Zeri-pakdo* (Gujarati); *Afai*, *Aphai*, *Phoorsa* (Hindi); *Bhaandi* (Rajasthani).

**Diagnostic Features:** Stocky-bodied, tail very short and abruptly tapering, head short, wider than neck, pupil of eye vertical.



**Fig. 14.** *Echis carinatus sochureki*, the Sochurek's Saw-scaled Viper

**Colouration:** Body brownish with median row of 30 white spots/blotches bordered with dark brown, lateral wavy white band in form of separate arcs and dark spots, whitish below with dark grey spotting; head with light arrow-head mark, directed anteriorly, a light loreal stripe extending to angle of mouth. 25-31 pale and dark-edged spots (as *E. carinatus* from Rajaji Tiger Reserve, [13].

**Scalation:** Variable as per literature quoted.

Female (Iraq)- Dorsals at mid-body 27; ventrals 174; anal single; subcaudals 30, undivided; circumopticals (around eye) 17-18; between eye and supralabial 2; supralabials 11-12; infralabials 11-12 [23].

Mid-body dorsals 29-33 rows, strongly keeled (keels of mid-dorsals rows flat), scales of 3<sup>rd</sup> to 7<sup>th</sup> lateral rows strongly oblique, with ciliated keels; ventrals 132-188, anal single, subcaudals 23-39, head scales small except

for 3-4 large supraoculars, supralabials 8-12 (separated from ocular by 1-2 rows of small scales), infralabials 10-13; anterior genial broad, followed by three pairs of slightly enlarged scales (wildlife of Pakistan).

Dorsals 28-32, ventrals 154-181, subcaudals 27-34, oblique serrated scale rows-3-7, gular rows 3.2-5.0, suboculars 2, mean number of dorsal spots varies from 31-41, white blotched interspaces always present, belly spotting varies from none to very intense and lateral zig-zag ranges from none to about half of the individuals in some populations [2].

Length: 38-80 cm [12]; Snout-vent 46.7 cm, tail 5 cm [23]; S-V 60-62.5 cm, tail 5.1-5.6 cm, av. length 40-60 cm (wildlife of Pakistan); av. size 30 cm (indibiobiodiversity).

**Altitudinal Range:** Plains to 914 m/3,000 ft (Waltner, 1975); an inhabitant of plains but found up to 2,000 m (as *E. carinatus*, [13]; plains to 900 m [12]; up to 1,800 m (Wildlife of Pakistan).

#### **Distribution:**

Rajasthan: Ajmer, Bikaner, Jaisalmer, Jodhpur, Nagaur and Pali and Sirohi districts; Thar Desert [12].

Rest of India: Gujarat (Jamnagar; Katch; Rajkot), Haryana, Punjab, Uttarakhnad (Dehra Dun, Pauri and Nainital districts, Rajaji Tiger Reserve).

Elsewhere: S Afghanistan, SE Arabian Peninsula, Bangladesh, Central Iran, S Iraq, Khuzestan, Oman, Pakistan and United Arab Emirates.

**Habitat:** Mainly arid and semi-arid sandy and rocky areas with sparse xerophytic to moderately dense grass, hedges and scrub vegetation/forests.

**Food & Feeding:** Feeds on Reptiles (mice, lizards, other snakes), amphibians (frogs and toads), arthropods (earwigs, centipedes, scorpions and other groups) [13].

**Breeding:** Ovo-viviparous. Female gives birth to 3-15 young ones in a clutch during summer months [13], viviparous races give birth to 6-28 young, juveniles met with from March to July (Wildlife of Pakistan).

**Nature:** Primarily nocturnal but sometimes found basking. Deadly venomous.

**Etymology:** Subspecies named after Erich Sochurek, Australian Herpetologist.

**Conservation Status:** IWPA- Schedule II; IUCN Red List- Near Threatened.

**Other Indian Subspecies:** *Echis carinatus carinatus* (Schneider, 1801), the South Indian Saw Scaled Viper, occurring in peninsular India.

**Remarks:** Constable (1949) considered Pakistan and other populations as *E. carinatus pyramidium* Geoffroy, 1827 (type locality Egypt) but Stemmler (1969) described *E. carinatus sochureki* (type locality Ban Khusdil Khan, Pishin, Baluchistan, Pakistan) and placed all Pakistan's and some other populations under it and replaced *E. carinatus pyramidium* back to species, *E. pyramidium* [8, 26].

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