

AN IDENTIFICATION KEY TO THE AMPHIBIANS AND REPTILES OF THE CHILKA LAKE, INDIA

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(Accepted 2.6.87)

ABSTRACT

A key to the identification of twenty species of amphibians and reptiles recently recorded from the waters, the islands and the hills of the Chilka Lake, India is presented.

INTRODUCTION

Information concerning the herpetology of the Chilka Lake is scanty. The only published reports are those of Annandale (1915, 1921). Between June 1985 and December 1986 I was able to explore the vast expanse of the Chilka Lake including its islands and hills as part of the Zoological Survey of India's expedition to the Chilka lagoon, and succeeded in recording six species of amphibians and fourteen species of reptiles. Of these, the rock-lizard *Psammophilus blanfordianus*, the smooth snake *Enhydrina enhydris* and the beaked sea snake *Enhydrina schistosa* are new records for the area. The unique limbless skink *Barkudia insularis* is now apparently very rare; no specimens were found on Barkuda Island, the type-locality.

Probably the great majority of amphibians and reptiles found in the Chilka lagoon are represented in the collection. It is felt, therefore, that this work will enable the biologists/naturalists interested in the herpetofauna of the Chilka Lake region to identify the amphibians and reptiles of the area and thereby facilitate future recognition of species not previously recorded for this region.

GEOGRAPHY OF THE LAKE

The Chilka Lake (Fig. 1) is a vast, shallow expanse of brackish water situated on the east coast of India between latitudes $19^{\circ} 28'$ and $19^{\circ} 54' N$ and longitudes $85^{\circ} 6'$ and $83^{\circ} 35' E$. It is roughly pear-shaped and spreads over an area of $1165^2 km$ in the Puri and Ganjam Districts of the State of Orissa and is

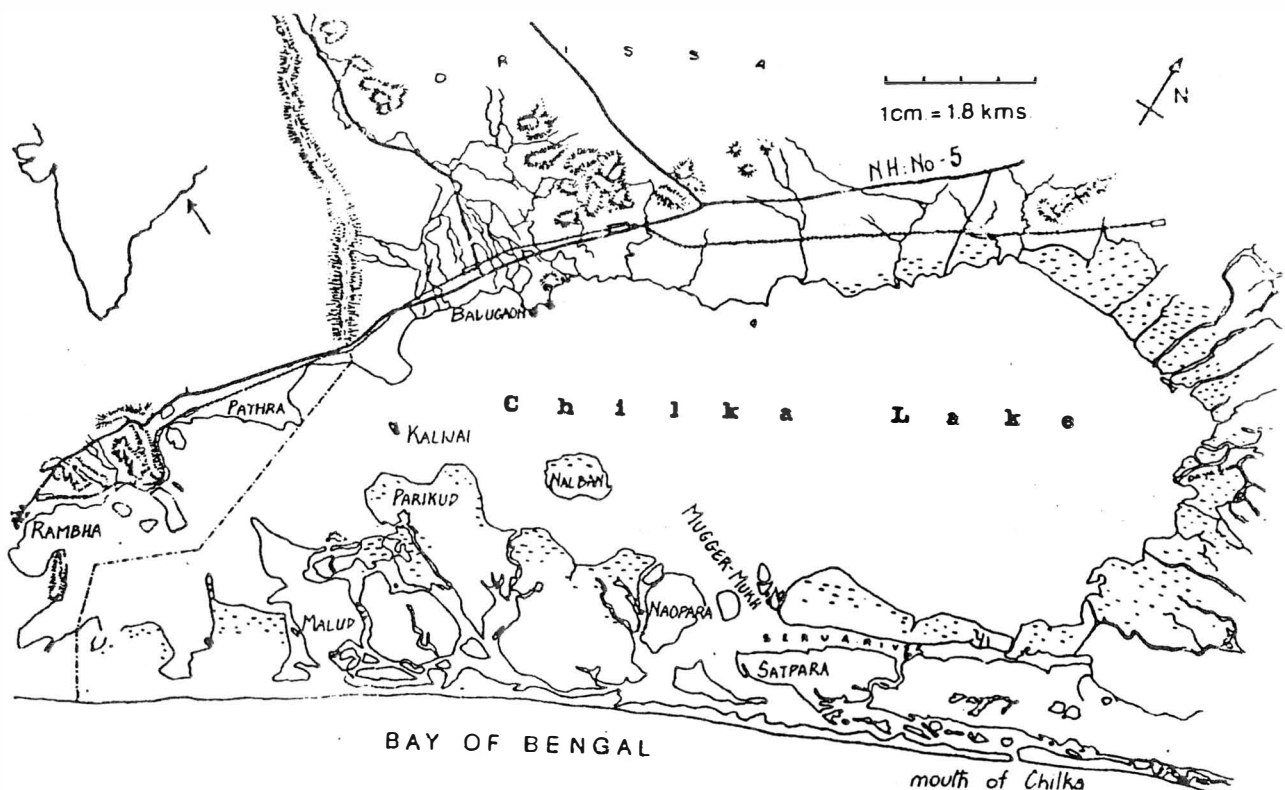


Fig. 1 The Chilka lake region.

connected with the sea (Bay of Bengal) through an outlet at its northeast and is subjected to tidal fluctuations. It receives freshwater from the two rivers, Daya and Bhargavi, the branches of the River Mahanadi as well as from several local streams. The lake at its western side is embraced by a group of low hills and dotted with several rocky islands in the southern portion. The depth of water ranges from 0.5m to 3m; the northern part is quite shallow and the deepest area is near the Kalidai. The lake's water imparts a saltier taste during the summer, less so in winter and nearly fresh during the rains. The surface temperature ranges from 16°C to 36°C. The cooler water is found in the central sector, while nearer the shores and in the neighbourhood of rocky islands, the temperature is remarkably higher.

THE KEY AMPHIBIA

1. Fingers and toes with discs. *Polypedates maculatus* (Gray) 1834.
Fingers and toes without discs. 2.
2. Skin warty. Elevated parotid glands on shoulder. Hind legs short. Generally living on land. *Bufo melanostictus* Schneider 1799.
Skin slimy. No parotid glands on shoulder. Long hind legs. Generally living in or near water. 3.
3. Toes completely webbed. 4.
Toes half to two-thirds webbed. 5.
4. Skin of back with prominent longitudinal folds. Inner metatarsal tubercle large, compressed, and crescentic. Colour olive-green or brown, with dark spots and a yellow middorsal stripe. *Rana tigerina* Daudin 1803.
Skin of back without folds. Inner metatarsal tubercle small. Colour olive or brown with dark markings; no middorsal stripe. *Rana cyanophlyctis* Schneider 1799.
5. Form stout and tending to be toad-like. Inner metatarsal tubercle large, compressed, and crescentic. Colour light brown or olive above with dark brown spots and often with a middorsal streak. *Tomopterna breviceps* Schneider 1799.
Form neither stout nor tending to be toad-like. Inner metatarsal tubercle small, oval or rounded. Colour brown or olive usually with distinct dark markings and a V-shaped band from eye to eye. *Rana limnocharis* Weigmann 1835.

LIZARDS

1. Tongue very long, slender, and forked. *Varanus bengalensis* (Daudin) 1802.
Tongue not so. 2.
2. Eyes without movable eyelids. Digits clawed. 3.
Eyes with movable eyelids. Digits free. 5.
3. Back covered with numerous, large tubercles which are strongly keeled and regularly arranged. Colour light brown on greyish, with dark brown spots and a dark eye streak. *Hemidactylus brooki* Gray 1845.
Back covered with few rounded tubercles which are feebly keeled and irregularly arranged. 4.

4. Tail feebly depressed. Colour grey or pinkish-brown or uniform or with dark longitudinal stripes and a pair of eye streaks. *Hemidactylus frenatus* Schlegel 1836.

Tail strongly depressed. Colour grey, with distinct dark markings which may be either wavy crossbars or rhomboidal spots and a dark eye streak. *Hemidactylus leschenaulti* Duméril and Bibron 1836.

5. Body depressed. Colour brown, with a series of elongated white spots on each side of the back. *Psammophilus blanfordianus* Stoliczka 1872.
Body compressed. 6.
6. Dorsi-nuchal crest present. Hind foot with five toes. Colour brown, with more or less distinct markings, especially in juveniles and females. *Calotes versicolor* (Daudin) 1802.
Dorsi-nuchal crest absent. Hind foot with four toes only. Colour light or dark-brown, with a series of dark-brown, dark-edged diamond-shaped spots. *Sitana ponticeriana* Cuvier 1844.

SNAKES

1. Size small and worm-like. Eyes diminutive, covered by shields. *Typhlops acutus* (Duméril and Bibron) 1844.
Size variable and not worm-like. Eyes certainly large and exposed. 2.
2. Tail very flat and paddle-like. 3.
Tail cylindrical and pointed or rounded on nearly so but not as above. 4.
3. End of snout curved and hooked. Colour olive or grey with dark bars; adults sometimes bluish grey. *Enhydryna schistosa* (Daudin) 1803.
End of snout neither curved nor hooked. Colour more or less uniform grey above and yellowish below. *Hydrophis obscurus* (Daudin) 1803.
4. Body covered with numerous small wart-like scales and head with granules. Ventrals absent. *Chersydrus granulatus* (Schneider) 1799.
Body covered with moderately large and fewer number of scales and head with shield-like scales. Ventrals distinct. 5.
5. Nostrils on the side of snout, not valve-like. Ventrals large. Eye large, with round pupil. Back with a pattern of distinct checkered spots. *Xenochrophis piscator* (Schneider) 1799.
Nostrils on the upper surface of snout, valve-like. Ventrals reduced in size. Eye small, with vertical pupil. 6.
6. Scales smooth. Lower jaw not prominent. Belly with a pattern of stripes. *Enhydryn enhydryn* (Schneider) 1799.
Scales strongly keeled. Lower jaw prominent. A pattern of dark bars above and dark spots or crossbars on the belly. *Cerberus rhynchops* (Schneider) 1799.

ACKNOWLEDGEMENTS

I would like to thank the Director, Zoological Survey of India, Calcutta and Dr. K. V. Rama Rao,

Coordinator, Chilka Lagoon Expedition for facilities and encouragement. It is a pleasure to acknowledge the services of several fishermen of the Chilka Lake who have accompanied me in the field and also assisted me in collection of the material.

REFERENCES

- Annandale, N. (1915). Fauna of the Chilka Lake. Reptiles and Batrachia. *Mem. Ind. Mus.* 15, 167-174.
Annandale, N. (1921). The Reptiles and Batrachia of Barkuda Island. *Rec. Ind. Mus.* 22, 331-333.

HERPETOLOGICAL JOURNAL, Vol. 1, pp. 237-245 (1988)

INTRASPECIFIC VARIATION IN THE COLUBRID SNAKE GENUS *MACROPROTODON*

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(Accepted 8.6.87)

ABSTRACT

The current status of the forms of *Macroprotodon* is summarised. Among the characters that were investigated the head patterns showed differences that were surprisingly consistent. The two recognised taxa, *Macroprotodon cucullatus cucullatus* and *Macroprotodon cucullatus brevis*, are reappraised and the existence of a third, *Macroprotodon cucullatus mauritanicus* is confirmed. An attempt has been made to determine the affinities of the isolated populations and a brief resume of the habits together with some personal observations is presented.

INTRODUCTION

The genus *Macroprotodon* consists of a single species with two currently recognised races. The high degree of intraspecific variability has long been recognised. The two races have been distinguished from each other on what would appear to be little more than differences in number of midbody scale rows.

The situation may be summarised as follows: *M. c. cucullatus* Geoffroy possesses normally 19 scale rows at midbody, 20 and 21 rows being occasionally met with in individuals from Algeria and Tunisia. The range extends from S. Palestine to Eastern Morocco including Lampedusa and the Balearics with relict populations in Rio de Oro and the Hoggar (Bons, 1967). Kramer and Schnurrenberger (1963) noted 'within the nominate race' and increase from East to West in the number of ventrals.

The other race *M. c. brevis* Günther is characterised by higher midbody scale counts of from 21-25 in Morocco and 21 and 23 in Iberia (Bons *op. cit.*). Recently however Almeida and Almeida (1986) remarked on two individuals from North Portugal (well to the north of the known range) as both possessing only 19 midbody scale rows.

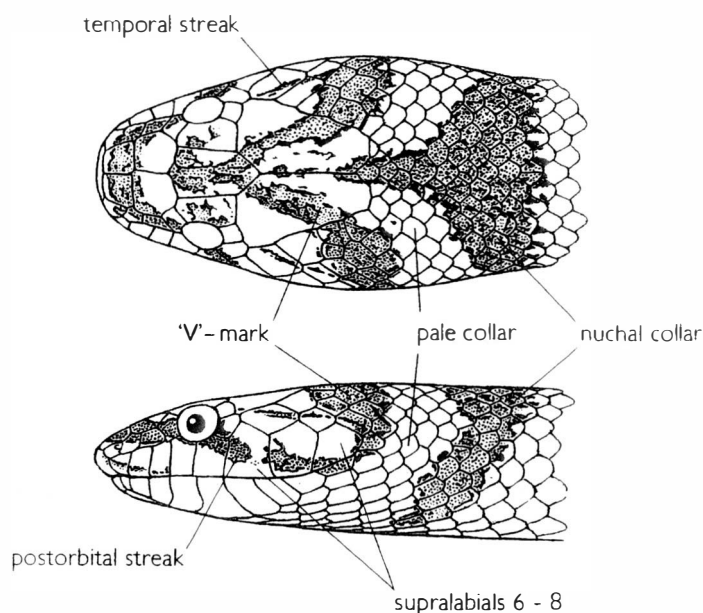


Fig. 1 Head of *Macroprotodon cucullatus mauritanicus* (BM 53.2.4.23, Algiers) showing typical scutellation and characters used in the study of the genus.

Bons (1973); Pasteur and Bons (1960) suggested the existence of a third race comprising the Iberian population which could be differentiated from the