

VIII.—*On the habits of a little known Lizard, Brachysaura ornata.*—By
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BRACHYSAURA ORNATA.

Blyth, J. A. S. B. Vol. XXV p. 448.

Günther, Reptiles of Brit. India, p. 161.

Jerdon, P. A. S. B. 1870, p. 78.

Stoliczka, P. A. S. B. 1872, p. 77.

Very little is known of this lizard. It was originally described by Blyth in the J. A. S. B. Vol. XXV from specimens procured by Dr. Jerdon at Saugar in Central India. Dr. Günther includes it in an appendix to the Reptiles of British India, and remarks that it is just possible that this animal may be recognized when re-discovered, but from the description alone it is impossible to characterize the new genus *Brachysaura* or to fix its position in the family of the *Agamidæ*.

In the P. A. S. B. for 1877, Dr. Jerdon in his Notes on Indian Herpetology remarks that all his endeavours to procure specimens for a more minute examination of this curious form had hitherto failed and “till some one with sufficient scientific proclivities examines these districts we must rest satisfied with our incomplete information.” The type appears at this time to have been lost. In 1872, five specimens were procured in Kachh by that enthusiastic naturalist Dr. Stoliczka, and described in the Proceedings for May, 1872.

During the last rainy season I found *B. ornata* excessively common in the vicinity of the town of Banda and was enabled to send more than twenty living specimens to the Zoological Gardens, Calcutta, as well as to present a series to the Indian Museum. The results of my observations show how much of interest there may be in the life history of a small lizard.

There are certain anomalous sexual characters about this lizard, the females being larger than the males. The superiority of the female in size appears to occur irregularly throughout the province *Sauropsida*. The female of *Sitana minor* is a third larger than the male, but in *Calotes versicolor* the reverse is the case. In *Brachysaura*, which is closely allied to *Calotes*, not only is the female larger, but she is normally more brilliantly coloured than the male. Certain peculiarities in the behaviour of the females leads me to suspect that they seek and attract the males. In more than one instance I observed a female make decided advances towards a male. She sidled up to him in a most insinuating way, with a crouching wriggling motion and open jaws, and seized him by the nuchal crest.

Dr. Stoliczka P. A. S. B. 1872, p. 72 remarks that the head-quarters of *Brachysaura* appear to be westward. This is not strictly correct, but even in ignorance of Stoliczka's paper I fell into a similar mistake and in a

letter to Dr. Anderson, wrote, "*B. ornata* appears to be essentially a Central Indian species. The black volcanic soil of these provinces seems its peculiar habitat. I, however, once (in 1873), captured a pair on the north bank of the Jumna at Allahabad near the mouth of the Sussor Kuderee, *Sitana* is plentiful in this locality, but I never found another pair of *Brachysaura*. It is unknown in the Duab, and the probability is that these individuals were the offspring of others brought down in some flood from Bundelkhand." It now appears likely that *Brachysaura ornata* will be found in arid tracts throughout the Gangetic provinces, from the confluence of the Jumna westward to the extreme limits of the Empire. It would appear to range with *Psammophis condanurus*, and *Sitana minor*. Its southern limit beyond Saugar is yet unknown.

There are several points in which my specimens appear to differ from Dr. Stoliczka's and I have therefore described the lizard anew.

Brachysaura ornata, Blyth, ♂. A squat thick-set pot-bellied ground lizard, with a large head and short tail. Scales on the upper surface of body, limbs and tail strongly keeled, this character being less defined on the lower surface of the abdomen and thighs. The scales of the body are in nearly vertical series down the flanks, following the line of the ribs, and gradually inclining upwards in the direction of the costal cartilages on the ventral surface. Counted round the body at the 30th spine they are 55 in number in an adult. From the 1st nuchal spine to the extremity of the tail are 110 scales.

A dorsal and nuchal crest of sharp spines is present in the male sex only; the nuchal portion of this crest, composed of 9 scales, is most developed, there is then a hiatus of 8 strongly keeled scales, when the spines again occur. They are continued in the form of a strong median series of keels to the tips of the tail.

Total length.	Head and body. to centre of vent.	Tail from centre of vent.
♂ $6\frac{1}{8}$	$3\frac{3}{8}$	$3\frac{3}{8}$
♀ $5\frac{1}{2}$	$3\frac{6}{8}$	$1\frac{5}{8}$ (Imperfect.)
♀	$3\frac{1}{10}$	2.42.

The fore limb when laid backwards reaches the inguinal region, and the hind limb laid forward extends to the angle of the lower jaw, all four limbs are strongly keeled to the extremities of the digits. The keels are very strongly marked on the scales of the tail, so much so as to impart to it a polygonal appearance in its lower half. They diminish in a binumeral ratio from 12 in number at the basal half of the upper third, to 6 at the extremity. No preanal pores have been observed.

Head large, with a prominent and overhanging superciliary ridge composed of 8 inflected scales, counted between the nostril and the posterior

margin of the orbit where it abruptly terminates. Nostril round, in a single large inflated shield, its position being immediately above the 3rd and 4th labials. Labial formula, $\frac{12, R \ 12.}{12, M. \ 12}$.

The lips are thick and fleshy and there are two rows of scales, similar to the upper labials, covering the lip. Both upper and lower labials are perforated with pores varying from 1 to 5 in number on each scale; the loreal region also exhibits these pores. The upper surface of the head requires minute description; it is more or less covered with tuberculated and keeled scales. Beginning from the rostrum it will be seen that the 4th and 5th scales on the mesial line from this shield are tuberculated and enlarged into a rudimentary nasal appendage. The number of scales in transverse series at this point are 2 on each side, or, including the tubercle, 5 in all. In other specimens, particularly in females, this character may be described as a rosette-like group of tuberculated scales. These scales are not so strongly marked in immature specimens. Posterior to this region are the convexly prominent superior surfaces of the orbit, characterized by a deep mesial groove, and also covered with enlarged tubercular scales. In the centre of the vertical region, which may be defined by an imaginary line drawn across the head from the posterior termination of the superciliary ridges, is a large round scale with a central depression and white horny central point. Separated from it by a single scale are two small conical isolated spines, and a few enlarged keeled scales. Further beyond, on the posterior edge of the temporal region, are two groups of spines as in *Calotes*. These groups are made up of from 5 to 7 elongate conical spines, a central spine being always more developed than the others. There is one other character of importance in the head. This consists of a ridged cheek piece of much enlarged and keeled scales which extends from below the hinder angle of the orbit to the tympanum. The number is not constant, and from 6 to 12 may sometimes be found.

The normal colour of the females consists of various shades of earthy brown, with three rows of rhomboidal or circular blotches—one median, which is the largest and extends down the tail, and two lateral rows of smaller size. The blotches have a pale straw or flesh-coloured edging. Females taken under sexual excitement are either wholly crimson, or crimson, with the exception of the back, which is dusky olive. The gular fold is deep black. In this stage the female does not exhibit any markings or blotches whatever, and at the least provocation or excitement becomes quite crimson. The prominent and pendulous abdomen in this sex is evidently connected with the stowage of ova.

The males are normally of an uniform dusky brown. In this sex the blotches are not so well marked as in the female, and much smaller. The

flesh-coloured edging might in them be rather described as an interrupted flesh-coloured line. The general colour assimilates itself to the black cotton soil which this lizard particularly affects. I have never captured a male in the crimson state, but have observed that they can assume a faint rosy tinge and also a bright green. The males have a distinct physiognomy, slenderer bodies, but stouter limbs than the females. The tail is bulbous and thick at the base, with the usual sexual projection, and suddenly tapers. It is always a third longer than in the female. The gular sac is developed in both sexes, but is more massive and has a distinctive masculine outline in the male. These notes on colouration present the sexes in breeding livery, August and September.

The tissue below the nuchal and dorsal crests would appear to be of an erectile nature. These crests I observed much developed in a male during a paroxysm of excitement when it acquired a distinctly arched outline. Many of the females when captured were entirely scarlet and evidently under strong sexual excitement. Their behaviour is then remarkable and most amusing. A female under these circumstances twirls the tail, inflates her gular sac, and gives the body a peculiar wriggle.

Brachysaura is a sluggish lizard, with a dull and heavy habit of body, and grows much larger than any specimens I have sent to the Museum. Both *B. ornata* and *Sitana minor* are ground lizards, but I have observed them hanging in an awkward fashion from nearly bare stalks $3\frac{1}{2}$ feet above ground. Though both frequent the open by choice, their holes are usually at the roots of a Spurgewort (*Calotropis*) or a Bair bush (*Zizyphus*); a deserted rat burrow is often used. They do not seem to be very prolific, laying from eight to ten eggs, yet they are numerically abundant in certain spots; for I captured no less than 50 within a mile of my house, chiefly on the Banda race-course. This lizard must be considered decidedly stupid. Large, and heavy specimens are hardly able to run, and in fact do not attempt it; but if pressed show fight with open jaws, actually leaping at an offending object. It can give a sharp nip and holds on like a bull dog.

I am at a loss to conceive how *Brachysaura* maintains itself in such numbers against the numerous predacious animals that prey on lizards. The genera *Corvus*, *Milvus*, *Poliornis*, *Herpestes*, *Felis*, *Canis*, *Ptyas*, *Naja*, *Varanus* and a host of other enemies all abound in the localities where it is found; *Calotes* and *Uromastix* are an important item in the food of these animals. *Sitana* I have often observed impaled on a thorn by a *Lanius*.

The only explanation I can offer is, that it has some objectionable flavour or poisonous protective quality which renders it secure from attack. I was in hopes that the experiment of offering one to some Raptor would have been made at the Zoological Gardens here, but the subject seems to have escaped attention. I may mention that the natives of Banda firmly

believe this lizard to be poisonous and get out of its way at once ; I was also informed that if eaten they would produce insanity. The circumstance of its feeding with impunity on insects that are themselves protected in this way seems in favour of this theory. The contents of the stomach of one I killed on purpose were, (1st), fragments of a small species of *Julus* ; (2nd), one small carnivorous beetle ; (3rd), fragments of other *Coleoptera*. It is very easily kept alive, feeding readily on flies, grasshoppers and beetles, and all kinds of stinking bugs. These bugs and *Julus* have a protective odour, and I have found all birds reject them.

When caught or frightened this lizard emits a short but not unmusical squeak. The faculty of voice has not been observed before in the *Agamidæ*. It appears to be nocturnal in its habits, and it is only in the evening, or when their holes are flooded, that they are to be seen in numbers.

IX.—*Second List of Butterflies taken in Sikkim in October, 1882, with notes on habits, &c.*—By LIONEL DE NICEVILLE.

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In the second part of this Journal for 1881, vol. 1, p. 49, I contributed a list of the Butterflies taken by me during five days collecting at different elevations in Sikkim in the month of October, and enumerated 129 species. This is but a very small portion of the Rhopalocerous fauna to be met with even in one month in the vicinity of the Station of Darjiling, as I therein indicated, and as the list that follows shews. The whole of the species now enumerated were not taken by myself, as I was accompanied on several occasions by Mr. Otto Möller (an enthusiastic collector, who has most generously placed the whole of his extensive collections of Sikkim Butterflies at Major Marshall's and my disposal for examination in the preparation of our work on "The Butterflies of India"), and a party of five Lepchas, who make what they can by catching insects and selling them to visitors. These men were very glad to sell us what we wanted of the specimens they caught at a pice a piece ; especially as we told them that we required small species more especially, these latter, unless very bright-coloured, they never take any notice of. On two different days they took us to two parts of the same hill stream ("Jora"), and shewed us their principal hunting grounds. These chiefly consist of open sandy spaces by the side of the stream which attract vast numbers of Butterflies to settle, and to suck up the moisture. In one place upon a large flattish stone near the middle of the stream, the men had put some sand and kept it