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SHORT COMMUNICATION

An Unusual behavior of *Otocryptis nigristigma* Bahir & Silva, 2005 (Reptilia: Agamidae) observed at Nilgala Forest in Sri Lanka

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Introduction

There are seventeen species of agamid lizards in Sri Lanka and fourteen of them are endemic (Bahir & Maduwage, 2005; Bahir & Silva, 2005; Das, 2001, Pethiyagoda & Manamendra-Arachchi, 1998). These seventeen species are classified under three sub families; Calotinae, Lyriocephalinae and Sitaninae. Sub family Sitaninae consists of two genera, *Otocryptis* and *Sitana*. Genus *Otocryptis* represented by two species in Sri Lanka, *Otocryptys wiegmani* and *Otocryptis nigristigma* (Bahir & Silva, 2005).

Accoding to the published literature *O. wiegmanni* is widely distributed in wet zone (rainfall >2000mm/yr) and at several locations in the sub montane forest areas (up to 1350m asl). *O. nigristigma* is recently separated from well known *Otocryptis wiegmanni*, as a separate species. Its type locality is Ritigala Strict Nature Reserve (dry zone wet condition forest) and it is believed to be restricted to forests in the dry zone (rainfall <2000mm/yr) of Sri Lanka. According to the Bahir & Surasinghe (2005) listed as an *O. nigristigma* is "Least concern" after evaluating the status of IUCN Global Red List Criteria (2001: version 3.1) and common Species.

O. nigristigma is distinguished from *O. wiegmanni* by having a black patch (Figure 1) on the male dewlap (Gular sac) and a shorter fifth toe (vs. a distinctly maroon patch present laterally on dewlaps on males and longer fifth toe of *O. wiegmanni*). *O. nigristigma* is a small slender agamid, with adults reaching a maximum length of 140mm (68mm SVL) from snout to tail and have a cream colored dorsal line with small spots from neck to tail. The area immediately under the neck and ear is luminous green with brownish stripes. Several behaviors of *O. nigristigma* were observed during the study and those are mentioned below.

Location

The observations were made in Nilgala forest, which located in the Monaragala district in Uva Province of Sri Lanka. The study area is located between Nothern latitudes of 7° 10' and Eastern longitudes of 81° 18', approximately 13 km away from Bibile town. The Bibila Ampara high way is running across the forest. The elevation of the area is about 216 m.

Habitat

The mainly vegetation is comprises of tropical dry mixed evergreen forest and lowland inter-mediate zone, semi evergreen forest (Ashton *et al.*, 1997; Gunatilleke & Gunatilleke, 1990). Also includes home gardens. The mean annual rainfall varies between 1500 mm - 2000 mm (mainly during Northeast monsoon), while the mean annual temperature of the area varies between 28°C - 31°C

Figure 1: *Otocryptis nigristigma* adult male with expanded gular sac (note the black patch) (Photo : Niranjan Karunarathna)

Figure 2: A road killed *Otocryptis nigristigma* at Nilgala. (Photo : Niranjan Karunarathna)

(Bibile, 1994; Somasekaran, 1988). The canopy is interminant but shade is high under the canopy. The amount of leaf litter on the ground is high and it is wet with abundant tree logs. The dominant tree species are *Terminalia arjuna* (Kumbuk), *Mangifera zeylanica* (Atamba), *Diospyros malabarica* (Thimbiri), *Entada pusaetha* (Pus Wel).

Observation

A live specimen of *O. nigristigma* was observed in 14th of July 2005 at about 9.30 pm at night, while it lie on the Bibile Ampara highway. First it appeared as a dry piece of wood in the road. The lizard was lying on the road leisurely with its limbs apart. It was realized that the lizard is doing this purposely and the intention seems to be thermoregulation.

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The initial observation was proved to be right as we found more specimens with gaps of about 20m. Another interesting observation was that all of them were almost in the center of the highway.

Discussion

In cold blooded animals, it is important to reduce evaporation and heat loss by conduction and maximize heat gain by radiation and metabolic heat production to raise the body temperature. The only commonly available radiation source is the sun, and in the absence of solar radiation, metabolic heat production is the only way to increase the heat gain. Of course, external and internal sources of heat (i.e. sun and metabolism), can be used simultaneously, but it is more economical to use an external source rather than body fuel (Schmidt-Nielsen, 1995). Usually lizards thermoregulate in the morning and in the evening by sun basking (Pough *et al.*, 2004). But according to these observations, it seems that *Otocryptis nigristigma* acquire heat, to regulate its body temperature from various external sources other than the sun, by lying on them under cold and dark conditions. Both adults and juveniles were observed and most of them were individuals but not groups of individuals. Once frightened they ran off, but in a while, they returned back to the center of the road. Another significant observation was that the lizards were not observed in the places, where amphibians were observed.

Hence this may be the first record of such pattern of behavior on thermoregulation in genus *Otocryptis* at night. Additionally in the daytime it was observed that the adults with several body colour patterns in the same vicinity, basking solar radiation for theromregulation. It was interesting to note that colouration of the scales in the gular sac area of these sun basking adults vary among the individuals.*

The major threat to these thermoregulationg lizards is roads kills. Several dead lizards (Figure : 2) were found on the road, which have been run over by vehicles. For instance, four dead specimens were recorded in 2 days. This happens not only in highway but also in by roads. In addition, they are also killed by people in the area due to myths around it. This interesting thermoregulationg behaviour of this endemic species has to be studied in detail to get a good understanding about the physiological back ground of such behaviour. It will also help to conserve the species and to increase the awareness among the local communities.

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References

Ashton, M., Gunatileke, C.V.S., De Zoysa, N., Dassanayake, M.D., Gunatileke, N. & Wijesundara, S. (1997). *A field guide to the common trees and shrubs of Sri Lanka*. Wildlife Heritage Trust of Sri Lanka. Colombo.

Bahir, M.M. & Maduwage, K.P. (2005). *Calotes desilvai*, a new species of agamid lizard from morningside Forest, Sri Lanka. *The Raffles Bulletin of Zoology, Supplement No.* 12: 381-392.

Bahir, M.M. & Silva, A. (2005). *Otocryptis nigristigma*, a new species of agamid lizard from Sri Lanka. *The Raffles Bulletin of Zoology, Supplement No.* 12: 393-406.

Bahir, M.M. & Surasinghe, T.D. (2005). A conservation assessment of the agamid lizards of Sri Lanka. *The Raffles Bulletin of Zoology, Supplement No.* 12: 407-412 .

Bibile, R. (1994). Recent Excursion off Bibile and Monaragala. *Loris*, 20(3): 101-106.

Das, I. (2001). Biodiversity and biogeography of the herpetpfauna of Southern Asia. *An overview of the threatened herpetofauna of South Asia*. IUCN Sri Lanka and Asia Regional Biodiversity Programme, Colombo. 1-38.

Gunatilleke, I.A.U.N. & Gunatilleke, C.V.S. (1990). Distribution of Floristic Richness and its Conservation in Sri Lanka. *Conservation Biology*, 4(1): 21-31.

Pethiyagoda, R. & Manamendra-Arachchi, K. (1998). A revision of the endemic Sri Lanka agamids lizard genus *Ceratophora* Gray, 1835, with description of two new species. *J. South Asian Nat. Hist.*, 3(1): 1-50.

Pough, F.H., Andrews, R.M., Cadle, J.E., Crump, M.L., Savitzky, A.H. & Wells, K.D. (2004). *Herpetology (third edition)*. Pearson Prentice Hall Publishers (USA) Ltd.

Schimidt-Nielsen, K. (1995). *Animal Physiology Adaptation and environment (fourth edition)*. Cambridge University Press (UK).

Somasekaran, T. (1988). *The National Atlas of Sri Lanka*. Surveys Department Sri Lanka.

*** Editor's note:** The roads with tar coat may act as a 'black body' and absorb more heat during day time and gradually release the heat even at night. This may act as a good external source of heat for cold-blooded reptiles. The dark coloured patch seems act as a 'local black body' on the animal. To increase the amount of radiant energy absorbed, reptiles depend on their colour and on their orientation relative to the sun. Many reptiles can change their colour by dispersion or contraction of black pigments in their skin. Because about half the solar radiation energy is in the visible light, a dark skin substantially increases the amount of solar energy that is absorbed rather than reflected (Schmidt-Nielsen, 1995).