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New records of lizards in Tura peak of West Garo Hills, Meghalaya, India

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ABSTRACT

Intensive survey has been carried out from January 2012 to December 2013 and whatever we have uncovered from Tura peak was photographed and its measurement was taken. The data of Lizards were collected by Active Searching Methods (ASM). Most of the lizard survey was done during the day time as lizards and skinks are seen basking in the sun during the day hours. The identified species of Lizards, geckoes and skinks were photographed and released into their natural habitat. Altogether four species of lizards have been recorded newly in Tura peaks of West Garo Hills of Meghalaya States of North east India. The species were such as *Calotes maria* and *Ptyctolaemus gularis* from Agamidae Family and *Hemidactylus flaviviridis* and *Hemidactylus garnooti* from Geckonidae Family. All those four species have not been reported from Garo hill in past survey, whereas the species *Hemidactylus flaviviridis* not been reported from any area of Meghalaya state till date.

Key words: New records, Lizards, Tura Peak, measurements, active searching.

INTRODUCTION

India is incredibly rich in both floral and faunal species but, most of the studies of reptiles has been pioneered and persecuted in the early 18th century by the British Naturalists while serving in the then Indian medical service (IMS) or the Indian Forest service (IFS). Their papers were published mostly by the trustees of the British Museum, London. Many of the lizards were collected and identified during British period and the species of lizards which were found during that period are in the collection of the British Museum which were contributed by Gray (1845), Gunther (1864, 1870), Jerdon (1870), Smith (1935), Ruppell (1835), Dumeril and Bibron (1836), Blyth (1853), Kuhl (1820), Dauden (1802) and Laurenti (1768). Gradually, serious workers started building up the edifice of the Indian Herpetology step wise and in between 1998-2008, 353 species have been discovered in the Eastern Himalayas, equating to an average of 35 new species every year. Out of 35 new species discovered, 16 were reptiles. Out of 201 lizard species known from India, 44 lizard species are so far recorded in the North East India (Ahmed et al. 2009) and 26 species are represented in Meghalaya (ZSI,1995). In Assam, inventory and natural history of lizards in Jeypore reserve forest have been carried out and 18 different species of lizards was uncovered (Islam & Saikia 2013). Meghalaya is one of the most important areas of North-Eastern States and is a part of the mega biodiversity regions of the world. It has actual forest cover 15,657 km^2 i.e. 69.8% of the total geographical area and the total area of recorded forest is 9496 km^2 i.e. 42.34 % (FSI, 1997). Garo Hills a part of Meghalaya covered with tropical forest is not only the home of many living creatures but it is convenient place for the lizards to thrive well. Most of the herpitofaunal work in Meghalaya has been done by various surveys conducted at random within the state by the Eastern Regional station of Zoological survey of India over a span of 33 years. Other than the above, reptile specimens studied from various institutions in Meghalaya also formed valuable reference. However, thorough research of any lizard species in any part of Garo Hills is still lacking. Therefore, the main aim of this research was to uncover the different lizard

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diversity residing in Tura Reserve Forest and to study its habitat.

MATERIALS AND METHOD

Study area

Meghalaya is situated in the North-East region of India and lies between 25.47°& 26.10°N - 89.45°& 92.47°E. Garo Hill is located on the Western part of Meghalaya (Fig.1& 2), the area is bounded on the North-West and North by Assam, on the East by West Khasi hills district and on the South and the South West by Bangladesh. The height of the Tura peak is about 600m msl. It has a fairly high temperature for most part of the year, i.e. from March to October. August is the hottest month having the mean maximum and minimum temperature is 24.3°C and 17.8°C respectively (**Meghalaya, 1978-1981**). It has average annual rainfall about 2689mm of which more than two-thirds are received in four months from May to August. It consists of lower Gondwana rocks created by pebble bed, sandstones and carbonaceous shale with streaks and lenses of coal.

The entire area under Garo hills was organized as single administrative district in 1873 and Tura as its Headquarter. In October 1979, the district was divided into two districts namely west Garo hills and east Garo hills. At present it has three districts, East Garo hills, West Garo hills and South Garo hills. There are three important mountain ranges in these districts. They are (1) Tura Range, (2) Arbella Range and (3) Ranggira Range. Tura range is one of the most important ranges in the West Garo hills. There are many mountain peaks located in this range. They are Tura Peak, Nokrek Peak, Meminram Peak, Nengminjok Peak, Chitmang Peak, Balpakram Hills and Dura banda. Many Naturalists and Zoologists have explored Nokrek Peak (Nokrek Biosphere Reserve) and Balpakram hills (Balpakram National Park) as it is rich in both flora and fauna. Tura Peak has its own charm and beauty for the people of Tura Town but neglected by Biologists. It has received less attention than the other areas of Meghalaya. Thus, present study has been carried out in Tura Peak.

Tura Peak

Tura Peak of west Garo Hills, Meghalaya lies between 25°.00' & 26°.10'N latitude and 89°.45' & 92°.45'E longitude. It has green forest cover with an area of 3.94 km^2. The height of this peak is 873m which is located on the eastern part of Tura Town and is about 5.64 km away from the main Tura town. The most important physio-geographic feature of Garo hills are the Tura range and Arbela range which are running parallel in an East-West alignment, extending from Tura to Siju and the Simsang Valley. Tura Peak is standing next to Nokrek Peak (Nokrek Biosphere Reserve). It has many small undulating hills on its side, small streams, three rivulets Rongkhon, Gandrak and Chitoktak, two beautiful waterfalls Rengsangrap and Gangrakdare. About 250m high above there is a place known as Makrekidam (Monkeys Toilet) and about 300-400m higher up from Makrekidam, the Chipu Ware (Snakes Valley) is situated, where there were plenty of different kinds of snakes as told by the elder people residing in the foothills. It has small footpaths for climbing up to Tura Peak and six different footpaths are carefully chosen for surveying and collecting data of lizards.

RESULTS

New records of lizards

Altogether four species of lizards have been recorded newly in Tura peaks of Garo Hills of Meghalaya States in North east India. The species were such as *Calotes maria* and *Ptyctolaemus gularis* from Agamidae Family and *Hemidactylus flaviviridis* and *Hemidactylus garnooti* from Geckonidae Family. All those four species have not been reported from Garo hill in past survey, whereas the species *Hemidactylus flaviviridis* not been reported from any area of Meghalaya state till date.

1. Gray's Forest Lizard- *Calotes maria* (Gray, 1845)

The species *Calotes maria* was first reported by Smith in 1935 from Khasi Hills, Meghalaya but the exact location was not mentioned; probably he had not collected the specimen himself. After 168 years of first report from Khasi Hills the species has been reported from the first time in West Garo Hills, Meghalaya. The species was located from several areas of Tura Peak namely, Upper Babupara, Akimbri, Rongkhon Chibisik and Top Chitoktak.

This species *Calotes maria* was first described by Gray in 1845 as Khasi Hills Forest Lizard and was first sighted from Khasi Hills, Meghalaya. The present location was in Garo Hills at Tura Peak in upper Chitoktak area (Coordinates: 25°31'128N & 90°14'229E) at the altitude of 2490 ft. The specimens was collected from the forest floor of Tura Reserve Forest on 13th May, 2013 at 8.06 hrs. at the altitude of 812m. Extensive survey in this area encountered altogether 21 individuals in several footpaths along the forests edge near

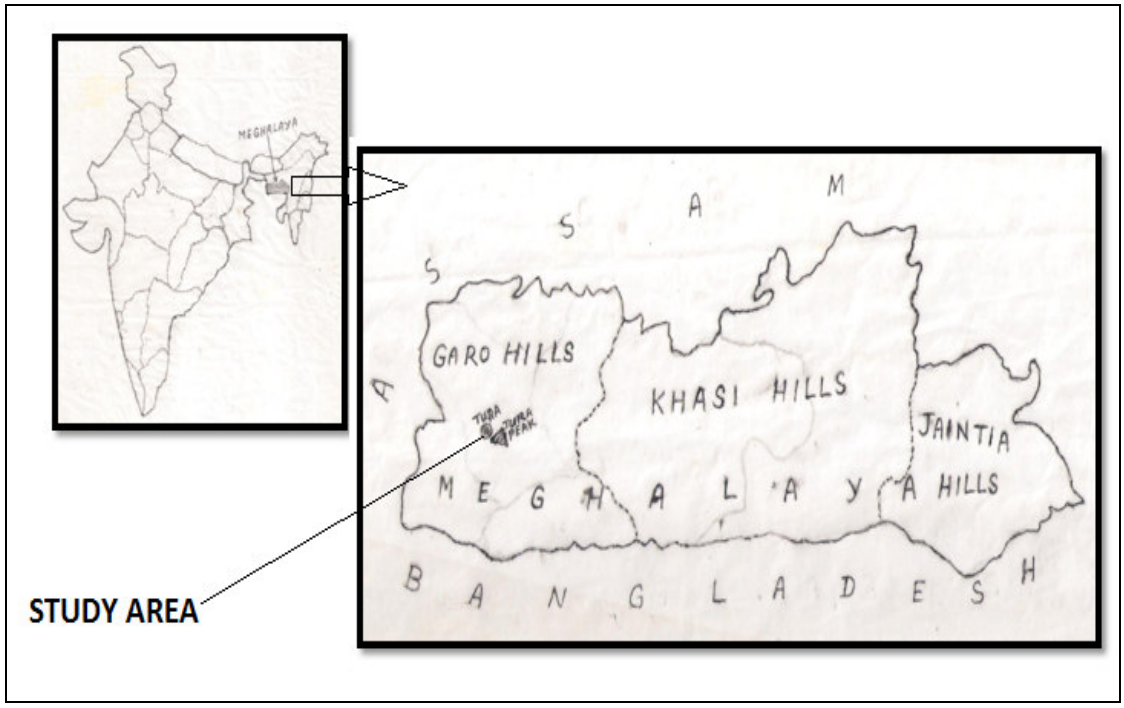

Fig.1. Tura peak of study area in Meghalaya.

Fig. 2. Study survey habitat of Tura Peak: **A**. Tura Reserve forest, **B.** Peak of Rangkhon RF near the sources of Waterfall, **C.** Rengsangrap Falls in Tura Reserve Forest (Tura Peak).

Rongkhon Chibisik and Makre ki dam. The colour of the body was yellowish green with blue patterns on the sides. There were two parallel rows of compressed scales on the head just above tumpanum. The iris is orange-yellow with black pupil. The tail was white and having brown patterns on it. A Juvenile was recorded in the tree leaves on 9th August 2013 at 14.36hrs. at upper Babupara forest undergrowth. The juvenile have light blue colour in head and light green colour in body skin. It has extra flap of skin on the side of the abdomen. It measured only 5cm or 50mm SVL 10.5cm or 105mm TL. These green lizard or calotes maria were seen on the tree trunks, branches and green leaves during the time of observation (Fig. 3).

2. Yellow-Bellied House Gecko-*Hemidactylus flaviviridis* (Ruppel, 1835)

Hemidactylus flaviviridis was not been reported in Meghalaya since today. The species was first time recorded in Boldaka-ding of Upper Babupara of Tura Peak. The species was found in the human settlement area closed to the Tura reserve forest. It was also found in the firewood logs kept for the whole year. It was first sighted in the Boldaka-ding on 5 March, 2013 at 17:36 hrs. (Coordinates: 25°30'04"N and 90°14'16" E). The species was collected from a house wall near light sources and observed to consuming insects. The specimens were released after Photographed and measurements. It length of the specimens was 60mm from SVL and TL was 65mm. The measurement of the species found that there were 7-10 lamellae under first toe and 11-14 under fourth toe and that was the distinguishing characters from the other species of the genus *Hemidactylus*. The tail was strongly swollen at the base and the dorsal part of the body was greenish-grey above. Five transverse broad undulating, greenish-brown bands and white below, with most of the scales minutely speckled with black. Tail has similar bands above, edged vividly with white. The head has a pale band on the side which passes through the eye. The coloration of the skin gradually fades and was found to be strikingly different during the day and at night. However, the lemon yellow colour of the belly was retained. Study has encountered altogether 29 individuals during entire study (Fig. 4).

3. *Hemidactylus garnooti* (Dumeril & Bibron, 1836)

Hemidactylus garnooti was recorded in Tura reserve forest for the first time in Meghalaya hills in a tree near human settlements of forest edge. Before 177 years ago, the species was recorded from Khasi hills. In Tura Peak, the species was first sighted under the old bridge of Akimbri area (Coordinates: N 25°31'04"N & 90°14'02"E) on 29, April 2013 at 17:45hrs. at an altitude of 2475ft. The specimen was captured and photographed and then released in to natural habitat. The length of the specimen was measured about 55mm SVL and 62mm TL. The identification was confirmed based on the characters of the species. A white elongated band from the snout runs through the eye to the side of the head, neck, and body and to the tail was very distinct. The dorsal part of the skin was either light grey or dark grey with three longitudinal lines running from the head to the tail. It has elongated brown and white patterns alternating one another. The underside was dirty white. It was the first time records of the species from Garo Hills of Meghalaya. The species was found to be common in Garo hills and have encountered altogether 37 numbers of individuals near the residential area of forest edges (Fig. 5).

4. Blue-throated lizard-*Ptyctolaemus gularis* (Peters)

Blue-throated lizard *Ptyctolaemus gularis* (Peters) was described by Mathew in 1982 from East Khasi Hills at Shillong, Kenche's trace, Fruit Garden, Motinagar, Umsning, Mawroh, Umran etc which were found and collected by various people. It was also found near Myntru rivar at Jaintia Hills, 5 kms away from Jowai. After 149 the species was first newly recorded in Tura Reserve forest at Upper Nikranga-ding, West Garo Hills of Meghalaya.

The species was first sighted in Nikranga-ding (Coordinates: 25°31'380''N& 90°14'148''E) of Tura Reserve Forest on 15 March, 2013 at 09.04hrs. The species was located at an altitudes of 689.15m and was found to moving in an around the leaf litter on the forest floor where we have captured to take photograph and its measurements. The length of the specimen was 90mm SVL and TL was175mm. The species was found to be very rare in the study area as we have encountered only 5 numbers of individuals throghout the study period. The Blue-throated lizard was identified on the basis of their morphological characters. The body was elongated and laterally compressed . The head was elongated and narrow. The skin was olive brown with some dark brown transverse bars/ spots on the dorsal side. During the month of march in their breeding season, a light yellow/greenish longitudinal stripes were appeard that starts from behind the head and continued along the flank to half of its body length. Limbs and tail above with

Fig. 3. *Calotes maria* (Gara Tangsek bi.sa inGaro language); a. Adult, b. Juvaniles.

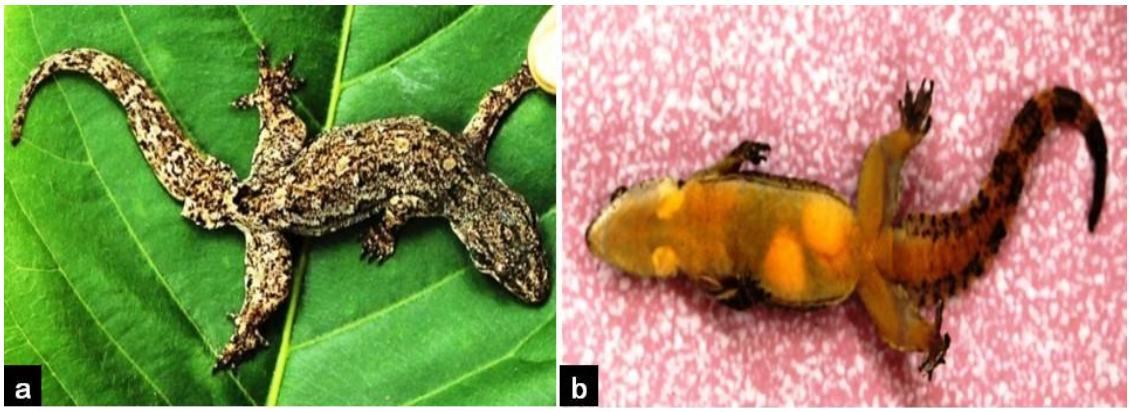

Fig. 4. Hemidactylus flaviviridis in Tura Peak (Local Garo Name:Benchidik Rimit-tangsek). A. Dorsal view; b. Ventral View.

Fig. 5. a , b& c. The *Hemidactylus garnooti* collected from Tura Peak in two different habitats. a. residential area; b&c Collected from bark of the tree.

Fig.6. a &b: Ptyctolaemus gularis as found on the forest floor in tura Peak forest habitat.

It has Blue gular pouch which was laterally compressed and folded in a 'U' shaped pattern. When at rest, the species was hardly be recognised, but if it aware for predators its blue coloured gular pouch became enlarged or expand, to posses threat display (Fig. 6).

DISCUSSION

The study area Tura Peak is also known as Tura reserve forest that supports green surroundings with thick bushes, shrubs and climbers, broad leaved trees and thus provides very comfortable habitat for lizards. We have encountered *Calotes maria* females, breeding males and juveniles in different forest area, this indicates that, the species comfortably resides in Tura reserve forest. Since we have sighted quite a good number of healthy adults and juveniles living in harmony in the midst of green surroundings, we assumed that, there are no threats of its existence. Moreover, the climate and its habitat appears to be conducive for these lizards that they are surviving well in this Tura reserve forest. Most of the *Calotes maria* specimen which we have encountered was found in higher altitudes around Tura peak, but it was not found in the foothills. So, it indicates that, the species prefers to use in hilly regions and dense forest. *Ptyctolaemus gularis* was found on the ground under the secondary forest growth like bushes and shrubs. It is very rare in the study area as the number of species we have encountered is very less compared to the size of the forest. These species are flourishing well as this creature can run very fast and can easily escape from its predators by mimicking themselves among the branches and twigs. The species is also very common in the study area and there is no threat factor was observed. *Hemidactylus garnooti* and *Hemidactylus flaviviridis* are found under logs of human settlement areas, crevices of the walls, behind the frames and on the bark of trees. They are also common in the study area and are beneficial for mankind as it can devour many of the mosquitoes and insects. Thus, they in turn help to reduce the menace of pests. Tura Peak covers only 3.94 km^2 area under Tura Reserve Forest which is gradually being encroached by the local people either for bettelnut plantation, Citrous garden or for human dwellings. Apart from that, the illegal tree felling by the traders and woodcutters everywhere so, immediate attention of forest department is necessary for conservation of this reserve forest of Tura Peak to save the unique species of Garo Hills of Meghalaya.

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