Published by: National Cave Research and Protection Organization, India

**ambient
SCIENCE**
Vol. 03(1): 52-54
Year 2016

Notes on Natural History

Hathipol: Biodiversity of a Tunnel 'Cave' of Chhattisgarh, India

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Study Area: Rmagarh hills, Ambikapur, Chhattisgarh, India

Coordinates: 22°52'57" N and 82°53'45" E

Key words: Cave bats, Cave cricket,

Introduction:

Tunnel caves are such passages, usually formed in the foothill of any mountain and mutually connect two plateaus. Such caves are large enough to accommodate the sizable amount of human beings and/or animals but do not meet all the criteria which are required to define a true cave (Vandel, 1965; Ford & Cullingford, 1976). Perhaps the geological processes of formation of such structures are the same as the other adjacent true caves. In essence, the complete dark zones are usually absent in tunnel caves due to which constant geophysical characteristics never develops. However, up to far extent tunnel caves also harbor the same biotic components which are usually common in the other true caves exist elsewhere.

Hathipol:

Hathipol situated in Ramgarh Hill of Surguja, state Chhattisgarh is a perfect example of tunnel cave (Fig.-1). It is well known geological structure since ancient times, mainly due to its existence near two notable man-made rock shelters- 'Sita Bengara' and 'Jogimara cave'. Sita Bengara has high historical importance as it is considered to be one of the oldest open theatres of the country, whereas Jogimara cave is an open chamber carved in the wall of a mountain, nicely decorated with ancient art, created in between 304 to 232 BCE.

Justifying the etymology, 'Hathipol' (hathi- elephant; pol- hollow), the passage of this tunnel is so big that a herd of elephant can easily pass from it. This cave is certainly evolved by the dissolution of sandstone. In its architecture no evidence of any type of rock dislocation is apparent. From west to east, a permanent water stream is always running throughout the passage, the stratum of which increases or decreases depending on its ambient climatic conditions. The right sided wall of the cave is unified with a long continuous strip of rock deposition dividing the tunnel into two strata (Fig.-2). No such structure is exist on the other end of the tunnel. The total length of this tunnel cave is around 124.5 m with height around 6 to 8 m. The breadth of the floor (total breadth - rock deposition) fluctuates between 3.26 m to

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Figure-1: Map indicating complete architecture of the Hathipol

Figure-2: Inner view, rock deposition dividing the tunnel into 2 strata

Figure-3: Water pools

9m. Water seepage could be frequently noticed throughout the side walls of the cave. Three distinct water pools deeply merged in the wall of the cave could be noticed from the upper end of the rock deposition. Each pool covers around 15-20 m area but the height of such pools are not more than 0.5 m (Fig.-3). Complete tunnel comes under twilight zone, so no intermediate or deep zone could be located in this tunnel cave.

Geophysical Characteristics:

Tunnel open towards NW-332; barometric pressure- 710.3 mmHg. Light intensity - 0.4 lx and annual humidity fluctuation 70 to 100% (in the middle).

Biodiversity:

Hathipol harbors rich biodiversity in it. Though it's both ends open widely, various types of organisms frequently visit it which could not be referred as permanent residents. During the last few years we regularly visited the cave and tried to tabulate all the organisms which were time to time seen inside the cave. Further, we selected only such organisms to present in this report which could be counted under cavernicolous category (Sket, 2008; Biswas, 2009).

Chiroptera, Hipposideridae

Hipposideros sp.

Unlike other season, during summer days (March to June), an unidentified species of genus *Hipposideros* was always found to roost near some crevices of the side walls of this cave (Fig.-4). Further, the species gathered closely around the water pools when the ambient temperature got high.

Figure 4: *Hipposideros* sp.

Chiroptera, Rhinolophidae *Rhinolophus* sp.

During one of our winter visit we encountered an orange furred tiny *Rhinolophus* sp. (~1½" body length). It was roosting in a nick of the cave roof (Figure-2b). The species was far away and due to lack of proper light we failed to take sharp image. However, it was seen only once among our various visits.

Figure 4: *Rhinolophus* sp.

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Araneae, Sparassidae/Heteropodinae

Heteropoda sp.

Observed *Heteropoda* sp. could be considered as a permanent resident of this tunnel cave, but unfortunately we didn't find a healthy population of this species inside the cave. During our few visits we encountered with its dead dried body only.

Orthoptera, Gryllidae

Meloimorpha japonica (Haan, 1842)

synonym: *Homoeogryllus japonicus*; *Gryllus japonicus*

Common name : bell-ring cricket

Meloimorpha japonica is the most dominated species found in Hathipol tunnel cave (Fig.-6). The species was first of all reported from this tunnel cave by Dixit & Sinha in the year 1982. We found the percentage of its pale coloured nymph more during winter (November-December). It testifies that the post monsoon could be the most suitable reproductive season for this particular species.

Figure 6: *Meloimorpha japonica* (female)

Conclusion:

Though the Hathipol is not a true cave, it harbors almost all such organisms which are mostly common in other true caves. The tunnel is used by the bats for their day roosting purpose but we never noticed sound populations of it in any season. Possibly, due continuous disturbance by passers, bats feel unsafe for day roosting inside it. Interestingly, during summer some small populations of about 20-30 individuals accumulated around each water pool. It is because the pools are aloof from every disturbance; moreover water levels almost remain stable in them.

Inside the cave, we didn't notice any site with guano deposition and due to which the most common guano dependent cavernicolous species failed to establish inside it.

Acknowledgements:

Senior author (JB) is thankful to Chhattisgarh Council of Science & Technology, Raipur, C.G. for financial assistance (1942/CCOST/MRP/2014). We are also thankful to Dr. Sanjay Thiske, Govt. College Rajnagounv, Dr Atul Tiwari, Govt. College Udaipur, Sarguja and Laxaman Rao, architect PWD, Chhattisgarh for assisting in measurements and mapping of the cave. Finally we are also grateful to Siddharth Biswas, National Cave Research and Protection Organization for helping us in field work

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