Closure Report

File Number : EMR/2016/003963

Project Title : Spatio-temporal and Thermal Ecology of Indian Python (Python molurus molurus Linn.1758) in Moyar River Valley, Tamil Nadu

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Total Sanctioned Amount : 57,78,200 (INR)

Total Released Amount : 56,73,415 (INR)

Start Date of the Project: 30 Mar, 2017

Date of completion: 29 Mar, 2021 (49 months)

Approved Objectives :

1.To determine movement pattern and home range characteristics of Pythons. 1.1.How far pythons move daily and seasonally? Is there any site fidelity? 1.2.Differences in movement pattern of male and female in breeding /non-breeding seasons 1.3.Whether movements to and from breeding habitats were aquatic, terrestrial or arboreal? 1.4.Difference in dispersal capacity during various life stages 2. Generate information on relocated pythons 2.1.Whether pythons occurring as patchy-population or Source–sink dynamics as metapopulations? How connectivity is hampered by random relocation? 2.2.Activity pattern and rate of survival of relocated pythons 2.3.What is the maximum relocation distance from which a python can find its home place? 3. Document the thermoregulatory behavior and compared the previous study in Northern India 3.1.Difference in thermoregulatory mechanism in breeding pythons, temporal variation sex and size class? 3.2.Are pythons mainly diurnal, crepuscular or nocturnal in south India? 3.3.What is the different habitat types used to maintain thermal regimes? 3.3.What are the basking pattern and preferred body temperature? Does the python aestivate/hibernate in large communal dens? 4. To generate information of python distribution and people perception towards snakes 4.1.People's perceptions towards snakes in general 4.2.Python distribution range across various habitat types in the study area 4.3.Major threats to the pythons in the study area?

Deviation made from original objectives (If Any) :

All objectives were achieved without any deviation, of which several papers were published, the same enclosed in this report.

Many other papers are being prepared from the project objectives that will be published soon.

In addition to the objectives, the following significant ecological data collected during the project tenure in the field to contribute to the science, society and biodiversity conservation

1) Tree species diversity, community composition, and recruitment pattern in Moyar river valley landscape, Southern India; The study provided the first baseline data on the tree diversity patterns in the studied landscape. Insights from this study would be beneficial for the habitat management of this critical landscape. The manuscript was submitted to the journal – Ecological Complexity for publication consideration.
2) A study on reptile discovery was conducted in the Moyar river valley landscape and recorded 34 species of reptile species belonging to 15 families and 28 genera during the study. The manuscript on an inventory of reptilian fauna of Moyar river valley landscape, Southern India, submitted to the Checklist Journal for publication consideration.
3) The study titled "An intangible heritage of ethnic Irula tribal culture exhibited through the festival: A cultural experience from Nilgiri Biosphere Reserve in Southern India" submitted to The Oriental Anthropologist Journal." The study of traditional cultural practices is an important area in anthropology. Festivals are one of the essential forms of cultural tradition, which is inherited through generations. Tamil Nadu is one of the states in India where the indigenous population is commonly known as Pazankudiyinar/Adivasis and are registered as scheduled tribes for administrative purposes. The population of the scheduled tribe in the state is 0.79 million as per the last census in 2011. There are 36 communities listed as scheduled tribes in the state, of which most of them occupy the forested landscapes. Remarkably, the Nilgiri Biosphere Reserve (NBR) is among the significant landscape with multiple ethnic communities namely, Todas, Kotas, Irulas, Kurumbas, Paniyas, Adiyans, Cholanaikers, Edanandan, Chettis, Allars, Soligas, and Malayans. In tribal societies, many of the practices are related to supernatural power. Several kinds of rituals, vows, and offerings are performed to receive the blessing from Nature or God. This paper attempts to document one of the significant festival-related to Irula tribal practices from the Moyar river valley in the NBR of Tamil Nadu. Also, this paper would explain how human beliefs are culturally professed through rituals in a particular cultural context.
4) "Larger group size and distribution of threatened Sambar deer Rusa unicolor niger (Artiodactyla: Cervidae) in Moyar River Valley, Southern India." The Sambar is a non-social deer usually observed as solitary or small groups with fewer than six individuals. In this manuscript, we discussed some insights on the infrequent larger aggregations of Sambar deer based on our sighting records between January 2018 and January 2020 in the Moyar river valley landscape of Tamil Nadu.

As in other snakes telemetry studies worldwide, it was expected the considerable mortality rate of pythons. Hence, it was initially proposed to implant the transmitter for a total of about 20 pythons. However, due to COVID-19 issue forest department allowed only 14 pythons for the telemetry study. Hence, due care has been taken to avoid python mortality during the surgery procedure and pythons translocation. All 14 pythons were monitored intensively, and sufficient data was collected without mortality to achieve all the project objectives. The study results also suggest that choosing a suitable habitat would reduce the mortality of pythons.

Ph.D. Produced/ Likely to be Produced : 1

Technical Personnel Trained : 8

Total Expenditure : 57,78,200 (INR)

Concise Research Accomplishment :

OBJECTIVE-1-In India,it's the first telemetry study on pythons(N=14); male movements are larger than females and have high site fidelity. The average daily movement was 452m; the lowest in winter-450m, highest in summer-950m & southwest monsoon-987m. The mean male movement was 514m while in females 362m; during the breeding, males expanded their movements ~1113m, meanwhile females 521m. The mating events occurred between 10m and 1km distance from the river. Pythons- 8ft moved an average of 472m, 8-10ft - 573m & >10ft ~264m. First-time minimum male size-198cm at maturity recorded. MSc thesis-Movement pattern and mating in Python at Moyar River Valley Landscape (MRVL),68p-awarded. OBJECTIVE-2-Along the MRVL pythons occurring in Source–sink dynamics as meta-populations (N=37)and away from the river,occurring in patches(N=15). Pythons activity and movement are high in summer-950m & monsoon-987m than the winter-690m. Homing instinct depends on the translocation distance; they could find their home up to 11km-IP14-took 274 days to return; likewise, IP10-10km-278 days, IP7-8km-324 days & IP8-5km-139 days. Pythons released >4km took 3 months to return. Total 12 pythons, trans-located(1.5-50km), 9 returned, and pythons released >15km were not returned. Python's connectivity is affected by random translocations if it's >11km. Suitable habitat for translocation can help snakes survival. OBJECTIVE-3-Python's thermal behavior in North India compiled and published. As reported from North, there are no communal dens & hibernation/aestivation at MRVL that could be inferred with a different climate. Pythons from the North prefer burrows; however, in South, they prefer the bushes, debris & vegetation covers for shelter. North-pythons are diurnal in winter & nocturnal in summer. In the South, pythons are diurnal (N=14); sometimes, the nocturnal activity is observed along the road. Mating pythons were observed during 1000-1500hrs & surface body temperature-Tb was 30.8±2.2C. OBJECTIVES 2&3 lead to a PhD thesis-2022. The diurnal activity low in summer than in winter & monsoon; the activity is related to ambient temperature (P0.01). Tb (N=5) positive linear relationship with temperature and a negative with the humidity (p=2.2e-16). OBJECTIVE-4:1-Total 86.5% of respondents had negative perceptions towards snakes which do not vary among villages (F=4.48;p=0.05) & age groups (X2=1.9;p=0.96). Most snakes were encountered in the monsoon(July-Aug) &reported livestock loss-21% due to snakes. MSc thesis-Understanding the dynamics of Human-Snake Interaction: A study of Indigenous perceptions in and around Moyar River Valley-56p-awarded 2-The distribution (MaxEnt) is limited to only 30.4% area; climate change affect future(2070) suitable habitats & a population shift would occur towards the hills 3-Threats included habitat destruction, negative perception & the road kills. Based on the results, PI involving in preparing policy documents to reduce the conflict in India.