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SHORT COMMUNICATIONS

DEATH FEIGNING BEHAVIOR IN THE BURMESE PYTHON *Python bivittatus* KUHL, 1820 IN CHITWAN NATIONAL PARK, NEPAL

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The rare death feigning behavior by Burmese python *Python bivittatus* is reported from Chitwan National Park, Nepal. This documentation from natural distributional range of Burmese python from human-python conflict prone zone is expected to be helpful as outreach material to safeguard the life of animal from danger by local people. This is the first report on death feigning in Burmese python from Nepal.

Keywords: Reptilia; serpentes; Pythonidae; python; behavior; thanatosis; Chitwan; Nepal.

INTRODUCTION

Survival is indispensable in living world, and to ascertain survival success animal show various adaptive behavioral responses. Death feigning or thanatosis is one such behavior observed across various taxa, where an animal exhibits temporary paralysis (Greene, 1988) when it feels threatened by the predator (Vogel and Han-Yuen, 2010; Bhosale and Thite, 2013). Death feigning is documented in mammals (Fraser, 1960; Kimble, 1997), birds (Sargeant and Eberhardt, 1975), amphibians (Lupo et al., 1991; Toledo et al., 2010) and reptiles (Greene, 1988; Vogel and Han-Yuen, 2010). Factors associated with display of such a behavior are considered owing to avoid predators and maximize probability of their survival (Ratner and Thamson, 1960); to avoid risk of damage against external stimuli (Marques et al., 2013).

Although death feigning has been recorded in reptiles, little is known about species on which such behavioral changes occur, and documentation is sparse for snakes found in Asia (Mirza et al., 2011; Bhosale and Thite, 2013). Amongst Asian snakes, death feigning behavior has been documented in *Aplopeltura boa* (Jablonski, Hegner, 2016), *Xenochrophis piscator* (Schneider, 1799), *Coelognathus radiatus* (Boie, 1827), *Lycodon aulicus* (Linnaeus, 1758), and *Pseudoxenodon macrops* (Blyth, 1854) (Vogel and Han-Yuen, 2010; Mirza et al., 2011; Bhosale and Thite, 2013). No published reports for such a behavior in Nepalese herpetofauna is present till date.

In Nepal, the python *Python* spp. is the only protected snake species under National Parks and Wildlife Conservation Act, 1973 with provisions of fine and/or imprisonment to offenders.

Within Nepal, Burmese python *Python bivittatus* is well-distributed from floodplains of terai region (O'Shea, 1998; Schleich and Kastle, 2002; Shah and Tiwari, 2004; Barker and Barker, 2008; Pandey, 2012; Bhattarai, 2014) to middle mountain areas from 100 to 2800 m altitude (Shah and Tiwari, 2004) and in community-managed forests (Bhattarai, 2012). Community based forestry in Nepal, although has increased outreach of local people in forest management, lack knowledge on understanding reptile and their behavioral changes, which has limited conservation of this species outside Protected Area in Nepal.

Here we document our observation of death feigning behavior in Burmese python and suggest the possibilities of using this information on designing of conservation plan for this particular species.

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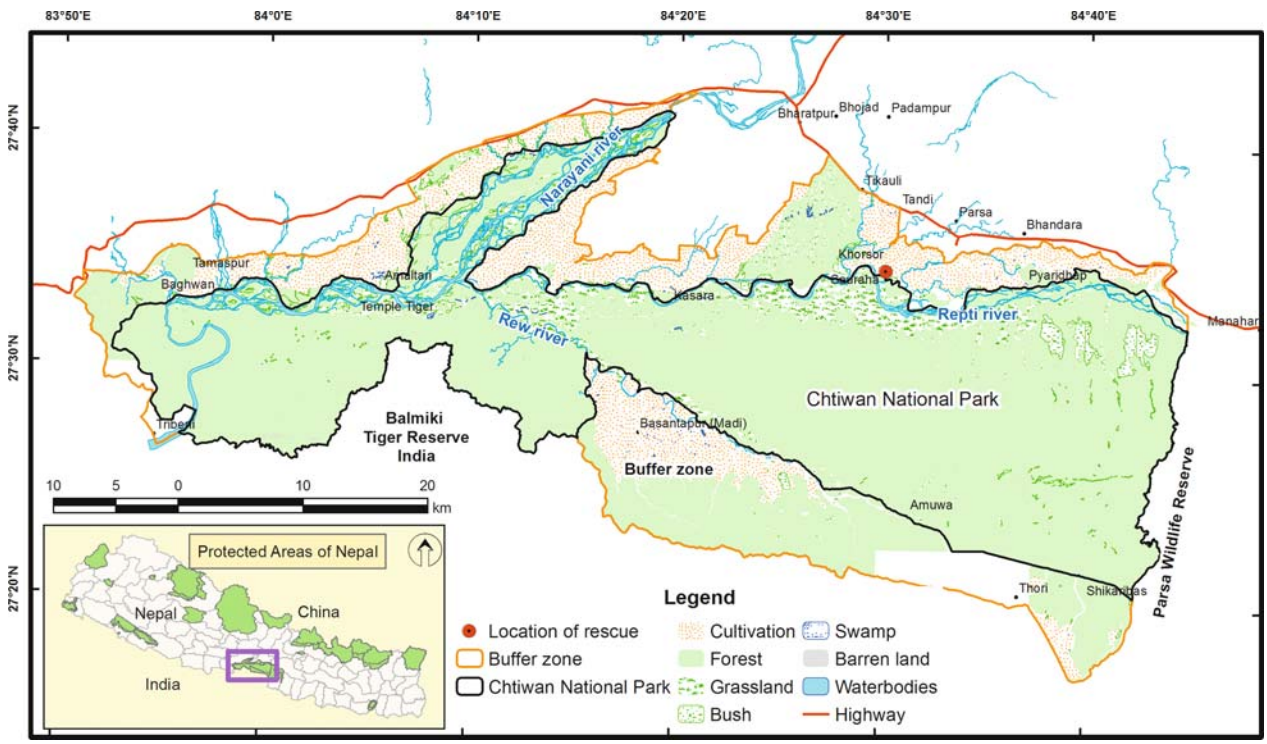

Fig. 1. Location of *Python bivittatus* rescue, Chitwan National Park, Nepal.

MATERIAL AND METHODS

On 25 July 2015 during rescue operation of Python from nearby house in Chitwan National Park, we observed the death feigning of a single specimen of *P. bivittatus* in two occasions. Chitwan National Park (932 km^2) is the country's first National Park established in 1973 situated along foothills of Himalayas, is a World Heritage Site. *P. bivittatus* is the most charismatic snake species of the park. Human-python conflict is common, although not well documented in the buffer villages within the Park.

RESULTS

A female *P. bivittatus* with length 2370 mm SVL, 300 mm TL and weight 7.5 kg was rescued from a poultry hut at Sauraha, Chitwan (Fig. 1). During the rescue, the python was quite aggressive as the poultry owner had tried to chase it from the hut to save poultry. After the rescue operation, the python was placed into a plastic sack and taken to National Trust for Nature Conservation – Biodiversity Conservation Center (NTNC-BCC) for photographic documentation and release. When removed from the sack, the body of python was found to be stiff with no hissing or any other aggressive action. When the python was put on the ground it did not move and appeared almost catatonic or dead. Upon gentle stimulation on its dorsum, it suddenly inverted its body, exposing its venter and remained immobile in this posture with closed mouth for about four minutes (Fig. 2). Later it returned to the upright position, began to crawl and attempted to escape. The python was recaptured and again imitated death, however, on this occasion, the behavior lasted for only 1.5 min (Fig. 3). Afterwards the python was put back in to the plastic sack for another one hour till next experiment. However, on the third occasion, the python did not feign to death, but crawled and was released into Chitwan National Park.

DISCUSSION

We observed *P. bivittatus* exhibiting death feigning behavior. We believe it was an adaptive behavior shown by the animal. Expression of such behavior was speculated to be induced owing to "stress and fear" on animal due to human presence and disturbance. Studies indicate that stress and fear are reasons for animals to display death feigning (Gallup, 1977; Misslin, 2003). In addition death feigning observed in this case could also be attrib-

Fig. 2. Death feigning by *Python bivittatus* at NTNC-BCC, Chitwan National Park, Nepal. Photo by Santosh Bhattarai.

uted by effect of starvation, as this individual was found in poultry farm in search of prey. Death feigning in captive bred pythons is not known because of their familiarity to the presence of and handling by, humans (Barker, personal communication). However, wild pythons could feign death due to injury, fatigue, stress and fear (Barker, personal communication). Careful physical examination indicated presence of no sign of wound in the animal body confirming absence of injury and snake appeared healthy.

Death feigning has been well documented in snakes such as *Heterodon* spp., *Natrix natrix* (Gregory et al., 2007); *Aplopeltura boa* (Jablonski and Hegner, 2016). Gregory et al. (2007) reported death feigning in only wild individuals of *Natrix natrix*. Death feigning, however, has been observed in snakes such as *Ovophis monticola*, *Rhabdophis himalayanus*, and *Ptyas mucosa* that occur in Nepal; in this instance; this behavior may have been due to intense heat and very bad condition of the specimen (Tillack, personal communication).

In Chitwan NP, more than100 individuals of *P. bivittatus* were rescued between 2012 and August, 2015; however none other individuals feigned death during rescue operations. We therefore hypothesize that such incidences in the case of *P. bivittatus* is rare and uncommon behavior. Dorcas and Willson (2011) documented similar behavior on *P. bivittatus*; in Everglades, USA, where it is regarded as invasive species (Reed and Rodda, 2009). This documentation on death feigning by *P. bivittatus* in its natural range is noteworthy, however, detailed observations and studies in this reptile could reveal occurrence and conditions of death feigning behavior.

Fig. 3. Second death feigning by the same individual of *Python bivittatus* at NTNC-BCC, Chitwan National Park, Nepal. Photo by Santosh Bhattarai.

With documentation of such behavior of python, it can safeguard loss of lives of some animals and will aid in python conservation in this region. Lack of knowledge on local people about death feigning by python can put animal in danger, especially when they are inactive form, as it can be buried or injured intentionally and/or unintentionally. This is a human-python conflict prone-zone, and livelihood of rural households is afflicted by python attack resulting into economic loss. Thus there prevails a high risk related to safety of animals. We propose to initiate outreach program in community based forests in order to generate awareness amongst the local people.

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