INDIAN ROCK PYTHON

Mating behaviour of *Python molurus molurus* (Linnaeus, 1758) in Moyar River Valley, Tamil Nadu, India

Female Indian Rock Python showing initial stage of ecdysis in neck region during mating

IUCN Red List:
Not Evaluated

Reptilia
[Class of Reptiles]

Squamata
[Order of Scaled reptiles]

Pythonidae
[Family of Pythons]

Python molurus molurus
[Indian Rock Python]

Species described by Linnaeus in 1758

Indian Rock Pythons are large, non-venomous, heavy-bodied ambush predators that prey on small- to medium-sized mammals, birds, and lizards (Bhupathy et al. 2014) and occupy diverse habitats in the Indian subcontinent (Ramesh 2012). Due to their secretive habits, information on their ecology is largely based on observations in captivity (Dattatri 1990; Vyas 1995, 1996, 2002; the few existing wild mating records of the species are from northern India (Smith 1943; Daniel 1983; Bhupathy & Vijayan 1989; Vyas 1996; Ramesh 2012).

This is the first report of the mating of free-ranging Indian Rock Pythons from southern India and is based on the observation in Moyar River Valley (11.564^{0}N & 76.968^{0}E; 352m), in Sathyamangalam Tiger Reserve, Tamil Nadu, India.

During a field survey on 17 January 2018 at 14.42h, we observed a mating pair (ca. 2.5m male and ca. 5m female) at about 1m distance from the waterline on the bank of Moyar River. The mating pair was in a coiled position — the male was lying under the female. Rapid tongue-flicking was apparent in both the Indian Rock Pythons during the mating process. Maximum effort was taken not to disturb the pythons — a safe distance was maintained and python movement was monitored through binoculars. Individual Indian Rock Pythons were identified using dorsal natural blotch patterns (Ramesh & Bhupathy 2012) for further monitoring. The onset of ecdysis in the neck region of the female Indian Rock Python was recorded. We could not record the various mating phase events because of the snakes' position. Mating lasted till 16.55h when the male Indian Rock Python left the mating site for the river. At the end of the mating event, everted right hemi-penis of the male was visible. The observed microhabitat was the forest floor covered by partially dead and degraded thick bushy vegetation of a straggling shrub *Phyllanthus reticulatus* under a closed canopy (ca. 12m height) of *Mallotus nudiflorus* (locally known as 'Kanchi maram'). The abundant fresh leaf litter of the deciduous tree on the forest floor also indicated the onset of the dry season. Weather conditions were sunny, with air temperature approximately 25^{0}C.

Global Distribution :
India (throughout the country except in the Lakshadweep, Andaman & Nicobar Islands and northeastern region), Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka. (Whitaker 1978)

Mating habitat of Indian Rock Python along Moyar River in Sathyamangalam Tiger Reserve, Tamil Nadu, India

Indian Rock Python is a solitary species; mating is the only time these snakes are usually found in pairs (Murphy & Henderson 1997). Basking and aggregation of this species, however, was reported during winter in northern India (Ramesh 2012; Ramesh & Bhupathy 2013). Reproduction in snakes, including python, is strongly seasonal. Female Indian Rock Python usually mate with several males (Dattatri 1990). In Keoladeo National Park (KNP) in northern India, Ramesh (2012) recorded mating aggregations of Indian Rock

Pythons consisting of a single adult female and several males. In India, mating of Indian Rock Pythons was reported during late winter and spring (Acharjyo & Misra 1976; Whitaker 1978; Daniel 1983). In KNP, courtship and mating events occurred in February–May (Ramesh 2012). The present observation, however, confirmed that mating of Indian Rock Pythons in southern India starts a little early in January, probably due to the optimal warmer temperature than in northern India.

Indian Rock Pythons usually reach sexual maturity between two to three years of age, provided proper body weight is met (Bhupathy 1993). After mating, approximately three months later, the female lays eggs and incubation lasts about three months (Murphy & Henderson 1997; Ramesh & Bhupathy 2010). Based on the present observation and available records, we infer that in mating pairs, female Indian Rock Pythons are usually larger than males in size (Reed & Rodda 2009; Ramesh 2012). Females appear to attain significantly larger body sizes than males in most python species (Shine & Slip 1990). The larger size of females might have evolved to increase reproductive success by increasing fecundity (Blueweiss et al. 1978; Koegh et al. 2000), egg size (Forsman & Shine 1995), and clutch size (Smith & Fretwell 1974).

Radcliffe & Murphy (1984) suggested that ecdysis appears to stimulate courtship in pythons. This assumption was supported by Ramesh & Bhupathy (2013) and Walsh & Murphy (2003), where the former reported that higher incidences of ecdysis coincided with reproductive activity in Indian Rock Pythons at KNP, India, and the latter reported that ecdysis appeared to stimulate courtship in captive Indian Rock Pythons. Synchrony in mating and ecdysis was also reported in other snake species (Nilson 1980; Lillywhite & Sheehy 2016). Further, reproductive events can also be highly correlated with climate conditions (e.g., temperature, rainfall, and photoperiod) and ecologic factors (e.g. resource availability, reproductive mode, and phylogenetic relationships) (Marques 1996; Madsen & Shine 1996, 1999; Brown & Shine 2006). Our observation supports the existing synchrony between mating and ecdysis in Indian Rock Pythons and also relatively early reproductive activity in Indian Rock Pythons inhabiting the warmer climate condition in southern India. Long-term data and multiple observations on reproductive activity in free-ranging Indian Rock Pythons, however, are required to support these inferences.

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