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MASTURBATION IN MALE CAPPED LANGUR (*TRACHYPITHECUS PILEATUS*) AT LAWACHARA NATIONAL PARK, BANGLADESH

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Masturbation is an auto sexual behaviour and for centuries, it has been believed a taboo, abnormal, or pathologic behaviour (Thomsen and Sommer 2015, Laqueur 2004). It's a stimulation or manipulation of one's own genitals, especially to orgasm, sexual self-gratification. This behaviour was known to be exhibited by females of over fifty species and males of about eighty species in the living anthropoid primate radiations (Thomsen *et al.* 2003, Jones 2005). Hence, several authors suggested it to be an ancestral, phylogenetically pervasive trait and a familiar component in the hominin ancestor's sexual characters (Thomsen *et al.* 2003). Yet approximately 80% of non-human primates are not reported to perform masturbatory behaviours (Thomsen and Sommer 2015), which may have been caused due to the elusive nature of such incidents and a limited number of scientific explorations (Thomsen *et al.* 2003).

There are 22 described species under the Asian colobine genus *Trachypithecus* (Roos *et al.* 2020). *Trachypithecus pileatus* (Blyth) is listed as a globally Vulnerable species and distributed in Bhutan, Bangladesh, north-eastern India, north-western Myanmar, and southern China (Das *et al.* 2020). The placement of *T. pileatus* in the genus *Trachypithecus* and its subspecies identifications are still in debate (Arekar *et al.* 2021, Das *et al.* 2020). There is a paucity of precise understanding of its reproductive behaviour, population trends, and systematics (Borah *et al.* 2021, Das *et al.* 2020). To our knowledge, masturbatory behaviour in *T. pileatus* has not been reported globally yet. This report reveals primary observations on the masturbatory behaviour in the species from the semi-evergreen Lawachara National Park (hereafter, LNP; details in Hakim *et al.* 2020) in northeast Bangladesh.

During behavioural studies of *T. pileatus* at LNP since April 2021 to date, two observations on the masturbations were made. On 21 April 2021, a group of *T. pileatus* composed of 2 adult males, 2 adult females and 4 non-adults

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(juveniles and infants) were found at 08:30h near the main entrance of LNP (N 24.328067°, E 91.783831°) and we followed till 16:30h. At the mid-day, these langurs were found resting sparsely between 6 to 16 m above ground. During resting, an adult male showed his erected penis to the nearby adult female. The male touched his genitalia, groom head, hand, and pelvic to solicit the female. Additionally, the male rubbed the glans and penis body by thump finger of the right hand that continued for 27 seconds till ejaculation. Then the male and female travelled together and groomed each other for a while. Neither copulation nor mounting was observed in the session, but they mated later at 16:34h.

Similarly, on 21 June 2021, another group of *T. pileatus* with 3 adult males, 3 adult females and 2 non-adults were found foraging close to the Lawachara animal rescue centre (N 24.311843°, E 91.776201°). At 12:25h, an adult male of the group moved to an adult female and seated closely on a branch 13 meters above the ground. The male presented his erected penis to the female and rubbed it with the thump finger of his right hand for about 12 seconds. Then the male initiated mounting, but no copulation occurred as the female immediately left the branch and continued feeding. The male showed aggression to the female. In response, the foraging Alpha male also chased the masturbated male aggressively.

Under the genus *Trachypithecus*, masturbation was known to *T. phayrei* (Shalauddin *et al.* 2021), *T. poliocephalus* (Hendershott *et al.* 2018), *T. francoisi* (Hu 2007), and *T. cristatus* (Bernstein 1968) in the wild. In most cases, males performed vocal, facial, and genital erection displays toward the females. Besides, *T. poliocephalus* male masturbated in the course of grooming by an adult female with no mounting among them (Hendershott *et al.* 2018). Explaining such masturbatory behaviours in the social groups of wild primates may require long-term observations on their social systems. The lack of sexual opportunity could result in masturbation and sperm competition among males (Shalauddin *et al.* 2021). Hence, multilevel social organization and complex hierarchy among males and intra and inter-group male-female ratios in a species group are thought to be significant variables determining sexual opportunities.

Masturbation may be beneficial to primates by reducing aggressions through hormonally induced relaxation, maintaining genital health, avoiding sexually transmitted diseases, manipulating the inseminated sperms, attracting the other sex, and enhancing the production of pheromone (Thomsen *et al.* 2003). Male primates may flush out old and low-quality sperms from their genital tract and produce fresh sperms to enhance the chances of fertilizing eggs when mating with newly fertile females (Thomsen and Sommer 2015, Thomsen

et al. 2006, Zimmerman *et al.* 1965 and Baker and Bellis 1993). This hypothesis is supported by our first observation on masturbation in *T. pileatus* male at LNP. Besides, masturbatory behaviour may also be advantageous in sperm competitions (Thomson *et al.* 2003, Jones 2005) while our second observation may indicate competitions of mating opportunities. However, the role of seasonal factors on the variations of sexual behaviours and reproductive strategies in *T. pileatus* is not studied well. Hence, we suggest an adequate characterization of sociosexual behaviour and reproductive strategies in *T. pileatus* to demonstrate the costs, causes, and intensities of masturbation. Having both evolutionary and conservation significances of masturbations, such studies will be useful in the breeding programs of this globally threatened species in the captive settings and help improve the understanding in prioritizing conservation needs in the fragmented habitats.

Fig. 1: (A) An adult *T. pileatus* male masturbating at Lawachara National Park, Bangladesh, and (B) Post-masturbation grooming in a couple mated later on the same day.

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