Journal of Threatened Taxa | www.threatenedtaxa.org | 26 September 2015 | 7(11): 7825–7826

ISSN 0974-7907 (Online)
ISSN 0974-7893 (Print)

OPEN ACCESS

Coprophagy by Barking Deer *Muntiacus vaginalis* (Mammalia: Cetartiodactyla: Cervidae) in Buxa Tiger Reserve, West Bengal, India

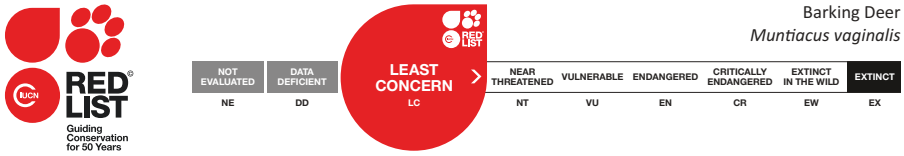
Sachin P. Ranade [1] & Vibhu Prakash [2]

[1] Vulture Conservation Breeding Centre, Raja Bhat Khawa, (BTR), Alipurduar, Alipurduar District, West Bengal 735227, India
[2] F-23, HMT Colony, Pinjore 134 101, Panchkula District, Haryana, India
[1] sachinranade@yahoo.com (corresponding author),
[2] vibhu.mathur@gmail.com

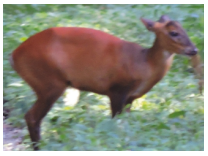
The Indian Muntjac or Barking Deer *Muntiacus vaginalis* (formerly known as *Muntiacus muntjak*) is a common, small (weight 14–28 kg), forest ruminant spread almost all over the Indian subcontinent and southeast Asia (Menon 2014; Timmins et al. 2008).

A Barking Deer was observed feeding on the dung of Asian Elephant *Elephas maximus,* on 31 August 2014, at Pan-Gadadhar Road in Jayanti range in Buxa Tiger Reserve (Image 1). The adult doe was observed from about 100m feeding on the ground with folded forelimbs. It would occasionally stand up and change positions during feeding. It looked like the deer had picked up dried yellow grass from the ground which was unusual as the grass was lush green all around. The deer was observed for almost 15 minutes until it noticed our presence and vanished into the jungle at 1600hr. On closer examination, it was found that the deer was feeding from the elephant dung on the forest path, infested with dung beetles. The dung had marks of hooves and feeding by the deer. It contained partly digested fruits of *Dillenia indica* Linnaeus. The fruits are quite hard, green, about 7.5–12.5 cm in diameter and are also known as Elephant apple (Hooker 1885).

Coprophagy which literally means 'faeces-eating' is categorized based on the source of the faeces. If the faeces is from other species or from conspecifics, then the act of feeding is called 'allocoprophagy'; if the faeces are of its own, then it is called 'autocoprophagy'. There are a few records of allocoprophagy in wild animals—Reindeer *Rangifer tarandus platyrhynchus* feeding on the droppings of Barnacle Goose *Branta leucopsis* (van der Wal & Loonen 1998); Olive Baboons *Papio anubis* in Kibale National Park, Uganda were recorded using elephant dung as a food source (Johnson et al. 2012); Sika Deer *Cervus nippon yakushimae* feeding on droppings of Japanese Macaques *Macaca fuscata yakui* (Nishikawa & Mochida 2010); in Gorilla *Gorilla beringei* (Rothman et al. 2006), in Captive Brown Capuchin Monkeys *Cebus apella* (Prates & Bicca-Marques 2005),



Barking Deer
Muntiacus vaginalis



DOI: http://dx.doi.org/10.11609/JoTT.o4367.7825-6

Editor: L.A.K. Singh, Bhubaneswar, Odisha, India. **Date of publication:** 26 September 2015 (online & print)

Manuscript details: Ms # o4367 | Received 09 July 2015 | Finally accepted 23 August 2015

Citation: Ranade, S.P. & V. Prakash (2015). Coprophagy by Barking Deer *Muntiacus vaginalis* (Mammalia: Cetartiodactyla: Cervidae) in Buxa Tiger Reserve, West Bengal, India. *Journal of Threatened Taxa* 7(11): 7825–7826; http://dx.doi.org/10.11609/JoTT.o4367.7825-6

Funding: None.

Conflict of Interest: The authors declare no competing interests.

Acknowledgements The authors would like to thank the Field Director of Buxa Tiger Reserve, the field staff and Forest Department of West Bengal for their kind co-operation. We are grateful to the Bombay Natural History Society, Mumbai for constant support and encouragements. We appreciate the assistance provided by Etoya Urao, Vulture Conservation Breeding Centre during field work.

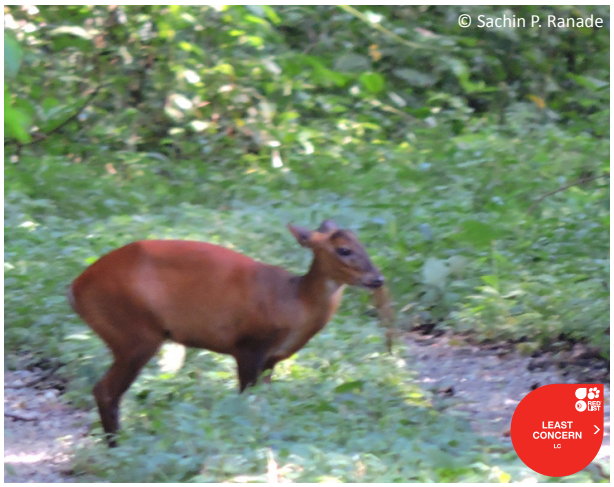


Image 1. The Barking Deer feeding on Asian Elephant's dung at Buxa Tiger Reserve

and in African Elephant *Loxodonta africana* (Leggett 2004). Autocoprophagy is well described and reviewed in leporids and other mammals (Hirakawa 2001). The benefits of this mechanism in domestic and wild herbivores are well explained (Karasov & Carey 2009; Meyer et al. 2010). Also, there are hypotheses to relate this behavior to age, social stress, malnourishment, mechanism to gain minerals, vitamin B1, etc., although none of them are completely satisfactory (De Passille et al. 1989; Prates & Bicca-Marques 2005).

In Vietnam, the Asian Elephant *Elephas maximus* is known to use at least 26 species of plants for food (Sukumar et al. 2002), while in Odisha State of India, 71 species of food plants are recorded in its diet (Mohapatra et al. 2013). Digested only partially, the African and Asian Elephant's dung is a well known rich food resource to several insect species (Theuerkauf et al. 2009; Rattanawannee et al. 2013). In this way food is made available to the ground-dwelling fauna. The record of corprophagy by a muntjac is the first of its kind. It is quite possible that the half digested fruits attract small frugivorous deer (Chen et al. 2001). It appears that, it was not a case of 'pika' - a disorder characterized by an appetite for non-nutritive substances, but this wild Barking Deer had taken advantage of feeding on half digested fruits which would not be otherwise easily available to the small mammal.

References

Chen, J., X.B. Deng, Z.L. Bai, Q. Yang, G.Q. Chen, Y. Liu & Z.Q. Liu (2001). Fruit Characteristics and *Muntiacus muntijak vaginalis* (Muntjac) visits to individual plants of *Choerospondias axillaries*. *Biotropica*, 33(4): 718–722; http://dx.doi.org/10.1111/j.1744-7429.2001.tb00231.x

De Passille, A.M.B., C.L. Girard, J.J. Matte & R.R. Bilodeau (1989). A study on the occurrence of coprophagy behavior and its relationship to B-vitamin status in growing-finishing pigs. *Canadian Journal of Animal Science* 69(2): 299–306; http://dx.doi.org/10.4141/cjas89-033

Hirakawa, H. (2001). Coprophagy in leporids and other mammalian herbivores. *Mammal Review* 31(1): 61–80; http://dx.doi.org/10.1046/j.1365-2907.2001.00079.x

Hooker, J.D. (1885). *Flora of British India*. Reprint by Bishen Singh Mahendra Pal Singh Publishers, Dehra Dun, 36pp.

Johnson, C.A., L. Swedell & J.M. Rothman (2012). Feeding ecology of Olive Baboons (*Papio anubis*) in Kibale National Park, Uganda: preliminary results on diet and food selection. *African Journal of Ecology* 50(3): 367–370; http://dx.doi.org/10.1111/j.1365-2028.2011.01316.x

Karasov, W.H. & H.V. Carey (2009). Metabolic teamwork between gut microbes and hosts. *Microbe* 4(7): 323–328.

Leggett, K. (2004). Coprophagy and unusual thermoregulatory behaviour in desert dwelling elephants of north-western Namibia. *Pachyderm* 36: 113–115.

Menon, V. (2014). Indian Mammals - *A Field Guide*. Hachette Book Publishing India Private Limited, 528pp.

Meyer, M., J. Hummel & M. Clauss (2010). The relationship between forage cell wall content and voluntary food intake in mammalian herbivores. *Mammal Review* 40(3): 221–245; http://dx.doi.org/10.1111/j.1365-2907.2010.00161.x

Mohapatra, K.K., A.K. Patra & D.S. Paramanik (2013). Food and feeding behavior of Asiatic Elephant (*Elephas maximus* Linn.) in Kuldiha Wild life Sanctuary, Odisha, India. *Journal of Environmental Biology* 34: 87–92.

Nishikawa, M. & K. Mochida (2010). Coprophagy-related interspecific nocturnal interactions between Japanese Macaques (*Macaca fuscata yakui*) and Sika Deer (*Cervus nippon yakushimae*). *Primates* 51(2): 95–99.

Prates, H.M. & J.C. Bicca-Marques (2005). Coprophagy in captive Brown Capuchin Monkeys (*Cebus apella*). *Neotropical Primates* 13(3): 18–21; http://dx.doi.org/10.1896/1413-4705.13.3.18

Rattanawannee, A., O. Duangpukdee & P. Poolprasert (2013). Insect diversity during different stages of Asiatic Elephant dung deterioration in Eastern Thailand. *Kasetsart Journal Natural Science* 47: 387–397.

Rothman, J.M., A.N. Pell, J.B. Nkurunungi & E.S. Dierenfeld (2006). Nutritional aspects of the diet of wild Gorillas. How do Bwindi Gorillas compare? pp. 153–169. In: Newton-Fisher, N.E., H. Notman, J.D. Paterson & V. Reynolds (eds.). *Primates of Western Uganda*. Springer, New York.

Sukumar, R., S., Varma, N.X. Dang & T.V. Thanh (2002). The status and conservation of Asian Elephants in Cat Tien National Park, Vietnam. Cat Tien National Park Conservation Project 97.

Theuerkauf, J., S. Rouys, A.L.V.B. Henegouwen, F.T. Krell, S. Mazur & M. Mühlenberg (2009). Colonization of forest elephant dung by invertebrates in the Bossematié Forest Reserve, Ivory Coast. *Zoological Studies* 48(3): 343–350.

Timmins, R.J., J.W. Duckworth, A. Pattanavibool, R. Steinmetz, N.S. Kumar, M.A. Islam & H.S. Baral (2008). *Muntiacus vaginalis*. The IUCN Red List of Threatened Species. Version 2014.2. <www.iucnredlist.org>. Downloaded on 07 October 2014.

van der Wal, R. & M. J.J.E. Loonen (1998). Goose droppings as food for Reindeer. *Canadian Journal of Zoology* 76(6): 1117–1122; http://dx.doi.org/10.1139/z98-033