Fish feeding adaptation by Rhesus Macaque Macaca mulatta (Cercopithecidae) in the Sundarban mangrove swamps, India

Joydeb Majumder¹, Rahul Lodh² & B.K. Agarwala³

1,2,3 Ecology & biodiversity laboratories, Department of Zoology, Tripura University, Suryamaninagar, west Tripura 799022, India Email: 1 jmtugemo@gmail.com, 2 samurah@gmail.com, ³ bagarwala00@gmail.com (corresponding author)

Rhesus Macaque Macaca mulatta (Cercopithecidae), an old world monkey, is one of the most common primate species found in both forested and human habitation areas. It is diurnal, mostly terrestrial and lives in large multi-male groups. Four subspecies, namely *M. mulatta mulatta* (Zimmermann), M. m. mcmahoni (Pocock), M. m. vestita (Milne-Edwards), and M. m. villosa (True) (Gupta 2001) are reported. It is assessed as Least Concern by IUCN (Timmins et al. 2008). Rhesus Macaques are food generalists and mostly feed on the ground (Gupta 2001). However, forest groups tend to be somewhat more arboreal than nonforest groups. In the tidal swamp forests of the Sundarbans, M. mulatta rarely

Date of publication (online): 26 April 2012 Date of publication (print): 26 April 2012 ISSN 0974-7907 (online) | 0974-7893 (print)

Editor: Mewa Singh

Manuscript details:

Ms # o2884 Received 22 July 2011 Final received 10 October 2011 Finally accepted 18 February 2012

Citation: Majumder, J., R. Lodh & B.K. Agarwala (2012). Fish feeding adaptation by Rhesus Macaque Macaca mulatta (Cercopithecidae) in the Sundarban mangrove swamps, India. Journal of Threatened Taxa 4(4): 2539-2540.

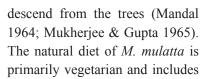
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Acknowledgement: We are very thankful to Department of CORAL, IIT Kharagpur and entire organizing team of BDCC, 2010 for arranging such a scientific tour to the Sundarban mangrove forest, West Bengal, and we also thankful to forest department of West Bengal for providing us access to the different core areas of Sundarban mangrove forest.

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fruits, seeds, flowers, leaves, buds, shoots, twigs, stems, roots, bark, pith, and resin of hundreds of species of angiosperms, gymnosperms, and fungi (Fooden 2000) showing considerable geographical variations (Goldstein & Richard 1989). Lindburg (1971) reported from Dehradun that Rhesus Macaques are largely frugivorous, but occasionally ate termites, grasshoppers, ants, and beetles. Makwana (1979), however, observed that animal food was eaten more often and regularly in Asarori forest and Malik (1983) had observed these monkeys eating bird eggs in Tughlaqabad. Other known animal foods include spiders, crayfish, crabs, shellfish, and honeycombs (Fooden 2000).

Rhesus Macaques studied in the Sundarbans fed on mangrove leaves, fruits, molluscs, and crabs (Mandal 1964). During a trip to the Sundarban mangrove forests in February 2011, we sighted an adult male Rhesus Macaque walking to the bank of estuarine water and catching live fish and eating it (Image 1). The rest of the members of the troop observed it from a distance for about 10 minutes and then two other members of the troop followed the act of the first adult and were successful. This observation on M. mulatta suggests that this species is able to feed on a variety of food available to them and, thus, show their high degree of adaptability to a variety of food sources on trees, on



Image 1. Male Rhesus Macaque Macaca mulatta feeding on

the ground and in water.

Macaques in the coastal forest rely more heavily on high-quality fruits/seeds, which are limited resources but fruit production per tree is higher in the coastal forest (Hanya et al. 2003). As a result, both the population and group density of macaques is about three times higher in the coastal forest (Hanya et al. 2004). As a consequence, there are within and between-group contests for limited food in coastal forests (van Schaik 1989). This could have promoted adaptation to aquatic food in Rhesus Macaques in the Sundarban mangrove swamps.

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