

Biodiversity Record: Long-tailed macaque swimming with infant in Upper Seletar Reservoir

Cheo Zi Han

Wildlife Reserves Singapore, 80 Mandai Lake Road, Singapore 729826; Email: cheo.zihan@gmail.com

Recommended citation. Cheo ZH (2021) Biodiversity Record: Long-tailed macaque swimming with infant in Upper Seletar Reservoir. *Nature in Singapore*, 14: e2021009. DOI: 10.26107/NIS-2021-0009

Subjects: Long-tailed macaque, *Macaca fascicularis* (Mammalia: Primates: Cercopithecidae).

Subjects identified by: Cheo Zi Han.

Location, date and time: Singapore Island, Upper Seletar Reservoir off Mandai Lake Road; 29 September 2020, 1345–1423 hrs.

Habitat: Freshwater lake fringed by secondary forest and parkland.

Observer: Cheo Zi Han.

Observation: At 1345 hrs, a wild, adult female long-tailed macaque, hereafter referred to as AF5, along with her approximately one-month-old infant, entered the reservoir from the shoreline of the Singapore Zoo, close to Pavilion by the Lake. AF5 swam in the direction of the opposite shoreline, which is a patch of forest that forms a part of the larger Central Catchment Nature Reserve. Judging by the splash that was heard, AF5 likely entered the water from a tree along the shoreline, from a height of at least 2 m; it is uncertain if she had fallen or jumped from the tree. While swimming to the opposite shore, AF5 kept her head out of the water and appeared to be manipulating the position of her infant that was clinging to her torso. About 5 minutes after AF5 entered the water, a juvenile macaque also entered the water, likely from the same tree as AF5, and swam towards AF5. However, it turned back after covering a distance of around 100 m.

Around 1355 hrs, AF5 reached the opposite shore and went into the forest out of the observer's sight. She had swum an estimated distance of 200 m from point 1 to point 2 (Fig. 1). Alarm calls were heard coming from the opposite shore, and they were assumed to be made by AF5. At approximately 1414 hrs, AF5 was spotted swimming back (Fig. 2) towards point 1 at the shoreline of the Singapore Zoo. Her infant could be seen positioned on her right flank (Figs. 3, 4). Both mother and child reached the opposite shore and got out of the water at approximately 1422 hrs (Fig. 4). Throughout the entire observation, AF5's troop remained in the vegetation along the Singapore Zoo's shoreline, and multiple members of the troop, including the alpha male, were observed looking and calling in the direction which AF5 had swum towards. As AF5 and her child sat at the water's edge to dry off, several members of the troop descended from the trees and stayed with them (Fig. 5).

Remarks: Long-tailed macaques are comfortable in water and are capable swimmers. They may swim to forage, thermoregulate, access other areas, and play (Kempf, 2009). This observation demonstrates how the macaques' comfort in water may have contributed to their success at dispersing across aquatic barriers, allowing them to colonise multiple oceanic islands across Southeast Asia (Abegg & Thierry, 2002; Yao et al., 2020). Even though macaques are often associated with human environments, they are still primarily adapted to riverine habitats (Riley et al., 2015).

The infant featured in this observation was born between 22 and 28 August 2020. Long-tailed macaque infants are born with the instinct to grasp (Kemps & Timmermans, 1982), while their mothers manipulate them into the ventro-ventral position for carrying (Timmermans & Vossen, 1996). In this most likely novel situation, AF5 had manipulated her infant onto her flank, in a position that allowed it to breathe without obstructing her swimming (Figs. 3, 4). As AF5 was not a first-time mother, she is expected to have experience in making sure that her infant survives the extreme situation of being immersed in water during a long distance swim (see Tsuchida et al., 2008).

Note: This record is part of a long-term monitoring programme of wild long-tailed macaques residing in the environs of Wildlife Reserves Singapore. The author is grateful to the Wildlife Reserves Singapore staff for their support of this work.



Fig. 1. Stretch of Upper Seletar Reservoir covered by AF5 on her swim. She swam with her infant from point 1 on the shoreline of the Singapore Zoo, to point 2 on the shoreline of the Central Catchment Nature Reserve. She then swam back to point 1 to rejoin her troop. Google map view (above) and landscape view (below) of the approximately 200-metre stretch of water between the two points. (Photograph by: Cheo Zi Han).

Literature Cited:

Abegg C & Thierry B (2002) Macaque evolution and dispersal in insular south-east Asia. *Biological Journal of the Linnean Society*, 75: 555–576.

Kempf E (2009) Patterns of water use in primates. *Folia Primatologica*, 80: 275–294.

Kemps A & Timmermans P (1982) Parturition behaviour in pluriparous Java-macaques (*Macaca fascicularis*). *Primates*, 23: 75–88.

Riley CM, Koenig B & Gumert MD (2015) Observation of a fatal dog attack on a juvenile long-tailed macaque in a human-modified environment in Singapore. *Nature in Singapore*, 8: 57–63.

Timmermans PJ & Vossen JM (1996) The influence of repeated motherhood on periparturitional behavior in cynomolgus macaques (*Macaca fascicularis*). *International Journal of Primatology*, 17: 277–296.

Tsuchida J, Yoshida T, Sankai T & Yasutomi Y (2008) Maternal behavior of laboratory-born, individually reared long-tailed macaques (*Macaca fascicularis*). *Journal of the American Association for Laboratory Animal Science*, 47: 29–34.

Yao L, Witt K, Li H, Rice J, Salinas NR, Martin RD, Huerta-Sánchez E & Malhi RS (2020) Population genetics of wild *Macaca fascicularis* with low-coverage shotgun sequencing of museum specimens. *American Journal of Physical Anthropology*, 173: 21–33.



Fig. 2. The adult female macaque AF5 leaving the opposite bank (point 2).



Fig. 3. AF5 swimming towards point 1 with her infant clinging to her right flank.



Fig. 4. AF5 reaching the bank of point 1.



Fig. 5. AF5 sitting down with her infant after the swim, with other members of her troop.

(Photographs by Cheo Zi Han).