

Observation of tail bifurcation in *Hemidactylus frenatus* (Schlegel, 1836)

Marjan Maria^{1,2} and Hassan Al-Razi^{1,2,*}

Six species (*Hemidactylus bowringii*, *H. brookii*, *H. flaviviridis*, *H. frenatus*, *H. garnotii*, *H. platyurus*) are representing the genus *Hemidactylus* (Oken, 1817) in Bangladesh (IUCN Bangladesh, 2015). Among the species of this genus *H. frenatus* is the most common and widely distributed all over Bangladesh (Khan, 2004; Hasan et al., 2014). Natural distribution of this species is unclear, but it presumably included an area extending from Bangladesh to the Philippines (Farr, 2011). This nocturnal gecko can be found in trees, logs, stones, and in human settlement (IUCN Bangladesh, 2015). Tail Bifurcation is an abnormal phenomenon for *H. frenatus* but not rare in geckos and other lizards. Many incidences of tail bifurcation of this species has been previously reported (Chan et al., 1984; Heyborne and Mehan, 2017; García-Vinalay et al., 2017). Here we described an occurrence of tail bifurcation in *H. frenatus* from a forest patch of North-east Bangladesh.

In 4th July, 2018 during our regular night survey of Bengal slow loris (*Nycticebus bengalensis*) in Lawachara National park, we found an individual of *H. frenatus* on the pillar of a tea stall inside the forest (24.3277°N, 91.7847°E). After careful observation we noticed that, it has a bifurcated tail. As we didn't have the permission to collect specimen, so we didn't capture or collect the specimen for measurement. We only took some good photos to describe it. It was an adult individual and the additional tail arises from a little distance of the base of main tail. The distance was around one fourth length of main tail and the ratio of main tail and additional tail

is approximately 4:3. The additional tail arose from the main tail in a 90° angle (Fig. 1)

Tail bifurcation is considered to be a frequent malformation among lizards and is recorded in family Agamidae (e.g. Ananjeva and Danov, 1991), Anguillidae (e.g. Conzendey et al., 2013), Gekkonidae (e.g. Kumbar et al., 2011), Gymnothalamidae (e.g. Plessey et al., 2014), Iguanidae (e.g. Mata-Silva et al., 2013), Lacertidae (e.g. Dudek and Ekner-Grzyb, 2014), Mabuyidae (e.g. Vrcibradic and Niemeyer, 2013), Scincidae (e.g. Mitchel et al., 2012), Teiidae (e.g. Pelegrin and Leão, 2016; Cordes and Walker, 2013), Tropicuridae (e.g. Passos et al., 2014; Martins et al., 2013). It is a relatively well understood abnormality being closely related to variations in the process of caudal autotomy, which is widely used by lizards in response to the attack of predators (Meyer et al., 2002). Formation of bifurcated tail occurs when there is mechanical damage that does not result in complete loss of the tail (Arnold, 1988). The presence of multiple tails in an individual could



Figure.1 Common House Gecko (*H. frenatus*) with a bifurcated tail.

¹ Bangladesh Slow Loris Research & Conservation Project.
531/2, Shahidbagh, Dhaka.

² Faculty of Life and Earth Science, Department of Zoology,
Jagannath University, Dhaka.

* Corresponding author. E-mail: chayan1999@yahoo.com

affect its fitness in negative ways, because the tail plays an important role in locomotion and can affect such activities as foraging, mating, and the ability to escape from predators (Passos et al., 2014). In Bangladesh (Khan, 2008) reported a tail bifurcation. As far we know this is the second report from Bangladesh.

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References

- Ananjeva, N.B., Danov, R.A. (1991): A rare case of bifurcated caudal regeneration in the Caucasian agama, *Stellio caucasicus*. *Amphibia-Reptilia* **12**: 343–349.
- Arnold, E.N. (1988): Caudal autotomy as a defence. In: *Biology of the Reptilia*, p.235–273. Gans, C., Huey, R.B., Eds., New York: Liss Inc.
- Chan, J. G., L. L. Young., P. R. K. Chang., C. M. Shero. & C. Watts. (1984): Morphological anomalies of two geckos, *Hemidactylus frenatus* and *Lepidodactylus lugubris*, and the toad, *Bufo marinus*, on the Island of Hawaii. In: *Proceedings of the Fifth Conference in Natural Sciences in Hawaii*, Hawaii Volcanoes National Park. p. 41–50. Smith C.W. Ed., University of Hawaii, Honolulu Hawaii, United States.
- Conzende, P., Campos, S.P.S., Lanna, F.M., De Amorim, J.D.C.G., De Sousa, B.M. (2013): *Ophiodes striatus* (Striped Worm Lizard). Bifurcated tail. *Herpetological Review* **44**: 145–146.
- Cordes, J.E., Walker, J.M. (2013): *Aspidoscelis velox* (Plateau Striped Whiptail). Bifurcation. *Herpetological Review* **44**: 319.
- Dudek, K., Ekner-Grzyb, A. (2014): Field observation of two-tailed sand lizard *Lacerta agilis Linnaeus*, 1758 and a common lizard *Zootoca vivipara* (Jacquin, 1787) in Poland. *Natura Sloveniae* **16**: 65–66.
- Farr, W.L. (2011): Distribution of *Hemidactylus frenatus* in Mexico. *The Southwestern Naturalist* **56**: 265–273.
- García-Vinalay, A. (2017): *Hemidactylus frenatus* Duméril & Bibron, 1836. Tail bifurcation. *Mesoamerican Herpetology* **4**(3): 635–637.
- Hasan, M.K., Khan, M.M.H., Feeroz, M.M. (2014): *Amphibians and Reptiles of Bangladesh—A Field Guide*. Arannayk Foundation, Dhaka, Bangladesh.
- Heyborne, W.H., Mahan, A. (2017): *Natural History Notes. Hemidactylus frenatus* (Common House Gecko). Tail bifurcation. *Herpetological Review* **48**: 437–438.
- IUCN Bangladesh. 2015. *Red List of Bangladesh Volume 4: Reptiles and Amphibians*. IUCN, International Union for Conservation of Nature, Bangladesh Country Office, Dhaka, Bangladesh, pp. xvi+320.
- Khan M.A.R. (2004): Checklist of Herpetofauna of Bangladesh, *Cobra* **75**: 1–29.
- Khan M.M.H. (2008): *Protected Areas of Bangladesh – A Guide to Wildlife*. Nishorgo Program, Bangladesh Forest Department, Dhaka, Bangladesh.
- Kumbar, S.M., Ghadage, A.B., Shndage, V.M. (2011): *Hemidactylus flaviviridis* (House Gecko). Bifurcation. *Herpetological Review* **42**: 94.
- Martins, R.L., Peixoto, P.G., Fonseca, P.H.M., Martinelli, A.G., Silva, W.R., Pelli, A. (2013): Abnormality in the tail of the collated lizard *Tropidurus gr. torquatus* (Iguania, Tropiduridae) from Uberaba city, Minas Gerais State, Brazil. *Herpetology Notes* **6**: 369–371.
- Mata-Silva, V., Rocha, A., Johnson, J.D., Wilson, L.D. (2013): *Urosaurus bicarinatus* (Tropical Tree Lizard). Bifurcation. *Herpetological Review* **44**: 686–687.
- Meyer, V., Preest, M.R., Lochetto, S.M. (2002): Physiology of original and regenerated lizard tails. *Herpetologica* **58**: 75–86.
- Mitchell, J.C., McDaniel, W., McDaniel, J. (2012): *Plestiodon inexpectatus* (Southeastern Five-lined Skink). Bifurcation. *Herpetological Review* **43**: 650.
- Passos, D.C., Pinheiro, L.T., Galdino, C.A.B. & Rocha, C.F.D. (2014): *Tropidurus semitaeniatus* (Calango de Lagedo). Tail Bifurcation. *Herpetological Review* **45**: 138.
- Pelegri, N., Leão, S.M. (2016): Injured *Salvator merianae* (Teiidae) regenerates six tails in central Argentina. *Cuadernos de Herpetología* **30**: 21–23.
- Phasey, H., Smith, P., Brouard, J.-P., Atkinson, K. (2014): *Vanzosaura rubricauda* (Red-tailed Vanzosaur). Bifurcation and Trifurcation. *Herpetological Review* **45**: 138–139.
- Vrcibradic, D., Niemeyer, J. (2013): *Mabuya frenata*, *M. macrorhyncha*. Tail bifurcation. *Herpetological Review* **44**: 510–511.