

Altitudinal range extension of Indian Peafowl: reviewing its causes and effects

The Indian Peafowl *Pavo cristatus* under order Galliformes was declared as the national bird of India in 1963 (Ramesh & McGowan 2009) and given protection as a Scheduled I species under the Wildlife (Protection) Act, 1972 of India (Anon 1972). They are the largest and the most charismatic birds in the family and hold a significant value in Indian mythology and culture (Baral & Inskipp 2013). The species is a generalist in diet and feeds mainly on seeds, shoots of crops, fruits, insects, and worms (McGowan et al. 2020). Indian Peafowl also feeds on small reptiles & small mammals and they form a major prey base for several predatory birds and mammals; therefore, they hold the prime position in the food web (Kushwaha & Kumar 2016).

Scrub jungles at the forest edges of subtropical and semiarid regions comprise the natural habitat of this species (Ali & Ripley 1987). They also occur abundantly in agricultural fields, near streams and water bodies, and in human habitation (McGowan et al. 2020). Due to their ability to adapt and thrive in non-forested areas and agricultural lands, they are increasingly becoming abundant in urban and outskirt areas. Therefore, this bird species is now considered an agricultural pest in many parts of the country (Senaratna et al. 2019).

The Indian Peafowl has a wide distribution range in India (Ali & Ripley 1987). It occurs naturally in the wild on the mainland of India

(McGowan et al. 2020), but they were also introduced in the Andaman Islands (Ali & Ripley 1987), U.S.A., Europe, Hawaii Islands, West Indies, South Africa, New Zealand, and Australia (McGowan et al. 2020). They mostly reside in low lands with an elevation of around 500 m (Baker 1930) but can be frequently recorded up to 1,200 m in Nepal (Baral & Inskipp 2013). The highest known elevation for the occurrence with confirmed evidence is 1,844 m (Dodsworth 1912) near the Tara Devi Railway station in Shimla. It is known to occur up to 2,000 m (Dodsworth 1912; Ramesh & McGowan 2009), however, there was no confirmed evidence to support this report so far. As per the Handbook of the Birds of the World (McGowan et al. 2020), this bird is known to move up to 2,000 m but no literature is available to confirm the upper limit of the species.

Recently, the Indian Peafowl was reported through a camera trap image captured at 2,622 m in Darjeeling, West Bengal (Thapa et al. 2020). Later, Pradhan & Tamang (2020) also highlighted the presence of the species at around 2,200 m in Darjeeling and provided supporting shreds of evidence that due to habitat loss the species is moving up in the mountains. Whereas, another study by Jose & Nameer (2020), revealed that changes in the temperature and precipitation due to climate change resulted in the expansion of the distribution range of the species in Kerala that is comprising a part of the Western Ghats. Habitat modelling from the known

locations of this species predicted that the distribution range of the Indian Peafowl would expand by up to 55.33% by 2050. Other than that, it is also possible that the local extinction of small predators like jackals may also be contributing to these extensions.

Due to the repercussion of changing environmental conditions, many birds have evolved to adapt in response to the consequences of climatic changes (Gregory et al. 2009), and often these adaptations are in the form of geographical range shifts like these. According to a study by Reino et al. (2009), every 1°C rise in temperature will increase the risk of a new invasion by 47%. However, these adaptive invasive species often benefit from climate change by affecting the native and specialized species (Şekercioğlu 2011) by invading their niche in temperate regions (Reino et al. 2009). These invasive species contribute significantly to the detrimental extinction of specialist species of the landscape (Bellard et al. 2016). For example, the high population of Indian Peafowl in some small Japanese islets leads to the decline in the population of endemic skink *Eumeces kishinouyei* and its sympatric bird species, Japanese white-eye *Zosterops japonicas* (Eguchi & Amano 2004). A careful investigation of species whose ranges are shifting upwards or invading the other habitats will help us understand the pressure of competition on the native population. Also, predictive modelling can help us understand their pattern of invasion and the effect on threatened/endemic species of the region.

References

- Ali, S. & S.D. Ripley (1987).** *Compact Handbook of the Birds of India and Pakistan together with those of Bangladesh, Nepal, Bhutan, and Sri Lanka*. Oxford University Press, New Delhi.
- Anonymous (1972).** The Indian Wildlife (Protection) Act. Ministry of Environment and Forests, Government of India, New Delhi.
- Baker, E.C.S. (1930).** *The Fauna of British India including Ceylon and Burma: Birds*. Taylor & Francis, London.
- Baral, H.S. & S. Inskipp (2013).** Status of Indian Peafowl *Pavo cristatus* in Nepal. *Indian BIRDS* 8(6): 145–147.
- Bellard, C., P. Casset & T.M. Blackburn (2016).** Alien species as a driver of recent extinctions. *Biology Letters* 12: 20150623. <http://dx.doi.org/10.1098/rsbl.2015.0623>
- Dodsworth, P.T.L. (1912).** Occurrence of the Common Peafowl *Pavo cristatus* in the neighbourhood of Shimla, north-west Himalayas. *Journal of the Bombay Natural History Society* 21: 1082–1082.
- Eguchi, K. & H.E. Amano (2004).** Invasive birds in Japan. *Global Environmental Research* 8: 29–39.
- Gregory, R.D., S.G. Willis, F. Jiguet, P. Voříšek, A. Klvaňová, A. vanStrien, B. Huntley, Y.C. Collingham, D. Couvet, & R.E. Green (2009).** An indicator of the impact of climatic change on European bird populations. *PLoS ONE* 4(3): e4678. <https://doi.org/10.1371/journal.pone.0004678>
- Jose, V.S. & P.O. Nameer (2020).** The expanding distribution of the Indian Peafowl *Pavo cristatus* as an indicator of changing climate in Kerala, southern India: a modelling study using MaxEnt. *Ecological Indicators* 110: 105930. <https://doi.org/10.1016/j.ecolind.2019.105930>
- Kushwaha, S. & A. Kumar (2016).** A review on Indian Peafowl *Pavo cristatus* Linnaeus, 1758. *Journal of Wildlife Research* 4(4): 42–59.
- McGowan, P.J.K., G.M. Kirwan & P. Boesman (2020).** Indian Peafowl *Pavo cristatus*. In: del Hoyo, J., A. Elliott, J. Sargatal, D.A. Christie & E. de Juana (eds.). *Handbook of the Birds of the World Alive*. Lynx Edicions, Barcelona. <https://www.hbw.com/node/53521>. Accessed 13.iii.2020.
- Pradhan, A. & S. Tamang (2020).** Indian Peafowl *Pavo cristatus* in Darjeeling Hills, Eastern Himalaya, and Broom-grass harvesting practices. *Indian BIRDS* 16(2): 64A.
- Ramesh, K. & P. McGowan (2009).** On the current status of Indian Peafowl *Pavo cristatus* (Aves: Galliformes: Phasianidae): keeping the common species common. *Journal of Threatened Taxa* 1(2): 106–108. <https://doi.org/10.11609/JoTT.01845.106-8>.
- Reino, L., J. Moya-Larano & A.C. Heitor (2009).** Using survival regression to study patterns of expansion of invasive species: will the common waxbill expand with global warming? *Ecography* 32: 237–246.
- Şekercioğlu, C.H. (2011).** Functional extinctions of bird pollinators cause plant declines. *Science* 331: 1019–1020.
- Senaratna, D., S. Lingesh & N.S.B.M. Atapattu (2019).** Foraging behaviour-based management strategy to minimize crop damage caused by Indian Peafowl *Pavo cristatus*. *Journal of Ethology & Animal Science* 2(2): 1–10.
- Thapa, A., A. Singh, P.K. Pradhan, B.D. Joshi, M. Thakur, L.K. Sharma & K. Chandra (2020).** Is the Indian Peafowl *Pavo cristatus* moving higher up in the mountains? *Indian BIRDS* 15(6): 177–179.

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