

# Unethical wildlife photography imperils the Western Ghats endemic galaxy frog, *Melanobatrachus indicus* Beddome, 1878

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Photography was once considered an expensive hobby due to high equipment and development costs, but the introduction of digital photography has changed this (Dattatri, 1990; Brown, 2018). Photography has now become an affordable hobby for many and the emergence of social media has supported this trend further (Seshadri et al., 2013; Zhang et al., 2017; Smith, 2020). About 2.8 billion photos are posted every day, including photos that depict nature and wildlife, on social media platforms (Diehl et al., 2016). In some ways, the increasing number of photographers has been beneficial, since photographs have facilitated the documentation of new species distribution records, species rediscovery, and even the description of new species (Nabhitabhata and Sukhsangchan, 2007; Banerjee and Inskipp, 2013; Das et al., 2013; Harasti and Gladstone, 2013; Chowdhury, 2014; Iqbal, 2015; Marshall and Evenhuis, 2015; Sengupta, 2017).

Photographs can communicate on and validate research findings (Carr, 2012; Das et al., 2013), and may form important components of materials used in conservation outreach programmes (Verissimo et al., 2013). Photographs are considered a potential tool for conservation (Morrison, 2018; Brown, 2018) and conservation photography may facilitate the development of an emotional attachment by people towards nature and wildlife (Kals et al., 1999; Adelman et al., 2000; Vining, 2003; Novacek, 2008). However, some photographers are motivated by the recognition

associated with photographing particularly unique or rare species (Banerjee, 2016). This has changed the attitudes of some photographers towards their subjects, resulting in a loss of emotional attachment and reduced care about the species or its habitat (Kanagavel et al., 2013; Seshadri et al., 2013; Verissimo et al., 2013; Dattatri and Sreenivasan, 2016; Zhang et al., 2017).

The actions of nature photographers can directly threaten individual animals or populations by disturbance (Knight and Cole, 1995; Frid and Dill, 2002; Tablado and Jenni, 2017). This can result in behavioural changes (Huang et al., 2011) that may impact feeding patterns (Giglio et al., 2019), breeding and mating success (Huang et al., 2011; Zhang et al., 2017; Giglio et al., 2019), the social structure (Huang et al., 2011) of subject animals, and even cause the confinement (Kanagavel et al., 2013) or death of wild animals (Dattatri and Sreenivasan, 2016). Nature photographers can also degrade sensitive habitats (Seshadri et al., 2013) or manipulate microhabitats, rendering the subject animals at risk to increased predation (Dattatri and Sreenivasan, 2016). The physical manipulation of animals for photography is also known to elicit strong stress responses (De Brauwert et al., 2019). The use of flash photography to photograph animals, particularly nocturnal animals, can be potentially detrimental to them (Quiros, 2007; Schipper, 2007; Guynup, 2017; Frans, 2023). There have been efforts to develop ethical codes of conduct for wildlife photography (Mittermeier, 2005; Guynup, 2017; Groo, 2019; Waterman, 2021; Frans, 2023; Dench, 2024), which all suggest that wildlife or nature photography should not affect the species and habitat. Many organisations and several eminent photographers are continuously striving to promote and encourage ethical and conservation wildlife photography and such efforts lead to the formation of the International League of Conservation Photographers in 2005 (Seelig, 2014).

In India, the unethical actions of nature photographers has resulted in a ban of bird nest photography during photography competitions and the restriction of

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photography during the breeding seasons of specific birds (Dattatri and Sreenivasan, 2016). In the recent past, macrophotography, especially of herpetofauna, has gained much attention in India, and there are no restrictions or protocols to promote ethical macrophotography of amphibians and reptiles. Here, we describe how unethical behaviour is impacting the status of *Melanobatrachus indicus* at one of our field study sites outside a protected area. Precise locality information is withheld due to the risk of further disturbance of the site.

*Melanobatrachus indicus* (Fig. 1A) is the sole representative of the microhylid subfamily Melanobatrachinae. The species is endemic to the southern Western Ghats of India and associated with tropical evergreen forest, wet temperate forests, and semi-evergreen forests above 900 m elevation (Vasudevan, 1997; Palot and Sureshan, 2017; IUCN SSC, 2022; Agashe et al., 2023) where it appears to be a microhabitat specialists typically found beneath rotting logs (Beddome, 1878; Daltry and Martin, 1997; Nixon and Bhupathy, 2007; Kanagavel and Tapley, 2013) or stones (Ishwar, 2000). This poorly known, Vulnerable frog (IUCN SSC, 2022) is considered a global priority for conservation due to its evolutionary history and global endangerment (Gumbs et al., 2018, 2024). *Melanobatrachus indicus* is morphologically distinct and brightly coloured (Kanagavel et al., 2020). Precise locality data have been obscured in previous publications (Kanagavel and Tapley, 2013) due to the concern that populations may be targeted for collection. Recently, this species was the subject of both regional and national news stories, with the species being designated as the flagship species of Mathikettan Shola National Park in Kerala State, India. The striking colour, rarity, and the status as the first flagship frog species for a national park has resulted in this species being sought after by photographers.

As part of ongoing attempts to monitor *M. indicus* populations, our team has been conducting routine fieldwork in a forest patch with the approval of the Kerala Forests and Wildlife Department since 2019. Along our transect at this site, there were 55 decomposing logs embedded in the leaf litter (Fig. 1B, D, F) and in March 2020, our team encountered seven individual *M. indicus* beneath these logs.

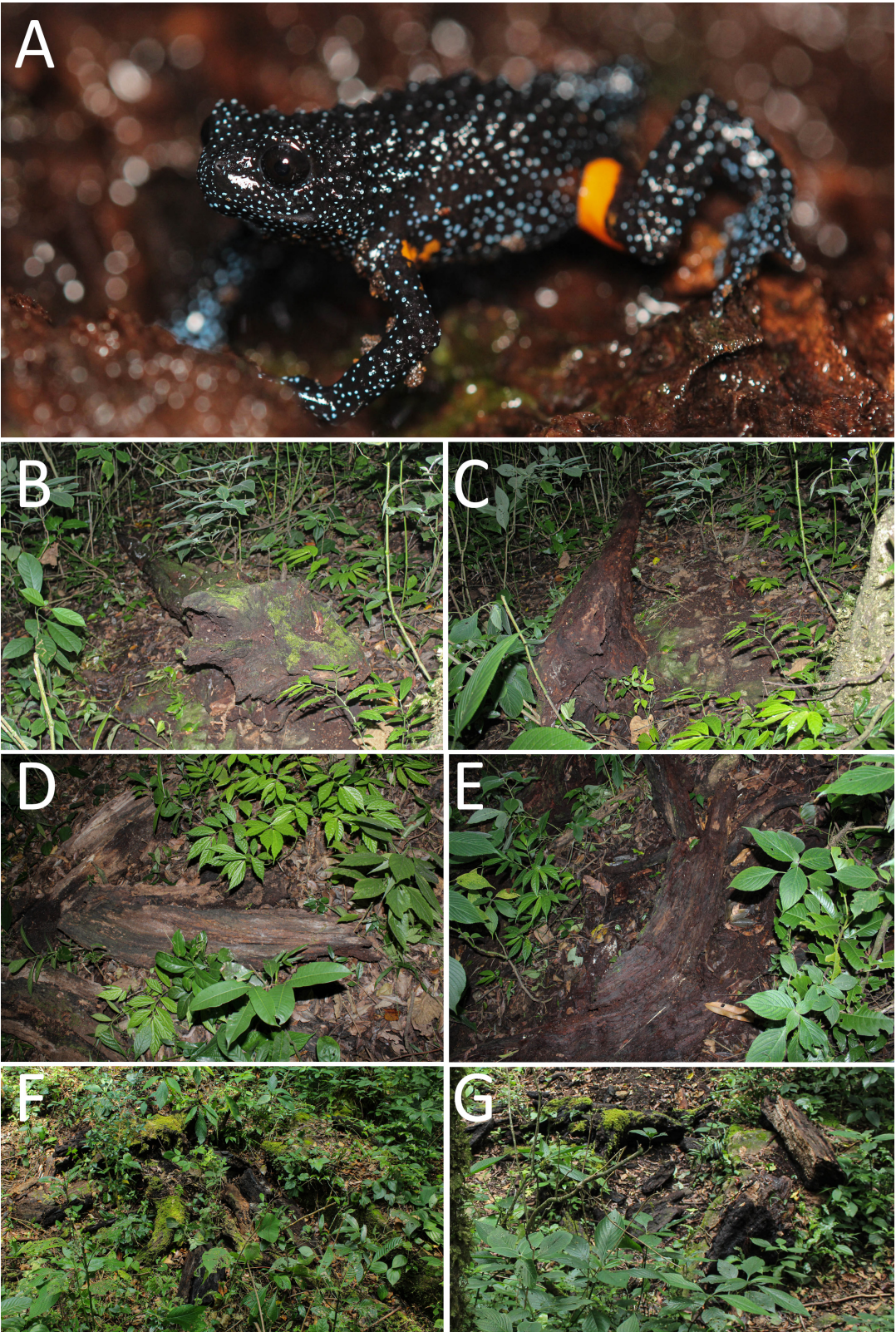
In August 2021, a local informant working for the Kerala Forests and Wildlife Department reported that our study site had been visited by several groups of photographers between June 2020 and April 2021 with

the specific aim of photographing *M. indicus*. The photographers were familiar with the microhabitat of the species from publications and local trackers and overturned many logs whilst searching for the species (Fig. 1C, E, G). Twenty-five of these logs, including all those we had previously documented as inhabited by *M. indicus*, had not been placed into their original position and the surrounding vegetation had been heavily trampled. Many of the logs had been turned over to expose the underside, embedding the previously moss-covered topside in the leaf litter. This is likely to have altered the microhabitat beneath the logs and reduced the available habitat for the species at this site. We did not encounter *M. indicus* beneath any of the logs at this site during our subsequent surveys in August 2021, November 2021, and May 2022.

Our local informant specified that groups of four to six photographers visited the site, and when an individual *M. indicus* was found each person in each of the groups photographed the animal. To accomplish this, the animal was translocated from where it was encountered and was placed on photogenic substrates, such as moss and logs. Therefore each frog was captured and handled by several different people. When groups found more than one frog, all frogs were handled for photography, with up to five individuals being photographed at one time. All photographers used cameras with high-power external flashes, which may produce a considerable amount of heat that could potentially lead to desiccation of the frogs. Our informant reported that each group took approximately 4 h to photograph the frogs. None of the photographers wore gloves while handling animals and frogs were not hydrated during photography exposure. Handling may have resulted in desiccation, stress (e.g., Narayan et al., 2012), as well as heat transfer to the animals (Navas and Araujo, 2000). Furthermore, handling multiple individuals without any biosecurity protocol in place (e.g., Gray et al., 2017) poses a risk of pathogen transfer between individuals. Our informant reported that two small *M. indicus* died during the photography sessions, although we have no means to verify this statement.

It is very important that ethical standards in both nature and conservation photography are established in India to minimise negative impacts on wildlife and habitats. We suggest the following steps to promote more ethical nature photography in India. The Ministry of Tourism in India should incorporate knowledge on ethical standards in wildlife photography for the selection procedure of licenced guides. The state forest departments in India







**Figure 1.** (A) Adult *Melanobatrachus indicus* recorded from our study site (specific coordinates withheld). (B–G) Microhabitat of *M. indicus* before and after disturbance by nature photographers. Undisturbed rotting log where frogs were found in May 2019, photographed after our survey (B) and again after having been overturned by photographers, photographed in August 2021 (C). Logs where frogs were found in January 2020, photographed after our survey (D) and again after having been left overturned by nature photographers, photographed in August 2021 (E). Log pile where we found frogs in March 2020, photographed after our survey (F) and again in overturned condition, with the surrounding vegetation cleared by nature photographers, photographed in August 2021 (G). Photos by K.P. Rajkumar.

should prepare a code of ethical field practice/guidelines for nature and wildlife photographers. These standards should include restricting capture, handling and chasing animals, minimising the use of high-intensity lights and to use diffusers, intentionally intervening in the natural behaviour of animals, and avoiding disturbance to microhabitat. The forest department in collaboration with the tourism department/NGOs with expertise can conduct training for tour operators and guides who are engaged with nature and wildlife photographers. Field tourist guides could be trained to ensure that the guidelines and standards are adhered to, and that photographers are fully briefed on the required standards prior to venturing into the field. Penalising photographers who violate these standards could also facilitate the adoption of more ethical behaviours. Furthermore, it would be beneficial if platforms that host wildlife photographs had their own ethical code of conduct to be followed by their members, and the posts by those who do not follow such standards should be removed. Finally, as social media and visual media plays a crucial role in influencing viewers (Silk et al., 2021), posting content on ethical nature photography accounts will help in promoting ethical photography.

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