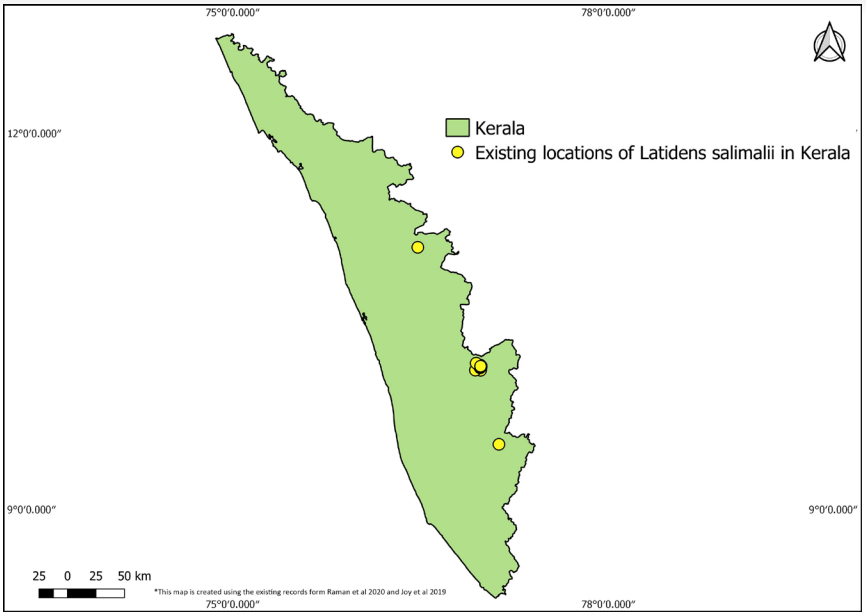
Conservation challenges: saving the Salim Ali's Fruit Bat one step at a time

One group of animals that have always been seen in bad light are the flying mammals, the bats. Myths and children's stories have mostly portrayed bats as evil, bloodsucking characters and at present, they are accused of being the reason behind the present Covid-19 pandemic with no scientific evidence. With the existence of such kind of fear for bats among the public, bat conservation becomes a challenging topic. But scientific researchers have realized the importance of their conservation and have started working on it.

Salim Ali's Fruit Bat (*Latidens salimalii*). © Rajesh Puttaswamaiah.

In India, there are about 130 species of bats (Saikia et al. 2021) but nothing much is known about many of their distribution, population, status, or behaviour. Of these, only two species are protected under India's Wildlife (Protection) Act 1972—Salim Ali's Fruit Bat *Latidens salimalii* and Wroughton's Free-tailed Bat *Otomops wroughtoni*.

Salim Ali's Fruit Bat is a veryrare species endemic to the southern Western Ghats. The first ever individual of the species was collected from the High Wavy Mountains, Madurai in Tamil Nadu by Angus Hutton in 1948, who misidentified it as Greater Short-nosed Fruit Bat *Cynopterus sphinx*, which was a common species



Salim Ali's Fruit Bat existing location map.

found throughout India. It was then examined by Kitty Thonglongya much later in 1972, identified as belonging to a new genus and described as *Latidens salimalii* Thonglongya (Bates et al. 1994). The species falls under the 'Endangered' category of the IUCN Red List (Srinivasulu & Srinivasulu 2020).

It took 51 years after the first record from the High Wavy mountains to report the presence of this species in another location in 1999, from Kalakkad-Mundanthurai Tiger Reserve in Tamil Nadu (Ghosh et al. 1999). After this, there were reports of *L. salimalii* from several other localities in southern Western Ghats. It was reported to be recorded and collected from Agasthyamalai Hill Complex in 2002 (Singaravelan & Marimuthu 2003a,b). Other reports were from Meghamalai (Singaravelan & Marimuthu 2003b), Courtallum and Kalakkad Hills in Tirunelveli and Valparai (Worldley et al. 2016). There were a few unconfirmed reports as well – Uppinangadi in Karnataka (Molur & Vanitharani 2008) and Periyar Tiger Reserve in Kerala (Molur et al. 2002). Apart from the unconfirmed reports, the presence of the species from Mankulam Forest Division, Munnar becomes the first sighting report from Kerala (Joy et al. 2019). The latest records of *L. salimalii* in Kerala are from Thondiyar region of Periyar Tiger Reserve and Silent Valley National Park (Raman et al. 2020). They are distributed usually at altitude ranges of 800–1,100 m (Molur & Vanitharani 2008; Wordley et al. 2016).

Salim Ali's Fruit Bats are medium sized bats, with an adult measuring up to 10cm in length and weighing around 64g (Raman et al. 2020). They have dark brown to black dorsal pelage and round-tipped oval ears. Unlike other fruit bats, they do not have an external tail and have only one pair of upper and lower incisors (Bates et al. 1994; Vanitharani et al. 2004; Raman et al. 2020).

They mostly roost in caves and were also observed to occupy abandoned buildings. They were also observed to roost 4–5 m from the cave entrance and were found to prefer dark recesses of the caves where only dappled light comes through the cracks or crevices on the rocks (Vanitharani et al. 2004). They are frugivorous species, mainly observed to be feeding on *Prunus, Ficus, Elaeocarpus, Diospyros*, and *Dichapetalum* (Singaravelan

& Marimuthu 2003; Agoramoorthy & Hsu 2005; Vanitharani 2015). Not much is known about their feeding behaviour. Although, it has been noted that the bats arrived at the roosts with uneaten figs and continued feeding from the roosting site (Vanitharani et al. 2004). Being fruit-eaters, it is important to understand their major role as pollinators and seed dispersers in the ecosystem and how their interactions help in the restoration of evergreen forests of southern Western Ghats. Despite their important role, fruit bats are categorized as 'Vermin' under Schedule V of the Indian Wildlife (Protection) Act 1972, which paves way for the indiscriminate killing of bats.

Salim Ali's Fruit Bat is the only fruit bat that is currently protected under Schedule I of Wildlife (Protection) Amendment Act of 2002 (Singaravelan et al. 2009), however, given that it is difficult to identify this species from other fruit bats, it is likely to be treated as a vermin rather than be protected.

Bats, in general, face a number of threats in the form of habitat loss, land use changes, pesticide uses, hunting and emerging diseases. In the case of *L. salimalii,* being a threatened and endemic species with a very restricted population of only around 1,000 individuals and with a lack of enough data on its behaviour and distribution, the threats they face tend to be more severe.

Apart from habitat loss, anthropogenic pressure from plantations, and utilization of the species for meat consumption and in traditional medicine to cure asthma (Raman et al. 2020) are some serious issues concerning the already endangered species. Also, the attitude of people towards bats have become worse after the Nipah virus outbreak in 2018 in Kerala. Moreover, inadequate knowledge or false notions about the species are hindrances to its conservation.

To improve the situation, we suggest the following recommendations of priority:

i) To educate and create awareness among the public regarding the species, the important ecological services they provide and to bust the myths and misconceptions about them.

ii) To train and work together with the concerned stakeholder groups like the forest department, local communities, policy makers, etc. so that they realize why it is important to conserve them and take up necessary measures to protect their existing roosting sites.

The role of the forest department, the local communities, policy makers, and scientific community are equally crucial in bringing about efficient protection of the species. What people do not realize is that it is our own interventions that cause disturbances to bat population which consequently becomes responsible for the outbreak of several disease-causing viruses. Therefore, it is important for us to understand that it is best to leave bats and their habitats undisturbed for the good of both us humans as well as the ecosystem health.

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