

## Role of Bats in the Ecosystem

### What is the issue?

Bats and humans have cohabited since time immemorial but the ecosystem services that bats provide are often neglected.

### Why are bats so significant?

- The bats prey on insects in farms, fields, forests and grasslands including agricultural pests and disease-causing mosquitoes.
- A study in Thailand has shown that **pest biocontrol** provided by just one species of bat prevented the loss of 2,900 tons of rice per year saving 1.2 million dollars that would provide meals for 26,200 people annually.
- Some bats sip nectar and helps in the cross pollination of flowers.
- They eat fruits and spread the seeds of many important tree species including wild varieties of bananas, guava, cashew, mango, figs, mahua and other fruits.
- Bat droppings (guano) have high concentrations of nitrogen and phosphorous and are widely used as a fertilizer for agricultural crops.

### What is the role of bats in spreading diseases?

- Bats are known or suspected to be the natural reservoirs for many pathogenic viruses such as **Nipah, Hendra, Marburg, Ebola and the coronaviruses** that cause severe acute respiratory syndrome.
- Scientific evidences are pointing that the SARS-CoV2 virus that causes COVID-19 originated in bats.
- Despite being reservoirs for viruses, bats never fall sick.
- In gaining the ability to fly long distances, bats have inherited an **immune system that protects them from viruses**.
- It protects them from multiple chronic age-related diseases and makes them age slower, and live longer.

*Bats are the largest mammalian groups after rodents and are among the longest lived mammals for their body size.*

## What about human-bat interface?

- Humans have significantly modified the landscape over the years by cutting the forests, clearing the land for agriculture and development resulting in disturbances to the habitat of bats.
- Activities such as mining destroy natural cave systems that bats live in.
- The spillovers are unusual and rare events and tend to occur when there is increased contact between humans and wild hosts.
- Scientists have shown that when bats are disturbed, they become stressed and could shed viruses that they carry, increasing the risk of spillover.

*Spillovers refer to the transmission of pathogens from their natural host or reservoirs to novel hosts such as humans.*

## How to restore the ecological balance?

- **Co-existence** - Several indigenous people are dependent on animals and nature, and have achieved a balance without any harm to both sides.
- Some have isolation practices such as quarantine following hunting.
- The Bomrr clan in Nagaland have traditionally celebrated the annual bat harvest where they gather at a place called Mimi and smoke a cave full of bats to kill them for consumption.
- In the process, the bats bite them or scratch them yet there has been no major disease outbreak among the Bomrr clan.
- To understand why the Bomrr are immune to the viruses in the bats, the National Centre for Biological Sciences (NCBS-TIFR), an aided centre of Department of Atomic Energy is carrying out sero-ecological studies on this human-bat interface.
- **Precautions** - Several precautions can be taken to minimise direct interactions with bats such as
  - Avoid handling or eating bats
  - Avoid eating fallen fruits gnawed by bats
  - Avoid fruits likely to be contaminated by bat fluids
- **Restoring the balance** - Restricting and reversing land-use change practices can help in regaining the balance with nature and animals.
- Integrated approaches such as **One Health**, where human health is linked to that of the environment and animals can result in the best possible outcomes.
- Global commitment is required for the reduction of habitat loss, and for the preservation and restoration of natural habitats and biodiversity.

## Reference

1. <https://www.thehindu.com/opinion/op-ed/batting-for-an-important-yet-misunderstood-species/article37511359.ece>

