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 eventsand 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

