

## **The decline in Insect Population**

### **What is the issue?**

- A study titled 'Worldwide decline of the entomofauna: A review of its drivers' was published recently.
- Insect populations are declining sharply worldwide, which could potentially cause the collapse of the planet's ecosystems.

### **What are the key findings?**

- More than 40% of insect species could become extinct in the next few decades.
- The extinction rate is eight times faster than that of mammals, birds and reptiles.
- In addition to this, one third of insect species are endangered.
- Insect biomass is declining by 2.5% a year; there is a threat that all of the planet's insects could go extinct within a century.
- Large numbers of specialist insects, which fill a specific ecological niche, and general insects are declining.
- On the other hand, a small group of adaptable insects are rising in numbers, but nowhere near enough to arrest the decline.
- An earlier study found that flying insect populations in German nature reserves declined by more than 75% over the duration of a 27-year study.
- This indicates that die-off is happening even beyond areas affected by human activity, in locations meant to preserve biodiversity.

### **Why are insects important?**

- Bugs make up around 70% of all animal species.
- The study stresses on the importance of insect life on interconnected ecosystems and the food chain.
- The ecosystem at the bottom level which includes insects has to be in balance.
- Insects have been at the structural and functional base of many of the world's ecosystems, since their rise almost 400 million years ago.
- In a way, insects are the small creatures that run the world.
- In the event of any imbalance, the "bottom-up" effects of insect loss would be serious.

## **What is the likely impact?**

- The decline in insect population and extinction could potentially cause the collapse of the ecosystems with a catastrophic effect on life on Earth.
- If there are no insects as moderators of other pest populations, insect populations would increase and ruin crops and make them difficult to grow.
- Species that rely on insects as their food source and the predators higher up the food chain which eat those species are likely to suffer more.
- An immediate danger is the loss of insectivorous birds, and the risk of larger birds turning from eating insects to eating each other (birds).
- The pollination of both crops and wild plants would also be affected, along with nutrient cycling in the soil.
- [Some 80% of wild plants use insects for pollination while 60% of birds rely on insects as a food source.]
- Lepidoptera, the order of insects that includes butterflies and moths, seems to have suffered the most.
- Bees (belonging to the Hymenoptera order) have been equally hard hit by the current decline in insect numbers.
- Most insects are particular about the kind of soil they inhabit; their absence can be a serious indicator of soil health too.

## **What are the causes for the decline?**

- The major causes for the decline in insect numbers include -
  - i. habitat loss
  - ii. conversion to intensive agriculture, use of agro-chemical pollutants
  - iii. urbanization
  - iv. pollution, particularly from pesticides and fertilizers
  - v. biological factors such as pathogens and introduced species
  - vi. climate change

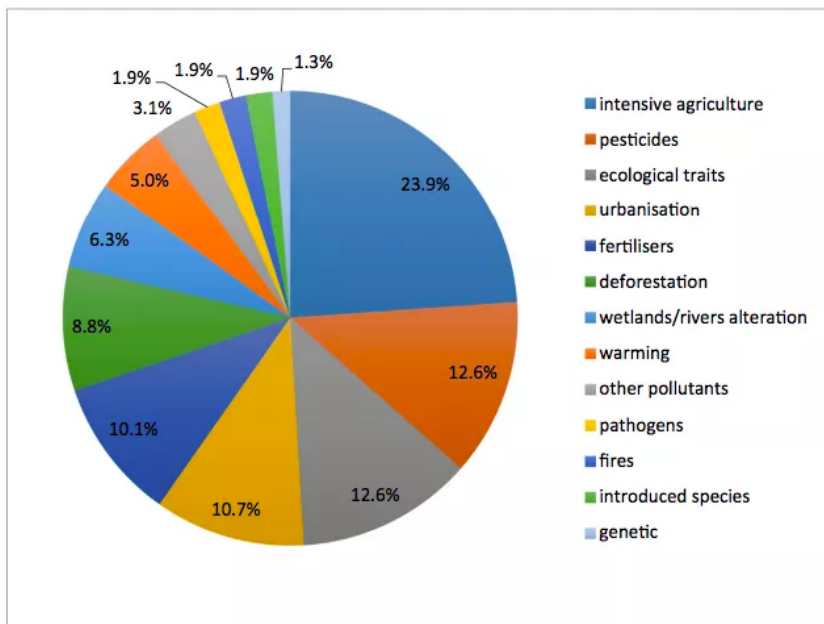


Fig. 6. Main factors associated with insect declines – see also Fig. 5.

## What is to be done?

- The findings call for an immediate and decisive action to avert a catastrophic collapse of nature's ecosystems.
- Overhauling existing agricultural methods is essential at this stage.
- Particularly, a serious reduction in pesticide usage and its substitution with more sustainable, ecologically-based practices is needed.

Source: Indian Express, CNN