

Relation between termites behaviour and warming world

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In news— A recent study has found relations between termite behaviour and warming world.

Key findings-

- It has found that **termites decompose wood at a much higher rate in warmer conditions.**
- For every 10 degrees Celsius increase in temperature, their decomposition activity goes up by almost seven times.
- The study also **revealed that as the Earth gets warmer, termites will rapidly spread across the world.**
- This could, in turn, lead to a further rise in global temperatures, because these small insects while consuming deadwood release carbon into the atmosphere.
- **This study is one of the first that connects the dots among a species' movement, changes in an ecosystem process, and climate change** to show that the movement of an organism as small as a termite can cascade to impact the rate that wood—a global carbon stock—is decomposed.
- **There are around 3,000 species of termites across the world,** including the ones that consume plant material and even soil. However, the most famous are the wood-eating termites.
- **According to the researchers, the termites' ability to decompose dead wood – dead parts of trees that contain carbon – makes them an important part of the planet's ecosystem.**
- For the research, more than 100 scientists were asked to place blocks of wood at 133 sites across the world, except in Antarctica, where bacteria, fungi and termites consume dead wood.
- They then measured the speed at which the wooden blocks

were eaten in different climates.

- As expected, both microbes and termites decomposed the pieces but the study found that there was a disproportionately higher increase in the insects' decaying activity at higher temperatures.
- For instance, termites in a region with temperatures of 30 degrees Celsius ate wood seven times faster than in a place with temperatures of 20 degrees Celsius.
- The researcher also observed that **these wood-eating termites were able to survive in warm and dry conditions, unlike microbes that need water to grow.**
- Therefore, with "tropicalization (i.e., warming shifts to tropical climates), termite wood decay will likely increase as termites access more of Earth's surface.
- **Although these insects are already found in colder areas, they play a limited role in the decaying of wood in comparison to fungi and bacteria.**
- Previous studies have also shown that climate change might be leading to an increase in the number of termites.

What are termites?

- **Termites are small insects that live in colonies and have distinct castes** and feed on wood or other dead plant matter.
- Termites **comprise the infraorder Isoptera, or alternatively the epifamily Termitoidae**, within the **order Blattodea** (along with cockroaches).
- They were once classified in a separate order from cockroaches, but recent phylogenetic studies indicate that they evolved from cockroaches, as they are deeply nested within the group, and the sister group to wood-eating cockroaches of the genus *Cryptocercus*.
- **Like ants and some bees and wasps from the separate order Hymenoptera, termites divide as "workers" and**

“soldiers” that are usually sterile.

- All colonies have fertile **males called “kings” and one or more fertile females called “queens”.**
- They mostly feed on dead plant material and cellulose, generally in the form of wood, leaf litter, soil, or animal dung.
- **Termites are major detritivores, particularly in the subtropical and tropical regions,** and their recycling of wood and plant matter is of considerable ecological importance.
- **They are among the most successful groups of insects on Earth,** colonising most landmasses except Antarctica.
- Their colonies range in size from a few hundred individuals to enormous societies with several million individuals.
- **Termite queens have the longest known lifespan of any insect,** with some queens reportedly living up to 30 to 50 years.
- **Unlike ants, which undergo a complete metamorphosis, each individual termite goes through an incomplete metamorphosis** that proceeds through egg, nymph, and adult stages.
- **Colonies are described as superorganisms because the termites form part of a self-regulating entity: the colony itself.**