

Time to Turn Nature Smart

By Garima Singh

Another Earth Day is upon us, reminding us how closely interlinked human, animal, and environmental health are. The theme for this year, 'Restore Our Earth', is yet another appeal to us—the inhabitants of this magnificent planet—to make earnest attempts at promoting harmony with nature.

Interestingly, nature itself holds vital cues on how we can go about it.

Lessons in Immunity

Let's start with the COVID-19 calamity, which has compelled scientists to look for ideas in every nook and corner to tackle and prevent future pandemics. A breakthrough from anywhere is welcome. In this quest, several initiatives are on to understand how natural systems deal with infections. For instance, a study related specifically to the coronavirus is trying to crack the genetic clues to the 'exceptional immunity' of six bat species, which enables them to tolerate viruses without falling sick. Mimicking this immune response of bats could help us fight the current pandemic, and be better prepared for future ones, [according to Prof Emma Teeling](#) of University College Dublin (UCD).

The ordinary interplay between members of the natural ecosystem holds fascinatingly complex lessons that are surprisingly relevant for us. Insect societies—with a social network that inherently limits spread of diseases while ensuring good communication—have been studied for a long time now. An interesting [study on ant colonies](#) has found that while the social interactions within these colonies are already designed to deal with disease, in the event of actual pathogen exposure, ants go a step ahead and alter their social interaction pattern in significant ways. The pathogen-exposed ants actively isolate themselves, while the colony increases social segregation between task groups to protect high-value individuals like the queen and nurses. These rapid behavioural changes arrest disease transmission, leading to 'induced organisational immunity'.

Inspired Inventions

Nature has, in fact, played almost as big a part as science in the inventions made so far by humans. It is common knowledge that the early aviation pioneers studied natural flyers like birds, bats, and insects to actualise the idea of flying. But hold on! Animals have inspired ground transport as well. The design of *Shinkansen*, the famous Japanese bullet train, was inspired by a kingfisher!

More recently, Belgian physicist Jean-Pol Vigneron and his team made LED lights shine brighter by more than 50 per cent, taking inspiration from the light-emitting mechanism of fireflies! The team did this by adding shapes similar to those on the bodies of fireflies, which enable these insects to emit more light.

Meanwhile, scientists tackling the issue of water scarcity have turned to a tiny beetle for help. According to [BBC Earth](#), the body structure of fogstand beetle—that helps it survive in one of the world's most arid areas, the Namib Desert in Africa—has inspired scientists in the United Kingdom to design roof tiles for trapping fog water.

Thus, we are now leaning on nature to show us the way for dealing with the emergent problems of our time, including environmental damage, and scarcity of energy and water resources.

Ironically, we are a part of these problems. Our indifference to the planet that shelters us has proven to be our bane, manifesting itself in critical limits—to growth, to endurance, to life. The now-common events of extreme heat, wildfires, and floods, and the current worldwide health pandemic—all tell us something about the health of our Earth. It's high time we acknowledged the damage we have done, and restored the self-sufficiency of natural systems.

Naturally Correct

There is immense wisdom in the way nature functions. From the ideas of [natural selection](#) and [survival of the fittest](#) that advocate adaptation for survival, to the recently mapped '[Wood Wide Web](#)' (the vast, interconnected web of organisms that constitute the forests' or woods' underground ecosystem) that shows how resources can be shared efficiently—there is much to be learnt from nature.

We would do well to borrow some of nature's smartness for restoring our Earth, and, hopefully, save ourselves from the mindlessly self-inflicted disaster of climate change.

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