BLink

a butterfly breeze from MP

The bee all and end all

joanna van gruisen

The Hindu Business Line Collateral damage: Spraying pesticide on a paddy field near Thrissur, perhaps killing useful insects too. KK Mustafah

BUSINESS LINE Joanna Van Gruisen

What is the connection between our lack of salad and cyclone damage? To what degree are animal-mediated pollination and climate change interlinked?

With the monsoon over and cooler weather around the corner, tourist season begins in Madhya Pradesh. The rains were not so plentiful this year, and the grass is not as high, yet all is lush and green. What is plentiful this year is the insect population. Some loved for their beauty or appreciated for their benefits — the butterflies, dragonflies, mayflies and a

few gloriously coloured beetles fall into this category. Others, the aphids and stink beetle family, are not so well loved. Indeed, the latter are in such numbers this year that much of our planting has failed — no delicious rocket and lettuce salads, no beans, no spinach; these are some of their favoured foods and the seedlings are sucked dry before they have time to greet the world.

We received a touch of tail-end wind and rain from Hudhud, but by the time it reached us, it was miles (literally and figuratively) from being cyclonic weather. Andhra Pradesh and Orissa, of course, fared very differently — winds of up to 200kmph lashed the coast causing massive disruption and damage to infrastructure and property. Less considered is the long-term effect of the extraordinary denudation and damage to the vegetation of the region; trees stand bare and broken, Visakhapatnam's proudly maintained green cover is history, for a while at least. The concern is what this may do to the birds and the bees. We take these for granted, until they disappear.

But what is the connection between our lack of salad and cyclone damage? The root cause and net result are similar. The speed of the changes we are bringing to the climate is increasing extreme weather patterns, but also the temperature differences are creating critical changes to insect life and to vegetation cycles. This can result in an increase in crop pests and a reduction in their predators. It can also, rather worryingly, result in a mismatch between pollinators and the pollinated — as insect pollinators and plants have differential reactions to variations in temperatures.

Few people are aware of the paramount importance of natural biodiversity to human life. Nor that, in Asia, 50 per cent of this is at risk due to climate change. Visakhapatnam may be learning a tough lesson this year, given the huge imbalance Hudhud's destruction will bring to the birds, butterflies, insects and small mammals that lived in its greenery, and on which we all depend. Such life is so easy to destroy but so much harder to recreate.

The storm's damage may be obvious and easily recognisable, but more subtle changes are occurring with as profound an impact. It seems we are waking up late to study this, and the relationships are complex and delicate, but already scientists are warning of the immense danger to the world's food security. Indian agriculture, where 60 per cent are dependent on rainfall and 80 per cent are small and marginal farmers, is already vulnerable to weather inconsistencies. This is a serious issue — agriculture contributes 25 per cent to our GDP and employs 65 per cent of our workforce, not to mention the 100 million dependent on non-timber forest produce.

Of course, different areas will be affected differently but insect ecology will be an issue everywhere and affect food production. It would be a mistake to believe we can deal with the increase in pests by using more pesticides. One of the problems with pesticides is that they often hit the beneficial insects along with pests, and kill the agents of production — the pollinators. For example, it's said, in Ghana mass spraying of the cocoa crop could result in as much as a 90 per cent drop in yield due to the death of midges, its main pollinator.

Animal-mediated pollination occurs in 90 per cent of the world's flowering plants. Remember all those birds, bats, bees, insects whose homes were also swept away by the Hudhud? About one-third of our food sources derives from animal-pollinated, mostly bee-pollinated, crops. Such pollination improves the fruit and seed quality or quantity of 70 per cent of our tropical crops, so we can imagine how drastic the effect on food production will be with their loss or even with mismatches between the flowering of the plant and the foraging activities of the pollinator. Added to this is a potential increase in vulnerability to pathogens and diseases like Colony Collapse Disorder (CCD) in bees, which has become part of the Western lexicon.

Fortunately India lies in the best bee region — five key species are found here and a sixth, the European honey bee, has been introduced. Some of the most delicious and healthy wild honey is found here. But much as we might value the bees' sweet produce, the bees' role as a pollinator is considered to be many times more valuable (15-20 times in India). Worldwide their estimated crop-pollinating value is nearly $200 billion. The bees' significance and economic value is also clearly visible in the fact that even in India, where — in contrast, for example, to the US — we still enjoy much natural pollination, installation of three-five bee colonies per acre of crop can increase seed yield. It may be good to reflect on this when considering pesticides, since these are a crucial factor in the CCD of Europe and the US. No harm learning from others' mistakes.

If only I could find a predator for my salad-eating pest. One answer, as for agriculture in our climate-changed world, is to adjust crop and planting time. Which? And When? We shall have to learn by experience. Would it not have been simpler to not cause climate change in the first place?

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