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Of Animals and Bees and Flowers Wild as Earth Day Nears

Serious concerns for anyone who cares for wildlife and the planet we inhabit.

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Nature cheers us. Animals can be powerful, beautiful, sleek, graceful. A field of wild flowers chanced upon can take our breath away. Wordsworth so moved by 'a host of golden daffodils' put pen to paper, and we are richer for his poem. So it's distressing when scientists confirm our gut feelings about the human footprint on this natural environment. Wild Animals are no longer free to roam. Bordered by encroaching human populations they have been forced into shrinking invisible cages, leading inevitably to shrinking numbers. It is not a rosy prospect, while pollution and mounting plastic waste cause additional disasters.

Few people know that March 3 was World Wildlife Day, or this coming Sunday (April 22) is Earth Day — perhaps Trump sucking up all the media oxygen is responsible. The fact remains, world wildlife is under serious threat, and in ways we can't even imagine — not forgetting the eventual disaster due to climate change, unless the world wakes up.

Not too long ago Science, the voice of AAAS, America's largest science body, published three papers describing the harmful, even devastating, impact of modern human presence. These are encapsulated below, and should be of serious concern to anyone who cares for wildlife and the planet we inhabit.

The theme for Earth Day is End Plastic Pollution. If one ever wondered what can happen to a plastic bag discarded carelessly, the following research has a surprising and worrying answer.

This Science article looks at plastic waste entering the oceans — often through catchment areas and into rivers that flow to the ocean. It assesses the influence of such waste on disease in reef-building corals. The authors survey 159 coral reefs in the Asia-Pacific, a region containing 55.5 percent of global reefs and 73 percent of the human population living within 50 km of a coast — about a quarter billion people.

Our plastic bag finally reaches the ocean and microbes hitch a ride on it, living longer and increasing their chances of landing on an unfortunate host: a coral reef. The authors have measured plastic items per 100 square meters. The count can vary from a low of 0.4 in Australia to a high of 25.6 in Indonesia. Size of human population in coastal regions, good management or mismanagement of plastic waste disposal are all factors in the amount of waste entering the water.

The study results are striking. The likelihood of disease from the microbes rises from 4 percent in areas free of plastic to a whopping 89 percent average when the corals have such debris. Another major issue is coral structural complexity which, importantly, underpins micro-habitats for reef-reliant organisms. Unfortunately, the study also finds that plastic debris is up to 8 times more likely to affect reefs with greater structural complexity. The resulting lack of habitat can devastate fisheries through a drop in productivity by a factor of three. Thus public awareness here could be a critical factor.

Next is a vast global study spanning the four major continents and New Zealand. Authored by 115 scientists, it traces the movement of 57 mammalian species through the GPS-tracking of 803 individuals. It finds a strong negative effect of the human footprint on animal spacial mobility, threatening long term viability unless the situation changes.

The scientists develop a human footprint index (HFI) comprising multiple aspects of human influence: built environment, croplands, pastures, nighttime lights, roads, waterways, railroads, population density, etc. On the animal side, they note and separate the effects of resource availability and body mass on vagility (migration distances) — larger species travel further as do carnivores.

They then compute animal movement as the distance between subsequent GPS locations over nine time scales ranging from one hour to 10 days. At each time scale and for each individual, they calculate the median (middle range) and longest distance movements. These procedures point to the thoroughness of the research.

Overall the findings indicate a decline in movement of mammals in high HFI areas ranging on average from one-half to one-third of their movement levels in areas without human presence. For example, the median displacement of carnivores over the 10 day period in high HFI areas was only about half when compared to zero impact regions. And the long distance movement over the same period in HFI areas was down to a third, averaging 6.6 km versus 21.5 km. The impact on feeding and breeding then is clearly severe.

The authors note the consequences for ecosystem function globally as the effects are critical for wildlife conservation and also in the spread of disease. In the latter aspect, the authors warn that “reduced vagility may go beyond ecosystem functioning to directly affect human well-being.” In their understated words, it means the danger of accelerated animal extinction and human epidemics.

Most of us tend to assume all bees are good. Apparently not, as a couple of scientists explain. So as we reach for that honey jar … it all depends on where it came from. That is the contention of the last paper which assesses the impact of managed honey bees on wild bees and other pollinators.

Pointing to the rapid global growth in managed bee colonies and the attention devoted to them, the authors believe this focus reduces efforts to preserve wild pollinators so necessary for wild plants and flowers. In fact, high densities of such bees worsen the decline of these wild pollinators, and have also been linked to the spread of disease via shared wild flowers. Long term this is a worsening threat to wild plants and flowers, many facing extinction.

The authors identify managed honeybees and their honey production and pollination of

commercial crops as an agricultural issue, not an ecological one. They advocate restriction of managed honey beehives in protected-ecological areas to reduce their harmful effects noting that half of all European wild bees are threatened with extinction.

The parrots in the local pet store are almost always at risk. It is human encroachment the owner tells us. Forests are cut down, reducing habitat and food sources, and diminishing parrot populations. Farmers plant crops in the cleared areas. The parrots may or may not eat these but are perceived as a threat and often killed, further endangering them.

Once upon a time, millions of rhinos roamed across Africa and Asia; now about 30,000 survive, and many species are extinct or about to be. Sudan, the last male northern white rhino lived at Ol Pejeta Conservancy in Kenya together with his daughter Najin and granddaughter Fatu. He was 45, equivalent to 90 in human age, and quite infirm. Earlier this year, when his condition deteriorated to the extent he was unable to stand, the vets decided to euthanize. Hope lies with in vitro fertilization, and in the genetic material the vets collected from him. At some future date, it might be possibly to use this to create an embryo with stem cell technology.

The engaging, lovable and cuddly koala is in danger from environmental effects. its unusual diet of eucalyptus leaves carry a toxin it can usually handle, but increased CO2 levels reduce nutrition and eating more leads to ingesting more poison. Add to this the Australian drought drying the leaves, leaving little moisture and resulting in kidney damage.

The human footprint also threatens the snow leopard, most closely related to the tiger not its namesake. Ranging across the high mountain areas of central Asia, China and Mongolia, and revered in Kyrgyzstan, it has become a victim of human-wildlife conflict. The herders whose livelihood depends on their sheep, goats and yaks do not take kindly to raiding snow leopards. But their natural prey, the wild ungulates are suffering sharp declines due to competition with domestic herds. Yet this animal is an example of what a concerted effort to save a species can accomplish. Its status has been upgraded from 'endangered' to 'vulnerable'.

Altogether, these studies and cases convey a stark warning. They show that environmental degradation is the promise of a dismal future in which mammalian wildlife is scarce, wild pollinators and consequently wild flowers and plants are sparse, and beautiful coral reefs succumb to plastic waste-borne bacteria depleting reef-supported fisheries. This is our legacy unless we take a step back to reassess human wants for their impact on the environment.

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