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Our Vanishing World: Wildlife

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Theme: Environment

Throughout its history, Earth has experienced five mass extinction events. See, for example, 'Timeline Of Mass Extinction Events On Earth'. It is now experiencing the sixth.

1. The Ordovician-Silurian Extinction, which occurred about 439 million years ago, wiped out 86% of life on Earth at the time. Most scientists believe that this mass extinction was precipitated by glaciation and falling sea levels (possibly a result of the Appalachian mountain range forming), catastrophically impacting animal life which lived largely in the ocean at the time.
2. The Late Devonian Extinction happened about 364 million years ago and destroyed 75% of species on Earth. Possibly spread over hundreds of thousands of years, a sequence of events that depleted the oceans of oxygen and volcanic ash that cooled the Earth's surface are believed to have driven the extinctions. It was to be 10 million years before vertebrates again appeared on land. 'If the late Devonian extinction had not occurred, humans might not exist today.'
3. The Permian-Triassic extinction, which occurred 251 million years ago, is considered the worst in all history because around 96% of species were lost. 'The Great Dying' was precipitated by an enormous volcanic eruption 'that filled the air with carbon dioxide which fed different kinds of bacteria that began emitting large amounts of methane. The Earth warmed, and the oceans became acidic.' Life today descended from the 4% of surviving species.
4. The Triassic-Jurassic extinction happened between 214 million and 199 million years ago and, as in other mass extinctions, it is believed there were several phases of species loss. The blame has been placed on an asteroid impact, climate disruption and flood basalt eruptions. This extinction laid the path that allowed for the evolution of dinosaurs which later survived for about 135 million years.
5. The Cretaceous-Paleogene extinction, best known of 'the Big 5' mass extinctions, occurred 65 million years ago, ending 76% of life on Earth including the dinosaurs. A combination of volcanic activity, asteroid impact, and climate disruption are blamed. This extinction period allowed for the evolution of mammals on land and sharks in the sea.
6. The sixth mass extinction event in Earth's history is the one that is being experienced now. Unlike earlier mass extinctions, which helped to pave the way for the evolution of Homo sapiens, the precipitating cause of this extinction event is Homo sapiens itself and, moreover, Homo sapiens is slated to be one of the species that becomes extinct.

Let me explain why this is so by touching on the diverse range of forces driving the extinctions, concepts such as 'co-extinction', 'localized extinctions' and 'extinction cascades', the ways in which extinction impacts are often 'hidden' in the short term, thus

masking the true extent of the destruction, and the implications of all this for life on Earth, including Homo sapiens, in the near term.

But before I do this, consider this excerpt from the book *Sapiens: A Brief History of Humankind* written by Yuval Noah Harari, commenting on the expansion of ancient humans out of Africa:

> 'If we combine the mass extinctions in Australia and America, and add the smaller-scale extinctions that took place as Homo sapiens spread over Afro-Asia – such as the extinction of all other human species – and the extinctions that occurred when ancient foragers settled remote islands such as Cuba, the inevitable conclusion is that the first wave of Sapiens colonisation was one of the biggest and swiftest ecological disasters to befall the animal kingdom. Hardest hit were the large furry creatures. At the time of the Cognitive Revolution [which Harari argues occurred during the period between 70,000 and 30,000 years ago and probably involved an internal restructuring of the Sapiens brain to facilitate learning, remembering, imagining and communicating while also, in the case of the earlier date, coinciding with the time when Sapiens bands started leaving Africa for the second time], the planet was home to about 200 genera of large terrestrial mammals weighing over fifty kilograms. At the time of the Agricultural Revolution [about 12,000 years ago], only about a hundred remained. *Homo sapiens* drove to extinction about half of the planet's big beasts long before humans invented the wheel, writing or iron tools.
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> 'This ecological tragedy was restaged in miniature countless times after the Agricultural Revolution' with mammoths, for example, vanishing from the Eurasian and North American landmasses by 10,000 years ago as Homo sapiens spread. Despite this, mammoths thrived until just 4,000 years ago on a few remote Arctic islands, most conspicuously Wrangel, then suddenly disappeared with the arrival of humans.

While there has been some debate about the full extent of the human impact compared to, say, climate and environmental changes including ice age peaks – see, for example, 'What killed off the giant beasts – climate change or man?' and 'What Killed the Great Beasts of North America?' – the archeological record provides compelling evidence of the role of Homo sapiens as, in Harari's words, 'an ecological serial killer'. There is further well-documented evidence in Professor Tim Flannery's *The Future Eaters: An Ecological History of the Australasian Lands and People* an excerpt of which in relation to New Zealand, where the megafauna survived until Maoris arrived just 800 years ago and then rapidly vanished, can be read here: 'The Future Eaters'.

And the onslaught has never ended as the inexorable encroachment of Homo sapiens to the remotest corners of the Earth (including virtually all of the thousands of islands of the Atlantic, Indian and Pacific Oceans) has inevitably led to the extinction of myriad local species including birds, insects and snails. In fact, following the Industrial Revolution about 270 years ago which enabled the development of killing technologies on a scale unheard of previously, the human assault on life on Earth has accelerated so effectively that 200 species of life are now driven to extinction daily.

Whatever other claims they might make about themselves, human beings are truly the masters of death.

So where do we stand today?

According to one recent report, the Earth is experiencing what could be described as 'just the tip of an enormous extinction iceberg'. See 'Co-extinctions annihilate planetary life during extreme environmental change'. 'Just the tip?', you might ask.

Extinction-causing Behaviours

The primary human behaviours that are modifying Earth's biosphere, with catastrophic outcomes for many species, are readily apparent and well-described in the scientific literature: destruction of habitat (such as oceans, rainforests, grasslands, wetlands, mangroves, lakes and coral reefs) whether through military violence, radioactive contamination, industrial activities (including ecosystem destruction to build cities, roads and railroads but a vast range of other activities besides), chemical poisoning or other means; over-exploitation; biotic invasion and the effects of environmental modification, including climatic conditions, leading to temperature rise, more frequent droughts, ocean acidification and other impacts which so alter a locality's environmental conditions that tolerance limits for inhabiting species are breached causing localized extinctions. Unfortunately, however, there are other, more complicated, mechanisms that can exacerbate species loss.

'In particular, it is becoming increasingly evident how biotic interactions, in addition to permitting the emergence and maintenance of diversity, also build up complex networks through which the loss of one species can make more species disappear (a process known as 'co-extinction'), and possibly bring entire systems to an unexpected, sudden regime shift, or even total collapse.' In simple language, a species cannot survive without the resources (the other species) on which it depends for survival and the accelerating loss of species now threatens 'total collapse' of 'entire systems'.

This is because resource and consumer interactions in natural systems (such as food webs) are organized in various hierarchical levels of complexity (including trophic levels), so the removal of resources can result in the cascading (bottom-up) extinction of several higher-level consumers.

Summarizing the findings of several studies based on simulated or real-world data, **Dr. Giovanni Strona** and **Professor Corey J. A. Bradshaw** explain why 'we should expect most events of species loss to cause co-extinctions, as corroborated by the worrisome, unnatural rate at which populations and species are now disappearing, and which goes far beyond what one expects as a simple consequence of human endeavour. In fact, even the most resilient species will inevitably fall victim to the synergies among extinction drivers as extreme stresses drive biological communities to collapse. Furthermore, co-extinctions are often triggered well before the complete loss of an entire species, so that even oscillations in the population size of a species could result in the local disappearance of other species depending on the first. This makes it difficult to be optimistic about the future of species diversity in the ongoing trajectory of global change, let alone in the case of additional external, planetary-scale catastrophes.'

In an attempt to emphasize the importance of this phenomenon, Strona and Bradshaw note that 'As our understanding of the importance of ecological interactions in shaping ecosystem identity advances, it is becoming clearer how the disappearance of consumers following the depletion of their resources – a process known as "co-extinction" – is more likely *the major driver of biodiversity loss*' [emphasis added] and that 'ecological dependencies amplify the direct effects of environmental change on the collapse of

planetary diversity by up to ten times.' See 'Co-extinctions annihilate planetary life during extreme environmental change'.

In their own recently published scientific study 'Biological annihilation via the ongoing sixth mass extinction signaled by vertebrate population losses and declines' the authors **Professors Gerardo Ceballos, Paul R. Ehrlich** and **Rodolfo Dirzo** document another frequently ignored element in understanding the accelerating nature of species extinctions.

'Earth's sixth mass extinction is more severe than perceived when looking exclusively at species extinctions…. That conclusion is based on analyses of the numbers and degrees of range contraction … using a sample of 27,600 vertebrate species, and on a more detailed analysis documenting the population extinctions between 1900 and 2015 in 177 mammal species.' Their research found that the rate of population loss in terrestrial vertebrates is 'extremely high', even in 'species of low concern'.

In their sample, comprising nearly half of known vertebrate species, 32% (8,851 out of 27,600) are decreasing; that is, they have decreased in population size and range. In the 177 mammals for which they had detailed data, all had lost 30% or more of their geographic ranges and more than 40% of the species had experienced severe population declines. Their data revealed that 'beyond global species extinctions Earth is experiencing a huge episode of population declines and extirpations, which will have negative cascading consequences on ecosystem functioning and services vital to sustaining civilization. We describe this as a "biological annihilation" to highlight the current magnitude of Earth's ongoing sixth major extinction event.'

Illustrating the damage done by dramatically reducing the historic geographic range of a species, consider the lion. Panthera leo 'was historically distributed over most of Africa, southern Europe, and the Middle East, all the way to northwestern India. It is now confined to scattered populations in sub-Saharan Africa and a remnant population in the Gir forest of India. The vast majority of lion populations are gone.'

Why is this happening? Ceballos, Ehrlich and Dirzo tell us: 'In the last few decades, habitat loss, overexploitation, invasive organisms, pollution, toxification, and more recently climate disruption, as well as the interactions among these factors, have led to the catastrophic declines in both the numbers and sizes of populations of both common and rare vertebrate species.'

Further, however, the authors warn 'But the true extent of this mass extinction has been underestimated, because of the emphasis on species extinction.' This underestimate can be traced to overlooking the accelerating extinction of local populations of a species.

'Population extinctions today are orders of magnitude more frequent than species extinctions. Population extinctions, however, are a prelude to species extinctions, so Earth's sixth mass extinction episode has proceeded further than most assume.' Moreover, and importantly from a narrow human perspective, the massive loss of local populations is already damaging the services ecosystems provide to civilization (which, of course, are given no value by government and corporate economists and accountants).

As Ceballos, Ehrlich and Dirzo remind us: 'When considering this frightening assault on the foundations of human civilization, one must never forget that Earth's capacity to support life, including human life, has been shaped by life itself.' When public mention is made of

the extinction crisis, it usually focuses on a few (probably iconic) animal species known to have gone extinct, while projecting many more in future. However, a glance at their maps presents a much more realistic picture: as much as 50% of the number of animal individuals that once shared Earth with us are already gone, as are billions of local populations.

Furthermore, they claim that their analysis is conservative given the increasing trajectories of those factors that drive extinction together with their synergistic impacts. 'Future losses easily may amount to a further rapid defaunation of the globe and comparable losses in the diversity of plants, including the local (and eventually global) defaunation-driven coextinction of plants.'

They conclude with the chilling observation: 'Thus, we emphasize that the sixth mass extinction is already here and the window for effective action is very short.'

Another recent study examined 'Experimental Evidence for the Population-Dynamic Mechanisms Underlying Extinction Cascades of Carnivores', and was undertaken by Dr. Dirk Sanders, Rachel Kehoe & Professor F.J. Frank van Veen who sought to understand 'extinction cascades'. Noting that 'Species extinction rates due to human activities are high', they investigated and documented how 'initial extinctions can trigger cascades of secondary extinctions, leading to further erosion of biodiversity.' This occurs because the diversity of consumer species is maintained due to the positive indirect effects that these species have on each other by reducing competition among their respective resource species. That is, the loss of one carnivore species can lead to increased competition among prey, leading to extinctions of those carnivore species dependent on prey that loses this competition.

Another way of explaining this was offered by Dr. Jose M. Montoya:

> 'Species do not go extinct one at a time. Instead… ecosystems change in a kind of chain reaction, just like in bowling. The impact of the ball knocks down one or two pins, but they hit other pins and this ultimately determines your score. Likewise, when in an ecosystem one species goes extinct many others may follow even if they are not directly affected by the initial disturbance. The complex combination of direct and indirect effects resulting from species interactions determines the fate of the remaining species. To predict the conditions under which extinctions beget further extinctions is a major scientific and societal challenge under the current biodiversity crisis…. Sanders and colleagues… show how and why initial extinctions of predators trigger cascades of secondary extinctions of the remaining predators.' See 'Ecology: Dynamics of Indirect Extinction'.

To fully grasp the extent of the crisis in our biosphere, we must look well beyond Earth's climate: There are a great many variables adversely impacting life on Earth, many of which individually pose the threat of human extinction and which, synergistically, now virtually guarantee it absent an immediate and profound response. As reported in the recent *Global Assessment Report on Biodiversity and Ecosystem Services* researched and published by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) – the scientific body which assesses the state of biodiversity and the ecosystem services this provides to society – 'Nature is declining globally at rates unprecedented in human history. The IPBES *Global Assessment*ranks, for the first time at this scale, the 5 direct drivers of change in nature with the largest global impact. So what are the culprits behind nature's destruction?' Number 1. on the IPBES list is 'Changes in land and sea use, like turning intact tropical forests into agricultural land' but, as noted, there are four others.

According to this report: ***one million species of life on Earth are threatened with extinction***.

And in their latest assessment of 100,000 species, the International Union for the Conservation of Nature (IUCN) concluded that not one species had improved prospects of averting extinction since their previous 'Red List' report. See 'News Release' and 'From over 100,000 species assessments in IUCN update, zero improvements'.

Of course, separately from the systemic extinction drivers noted above, including the unmentioned destruction of Earth's oceans through its absorption of carbon dioxide, pollution with everything from pesticides to plastic, and chronic overfishing which is pushing many ocean species to, or over, the brink of extinction as well, humans also engage in yet other activities that drive the rush to extinction. Hunting wildlife to kill it for trophies or pet food – see 'Killing Elephants "for Pet Food" Condemned' – and trafficking wildlife: a $10-20 billion-a-year industry involving illegal wildlife products such as jewelry, traditional 'medicine', clothing, furniture, and souvenirs, as well as exotic pets – see 'Stop Wildlife Trafficking' and 'China must lead global effort against tiger trade' – play vital roles as well.

In summary, the tragedy of human existence is that the Cognitive Revolution gave Homo sapiens the capacity to plan, organize and conduct an endless sequence of systematic massacres all over the planet but, assuming that we have the genetic capacity to do so, our parenting and education models since that time have ensured that we have been denied the emotional and intellectual capacities to fight, strategically, for our own survival. And the time we have left is now incredibly short.

So what can we do?

Given that the ongoing, systematic industrial-scale destruction of Earth's wildlife has its origin in evolutionary events that took place some 70,000 years ago but which probably had psychological origins prior to this, it is clearly a crisis that is not about to be resolved quickly or easily.

'Why the mention of psychology here?' you might ask. Well, while many other factors have obviously played a part – for example, abundance of a species in a particular context might mean that the issue of killing its individual members for food does not even arise, at least initially – it is clear that, given the well-documented multifaceted crisis in which human beings now find themselves, only a grotesquely insufficient effort is being put into averting the now imminent extinction of our own species which critically requires us to dramatically stem (and soon halt) the tide of wildlife extinctions, among many other necessary responses. See, for example, 'Human Extinction by 2026? A Last Ditch Strategy to Fight for Human Survival' and 'Doomsday by 2021?'

It is psychologically dysfunctional, to put it mildly, to participate in or condone by our silence and inaction, activities that will precipitate our own extinction, whether these are driven by the insane global elite – see 'The Global Elite is Insane Revisited' – or by our own dysfunctional overconsumption. See 'Love Denied: The Psychology of Materialism, Violence and War'.

For that reason, after 70,000 years, we must finally ask 'Why?' so that we can address the fundamental drivers of our extinction-threatening behaviour as well the several vital symptoms that arise from those drivers. Let me explain what I mean.

The fundamental question is this: ***Why are humans behaving in a way that will precipitate our own extinction in the near term?*** Surely, this is neither sensible nor even sane. And anyone capable of emotional engagement and rational thinking who seriously considers this behaviour must realize this. So why is it happening?

Fundamentally it is because our parenting and education models since the Cognitive Revolution 70,000 years ago have failed utterly to produce people of conscience, people who are emotionally functional and capable of critical analysis, people who care and who can plan and respond to crises (or even problems) strategically. Despite this profound social shortcoming, some individuals have nevertheless emerged who have one or more of these qualities and they are inevitably 'condemned' to sound the alarm, in one way or another, and to try to mobilize an appropriate response to whatever crisis or problem confronts them at the time.

But, as is utterly obvious from the state of our world, those with these capacities have been rare and, more to the point, they have had few people with whom to work. This is graphically illustrated by the current failure to respond strategically to the ongoing climate catastrophe (with most effort focused on lobbying elite-controlled governments and international organizations), the elite-driven perpetual (and ongoing threat of nuclear) war as well as the other issues, such as the use of geoengineering and the deployment of 5G, that threaten human survival. See 'The Global Climate Movement is Failing: Why?', 'The War to End War 100 Years On: An Evaluation and Reorientation of our Resistance to War' and 'Why Activists Fail'.

Given the preoccupation of modern society with producing submissively obedient students, workers, soldiers, citizens (that is, taxpayers and voters) and consumers, the last thing society wants is powerful individuals who are each capable of searching their conscience, feeling their emotional response to events, thinking critically and behaving strategically in response. Hence our parenting and education models use a ruthless combination of visible, 'invisible' and 'utterly invisible' violence to ensure that our children become terrified, self-hating and powerless individuals like virtually all of the adults around them.

This multifaceted violence ensures that the adult who emerges from childhood and adolescence is suppressing awareness of an enormous amount of fear, pain and anger (among many other feelings) and must live in delusion to remain unaware of these suppressed feelings. This, in turn, ensures that, as part of their delusion, people develop a strong sense that what they are doing already is functional and working (no matter how dysfunctional and ineffective it may actually be) while unconsciously suppressing awareness of any evidence that contradicts their delusion. See 'Why Violence?', 'Fearless Psychology and Fearful Psychology: Principles and Practice','Do We Want School or Education?' and 'Love Denied: The Psychology of Materialism, Violence and War'.

So if we are going to address the fundamental driver of both the destruction of Earth's wildlife and the biosphere generally, we must address this cause. For those adults powerful enough to do this, there is an explanation in 'Putting Feelings First'. And for those adults committed to facilitating children's efforts to realize their potential and become self-aware (rather than delusional), see 'My Promise to Children' and 'Nisteling: The Art of Deep Listening'.

Beyond this cause, however, we must also resist, strategically, the insane elite-controlled governments and corporations that are a key symptom of this crisis – see 'The Global Elite is

Insane Revisited' – by manufacturing and marketing a vast range of wildlife (and life)-destroying products ranging from weapons (conventional and nuclear) and fossil fuels to products made by the destruction of habitat (including oceans, rainforests, grasslands, wetlands, mangroves, lakes and coral reefs) and the chemical poisoning of agricultural land (to grow the food that most people eat) while also using geoengineering and deploying 5G technology worldwide. See Nonviolent Campaign Strategy.

But we can also undermine this destruction, for example, by refusing to buy the products provided by the elite's corporations (with the complicity of governments) that fight wars (to enrich weapons corporations) to steal fossil fuels (to enrich energy, aircraft and vehicle-manufacturing corporations) or those corporations that make profits by destroying habitats or producing poisoned food, for example. We can do this by systematically reducing and altering our consumption pattern and becoming more locally self-reliant as outlined in 'The Flame Tree Project to Save Life on Earth' or, even more simply, by committing to The Earth Pledge (below).

In a nutshell, for example, if we do not travel by car or aircraft, NATO governments will have much less incentive to invade and occupy resource-rich countries to steal their resources and corporations will gain zero profit from destroying wildlife habitat as they endlessly seek to extract the resources necessary to manufacture and fuel these commodities thus saving vast numbers of animals (and many other life forms besides) and easing pressure on the biosphere generally.

You can also consider joining those working to end violence in all contexts by signing the online pledge of 'The People's Charter to Create a Nonviolent World'.

The Earth Pledge

Out of love for the Earth and all of its creatures, and my respect for their needs, from this day onwards I pledge that:

1. ***I will listen deeply to children*** *(see explanation above)*
2. ***I will not travel by plane***
3. ***I will not travel by car***
4. ***I will not eat meat and fish***
5. ***I will only eat organically/biodynamically grown food***
6. ***I will minimize the amount of fresh water I use, including by minimizing my ownership and use of electronic devices***
7. ***I will not buy rainforest timber***
8. ***I will not buy or use single-use plastic, such as bags, bottles, containers, cups and straws***
9. ***I will not use banks, superannuation (pension) funds or insurance companies that provide any service to corporations involved in fossil fuels, nuclear power and/or weapons***
10. ***I will not accept employment from, or invest in, any organization that supports or participates in the exploitation of fellow human beings or profits from killing and/or destruction of the biosphere***
11. ***I will not get news from the corporate media (mainstream newspapers, television, radio, Google, Facebook, Twitter…)***
12. ***I will make the effort to learn a skill, such as food gardening or sewing, that makes me more self-reliant***

13. ***I will gently encourage my family and friends to consider signing this pledge.***

Conclusion

Perhaps the key point to be learned from the evidence cited above is that just as we have triggered a series of self-reinforcing feedback loops that 'lock in' an ongoing deterioration of Earth's climate which we are now virtually powerless to halt (if we were even trying to do so), we have also precipitated a biodiversity crisis that is self-reinforcing because the loss of each and every species has an impact on those species that are dependent on it, precipitating chains of events that make further extinctions inevitable. This is one of the 'negative synergies', for example, contributing to the Amazon rainforest's rapid approach to the tipping point at which it will collapse. See 'Amazon Tipping Point'.

Hence, we are approaching the final act of a tragedy that had its origins in the Cognitive Revolution some 70,000 years ago and which we have not been able to contain in any way. The earlier acts of this tragedy were the countless species of plants, birds, animals, fish, amphibians, insects and reptiles that Homo sapiens has driven to extinction.

Now, in the final act, we will drive to extinction 200 species today. 200 species tomorrow. 200 species the day after….

Until, one day very soon now, unless you and those you know are willing to commit yourselves wholly to the effort to avert this outcome, the human assault on life on Earth will reach its inevitable conclusion: the extinction of Homo sapiens.

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