

THE UN SPECIES EXTINCTION REPORT: IS IT SCIENCE, OR SOMETHING ELSE?

An NPG Forum Paper
by Edwin S. Rubenstein

One million plant and animal species are now at risk of extinction, endangering ecosystems that people all over the world need for survival. This stark conclusion is from the most exhaustive report ever published on the decline in biodiversity around the world.

“If we want to leave a world for our children and grandchildren that has not been destroyed by human activity, we need to act now,” said Robert Watson, the British chemist who chaired the study, produced by the UN’s Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES). **“If we do not act now, many of the million threatened species will become as extinct as the dodo on this tie,”** Watson said, pointing to the image of the late bird on his neckwear.¹

The E-word is always an attention grabber, often overused by environmentalists because it’s so dramatic and final, and everyone knows about the dodo. Most scientists and other people agree that human encroachment on natural habitats poses a threat to plants and the animals that need them to survive. But it’s a long stretch from there to the idea that one million species are actually threatened with extinction.

Indeed, the notion that one million species even exist is hard for most of us laymen to fathom. Eco-professionals themselves are not sure how many there are: estimates range from 3 to 100 million.² (Different academic communities – e.g., zoologists, botanists, and bacteriologists – use different levels of differentiation to define a species.)

The UN report settles on 8 million as the number of plant and animal species on Earth. (Remarkably, there is no explanation as to exactly how this figure

was arrived at.) Seventy-five percent of all species – about 6 million – are insects, and **“available evidence”** suggests that 10% of insect species – 600,000 – are threatened with extinction.³

Implication: more than half of the one million species at-risk are insects.

What does the one million extinctions figure mean? Is it a gross figure, the number of species that are at risk of extinction, or is it a net figure – species threatened by extinction less the number of new species expected to appear over the same period? Evolution is a continuous process of old species yielding to newer “fitter” ones.⁴

Does the UN focus on species obituaries while ignoring their birth announcements?

The system of naming and describing species used today was created by the Swedish scientist Carl Linnaeus in 1758. In the ensuing 253 years 1.25 million species had been described and entered into central databases.⁵ In 2011 came the **“most precise calculation ever offered”** on the number of species on Earth: (Drum Roll): 8.7 million (give or take 1.3 million).⁶

Yet the same 2011 study, published by PLoS Biology, says a staggering 86% of all species on land and 91% of those in the seas have yet to be discovered, described, and catalogued. **“Many species may vanish before we even know of their existence, of their unique niche and function in ecosystems, and of their potential contribution to improved human well-being,”** says lead author Camilo Mora.⁷

It seems that the more we learn about global species, the more we learn things we don’t know.

MASS EXTINCTION: NO BIODIVERSITY LOSS: YES

The fossil record reveals five mass extinctions involving the demise of vast numbers of species. Each was triggered by natural causes such as changes in climate, snowpack, and continental drift. The most spectacular – the asteroid plunging into the Caribbean 66 million years ago – triggered the mass extinction of dinosaurs and other species. Within a few million years the post-dinosaur void was filled by an explosion of diversity – modern mammals, birds, and amphibians. The Earth has always recovered, producing a new crop of species.

Since homo sapiens burst onto the scene (about 120,000 years ago) our growing population has presented a problem for countless other organisms. Our assault on biodiversity began in pre-history when we were still hunter-gatherers, accelerated in the agricultural revolution, and exploded with the industrial revolution and the ensuing population boom.

Is Earth headed for the Sixth Mass Extinction – this one spearheaded by humans? The key paragraph from the UN report suggests it is:

“Human actions threaten more species with global extinction now than ever before. An average of around 25 per cent of species in assessed animal and plant groups are threatened...suggesting that around 1 million species already face extinction, many within decades, unless action is taken to reduce the intensity of drivers of biodiversity loss. Without such action there will be a further acceleration in the global rate of species extinction, which is already at least tens to hundreds of times higher than it has averaged over the past 10 million years.”⁸

Mass Extinction Reality Check #1: Nothing in the UN report comes close to the mass extinctions of prehistory. The most recent mass extinction – the one that killed the dinosaurs – saw an estimated 75% of species go extinct. By contrast, the one million extinction figure projected by the UN translates into an extinction rate of only 1% if you accept the highest species estimate, and 33% at the lowest. While the current rate of species extinction may well be “...tens to hundreds of times higher than it

has averaged over the past 10 million years,” this factoid reflects fairly low baseline extinction rates since the last mass extinction rather than a spike in extinctions today.

Over the years even the UN has waffled on species extinction. The Millennium Ecosystem Assessment, a mega study ordered by the UN in 2002, estimated that 24 species a day go extinct. At that rate it would take 114 years to reach one million extinctions. Another effort, the United Nations Convention on Biological Diversity in 2007, found the extinction rate to be upwards of 150 species per day – giving us a mere 18 years before the one million Extinction Day. The disparity, experts say, could reflect differences in the computer models used to create the statistics.⁹

The last point is key. Extinction scenarios are only as valid as the computer models used to generate them. Studies based on actual observations of local conditions (rather than computer models) find no evidence that biodiversity is suffering. The most comprehensive, a National Academy of Sciences study, shows no net decline in plant diversity over 100 years in 16,000 sites examined around the world.¹⁰ The study found lots of churn – diversity declining at sites facing invasive species, and increasing after the disturbance passes, producing no net change over time.

Mass Extinction Reality Check #2: It’s been a century since the last two species of any interest to humans – the passenger pigeon and the Tasmanian Tiger – died out. Almost all the species extinctions that have occurred in the last two centuries have been on islands, the result of predation by invasive species such as rats or cats accidentally introduced by sailors.¹¹ The dodo, last seen on the island of Mauritius in the 17th century, was wiped out after rats, cats, and pigs were introduced by humans.¹²

The demise of Martha, the last surviving passenger pigeon, on September 1, 1914, was not unexpected. Her species had been under pressure since the 1880s, but no one cared. It seemed inconceivable that the most abundant bird in America, with a population estimated at 3 to 5 billion, whose flocks took hours to pass over midwestern cities, could go extinct. This was not a case of insufficient habitat. This was a mindless slaughter by hunters and commercial establishments

looking to feed a burgeoning U.S. population. The more their numbers dwindled, the more intensely they were hunted.

“Sadness,” writes Leon Kolankiewicz, brought commitment, as “... regrets over the passenger pigeon’s stunning demise helped motivate the nascent wildlife conservation movement at the start of the 20th century. And throughout the century just passed, the tragic fate of this bird has served as a cautionary tale for biologists and policymakers alike: even numbering in the billions does not guarantee a species’ survival.”¹³

There were some close calls: “A century ago, the whitetail deer had been all but extirpated from many eastern states, the wild turkey was scarce, and many species of waterfowl and wading birds were diminishing rapidly. Populations of birds like the trumpeter swan, whooping crane, California condor, and ivory-billed woodpecker were dropping – and the passenger pigeon had just gone extinct. The American bison had barely escaped this destiny, as railroads and ruthless gunners pushed westward. Mountain lions, wolves,

and elk had been obliterated in the East, and the grizzly bear all but wiped out of California... In the second half of the 20th century, the American bald eagle, peregrine falcon, brown pelican, and osprey were all threatened with oblivion from the widespread use of man-made insecticides.”¹⁴

But those once endangered species are now ascendant: “Today, several decades after many pesticides were banned...these raptors have all rebounded. Whitetail deer have become so abundant that they are a pest to gardeners and a traffic hazard in many places. Protected wading birds (herons and egrets) and managed waterfowl are far more numerous and enjoy stable populations. Bison, grizzly, and wolf populations – while not regaining their former size and range – have at least stabilized and reclaimed some old haunts. Wild carnivores like coyotes and foxes roam Washington, DC’s woodlands and other urban areas.”¹⁵

The extinction of the Tasmanian Tiger was, if anything, even more appalling. The animal was both unique and beautiful:



Tasmanian Tigers in a Washington, DC Zoo (c.1906)¹⁶

Tasmanian sheep herders demonized the animal as a blood thirsty carnivore that liked to feed on their herds. The extermination started discretely when a private land company put a bounty on the head of each animal killed in 1830.

Things got edgy in 1884, when a group of farmers set up the “Buckland and Spring Bay Tiger and Eagle Extermination Society” with the explicit purpose of eradicating the species. The government piled on, paying bounties of one pound per adult and ten pence for young until 1909. By then the deed was done. The only existing tigers were in zoos.

The last Tasmanian Tiger died of exposure after it was locked out of its sleeping enclosure at the Beaumaris Zoological Gardens in Hobart on September 7, 1936.¹⁷ The death was unreported. No news articles recorded the event, and its remains were thrown away.

No news, no sadness at that time. But plenty of guilt today, which is why the date of the last tiger’s death is Tasmania’s National Threatened Species Day.

Such indifference to the extinction of an indigenous species is unimaginable today. Two of the most overhyped of all doomed species are enjoying a remarkable renaissance, not least because – contrary to the rumblings of some environmentalists – government and people really do care about species preservation.

We’ve all seen the video of a few Polar bears on a slab of ice surrounded by rising Arctic waters. FACT: Polar bear populations have exploded from about 5,000 sixty years ago to an estimated 22,000 to 31,000 today, according to the World Wide Fund for Nature.¹⁸ Polar bears are among the few large carnivores that are **“...still found in roughly their original habitat and range--and in some places, in roughly their natural numbers.”**¹⁹

Meanwhile, the number of tigers in India has risen dramatically in the last decade. The estimated number of the still endangered big cats has increased from 1,411 in 2006 to 2,226 in 2014, according to a report published by the Indian government’s National Tiger Conservation Authority.²⁰

Primates (other than us) are a sad exception. Sixty-percent of primate species are “threatened with extinction” – putting them close to mass

extinction territory. **“Many primates are iconic (for example, gorillas, chimpanzees, orangutans, spider monkeys, and lemurs;...but given the scale of their decline, it is clear that neither their charisma nor their flagship status is sufficient to safeguard them from the threat of human-induced extirpation... Extinction rarely results from deficient scientific knowledge of the steps required to protect the species. Instead, it is embedded in political uncertainty, socioeconomic instability, organized criminality, corruption, and policies that favor short-term profits over long-term sustainability.”**²¹

Humans have a long history of threatening other primates. It may be in our genes. A 2017 study published in the *American Journal of Human Genetics* found that from 1.8% to 2.6% of the genome of modern humans consists of Neanderthal DNA.²² This supports the hypothesis that *homo sapiens* and *homo neanderthalensis* may have lived in close proximity and interbred. No one knows why Neanderthals went extinct about 40,000 years ago while we are still here. Some theorize that humans killed the Neanderthal. A more likely scenario, according to others, is that a rapidly growing human population overtook habitats formerly available to Neanderthals. We didn’t defeat them, we just swamped them.²³

The more things change, the more they remain the same.

As an economist, I am struck by the analogies between species extinctions and the demise of companies. Companies that once revolutionized and dominated industries – Xerox in copiers or Polaroid in instant photography, for example – saw profits fall and their dominance vanish as rivals launched improved designs. In technology, the cassette tape replaced the 8-track, only to be replaced in turn by the compact disc, which was undercut by downloads to MP3 players, which is now being usurped by web-based streaming services. In retail, the Amazon “species” is in the process of driving thousands of brick and mortar establishments to extinction.

Successful mutations – whether environmental or economic – are disruptive at first, but improve conditions in the long run. To stymie them is counterproductive. In economics this process is

called “creative destruction,” a term attributed to the German economist Joseph Schumpeter.

There is no comparable terminology in environmental science: every species that goes extinct, no matter how modest, homely, or lacking in demonstrable usefulness to mankind, is grieved over. That attitude is understandable. If Amazon goes under, market forces will create newer, better ways of doing business, or restore the old ways. By contrast, there is no guarantee that Earth will recover from man-made extinctions in a way that restores biodiversity. Species are irreplaceable.

The UN study projects one million species extinctions, some within decades. How valid is that figure? Decide for yourself:

ARE UN EXTINCTION NUMBERS CREDIBLE?

A sentence in the *New York Times* front page coverage of the 2019 biodiversity report caught our eye: **“The largest, most comprehensive study ever undertaken of the conjoined fates of human wellbeing and the natural world, the report was finalised in Paris after intense negotiations between IPBES members that concluded at 0300 a.m. on Saturday.”**²⁴

Why did a 1,500-page study three years in the making, the work of 145 authors summarizing 15,000 scientific papers, require “intense negotiations” in the wee hours before being released?

Welcome to politics, UN style.

The UN and its environmental subsidiary (IPBES) are both beholden to 193 member nations, most of them poor. Scientists are recruited to write IPBES studies. Afterward they are obliged to summarize their findings in a preliminary document known as the *Summary for Policymakers*. At that point politicians and UN bureaucrats get involved, scrutinizing and *rewriting* the summary line by line.

A blogger writes: **“Fairy tales tell of turning straw into gold. The UN takes scientific summaries and transforms them into politically acceptable straw. The resulting document, which will be solemnly released today, is what a roomful of political operatives have all agreed to say out loud.”**²⁵

It gets worse: the final report, drawing on the scientific research underlying the study, will also be changed. That’s not how things normally work. Summaries are supposed to be accurate reflections of longer scholarly documents. At the UN they represent an opportunity to alter those documents in ways that support the organization’s “sustainability” agenda. Sustainability is code for policies that, among other things, allow poor countries – India and China, for example - to opt out of UN environmental treaties like the 2014 Paris Climate Accord.

Long time UN observers are not surprised. When established in 2010, IPBES proclaimed its mission was **“to spearhead the battle against the destruction of the natural world.”**²⁶ That sounds like a conclusion rather than a call for objectivity. It is not what a scientific body searching for truth “wherever it may lead” would commit to. But environmental Doom and Gloom is always preferred to sobriety, especially when media coverage is the measure of success. The mainstream media loves a good scare story, no matter how tenuous the evidence. So, numbers are tweaked and fudged until a Doomsday scenario pulls into view.

The same methodology infects IPBES’s sister organization, the Intergovernmental Panel on Climate Change (IPCC). Harvard ecologist Edward O. Wilson once estimated that up to 50,000 species go extinct every year. He arrived at that figure using the same methodology that IPCC uses to prognosticate catastrophic climate change: computer models.

Greenpeace co-founder Patrick Moore exploded this myth a long time ago: **“There’s no scientific basis for saying that 50,000 species are going extinct. The only place you can find them is in Edward O. Wilson’s computer at Harvard University. They’re actually electrons on a hard drive. I want a list of Latin names of actual species.”**²⁷

Another activist, Tim Keating of Rainforest Relief, when asked to name any of the 50,000 species allegedly headed for extinction, said: **“No, we can’t [name them], because we don’t know what those species are. But most of the species that we’re talking about in those estimates are things like insects and even microorganisms, like bacteria.”**²⁸

Hmm. Insects and bacteria. Imagine the headline: **“UN study warns one million insects and bacteria are at risk of extinction.”**

OK, OK: everyone knows bees and other “pollinators” are vital to the food chain: 75% of global food crops rely on them, says the UN report. But the 2019 report also acknowledges that **“Global trends in insect populations are not known...”**²⁹

In a perfect world Prof. Watson would acknowledge the controversies and disagreements swirling around his report. He is, after all, the institutional memory of UN biodiversity research. But that is not his job. His mission is to promote a doomsday scenario that is based on the flimsiest of real-world evidence – or no evidence at all.

He is the UN version of a company man.

BIODIVERSITY LOSS

Biodiversity loss is occurring because one species – homo sapiens – is infringing on the natural habitats available to the roughly 8 million non-human species. Relatively few species go extinct, but sharp declines in population and biodiversity are just as serious.

The average vertebrate (birds, fish, mammals, amphibians) population has declined by 60% since 1970, according to World Wildlife Fund, the international conservation non-profit.³⁰ This is not the same as saying that the world has lost 60% of its animals. A population is the portion of a species confined to a particular geographic area. (Polar bears on small islands off the coast of Alaska, for example, are different populations from the ones on the Alaskan mainland.) Globally, small, remote animal populations have suffered the largest percentage biodiversity losses.

Fewer and fewer local varieties of domesticated plants and animals are being cultivated, raised, and traded around the world despite efforts by indigenous peoples to maintain their unique animal and plant populations. From 1970 to 2016 **“...559 of the 6,190 domesticated breeds of mammals used for food and agriculture (over 9 per cent) had become extinct and at least 1,000 more are threatened.”**³¹ The loss of diversity makes food supplies more vulnerable to climate change, disease, and insect infestation.

Last year scientists discovered a rare species of corn that essentially makes its own fertilizer. It’s possible that geneticists will figure out a way to replicate this trait in other crops, reducing the need for chemical fertilizers which are huge polluters. Had this species gone extinct, we would have lost this tool.³²

Large declines in wild bees have been reported: **“... more than 75 per cent of global food crop types, including fruits and vegetables and some of the most important cash crops such as coffee, cocoa and almonds, rely on animal pollination.”**³³

Some 70 per cent of drugs used for cancer are natural or are synthetic products inspired by nature.³⁴

Why do we have a biodiversity crisis? The UN identifies five major drivers, each linked to human population growth. In order of importance, they are the loss of natural habitat; direct exploitation of organisms; climate change; pollution; and the invasion of alien species:

- **The reduction of natural habitat.** The area of the world that is untouched or unaltered by humans is shrinking all the time, and when it shrinks, so does nature. **“Seventy-five percent of the land surface is significantly altered, 66 percent of the ocean area is experiencing increasing cumulative impacts, and over 85 percent of wetlands (area) has been lost.”**³⁵ Food production is the most common form of land-use change, with over one-third of the Earth’s land surface being used for crops or animal husbandry.
- **Direct exploitation of organisms** “...in particular overexploitation of fish, shellfish, and other organisms...” as well as the illegal poaching of protected species on land.³⁶
- **Climate Change.** Global warming is both a cause and a result of biodiversity loss. A 2015 study that examined 130 extinction models from previous studies concluded that 5.2% of species would be lost as a result of global warming alone if temperatures were to rise 2 degrees Celsius above pre-industrial revolution levels.³⁷ (The world has already warmed 1 degree.) At the same time, **“Marine and terrestrial ecosystems are the sole sinks for anthropogenic carbon emissions, with a gross sequestration of 5.6**

gigatons of carbon per year (the equivalent of some 60 per cent of global anthropogenic emissions.)”³⁸ A hotter planet means fewer species, and fewer species means less CO₂ removed by natural sinks that manage to survive. If climate change were the only problem, a lot of species could probably move and adapt. But when populations are already small and becoming less diverse, and habitats are shrinking, a problem becomes a deadly crisis.

- **Pollution.** Think about the huge amount of plastic water bottles discarded every year. “**Marine plastic pollution in particular has increased tenfold since 1980, affecting at least 267 species, including 86 per cent of marine turtles, 44 per cent of seabirds and 43 per cent of marine mammals. This can affect humans through food chains.**”³⁹
- **Invasive alien species.** Over the past 50 years human population has doubled, the global economy has grown nearly 4-fold, while global trade has increased 10-fold. International trade may be good for economic growth, but it is bad for the environment. Species which once inhabited a small local area are often exported, en masse, to another continent, where they have no natural predators and can decimate indigenous competitors. International diets and food crops are becoming more homogeneous. Not only is this boring, it is downright dangerous. If disease or pestilence were to affect key food groups the chance of a global food shortage will be far greater than it is today. A secure food supply is not the only benefit of diet diversity: “**Shifting diets towards a diversity of foods, including fish, fruit, nuts and vegetables, significantly reduces the risk of certain preventable non-communicable diseases, which are currently responsible for 20% of premature mortality globally.**”⁴⁰

Eco-optimists still insist that genetic engineering can replace lost species and therefore ameliorate the threat to the human food supply and health. Wishful thinking? Well, yes: “**Most of nature’s contributions are not fully replaceable, yet some contributions of nature are irreplaceable (*well established*). Loss of diversity, such as phylogenetic and functional diversity, can permanently reduce future options, such as wild species that might be domesticated as**

new crops and be used for genetic improvement... People have created substitutes for some other contributions of nature, but many of them are imperfect or financially prohibitive.”⁴¹

CONCLUSION

Extinctions and biodiversity loss have been the norm since the beginning of life on Earth. More than 99% of all species that ever existed have disappeared without leaving descendants. The next episode will be the first caused by a single species: homo sapiens.

The UN’s prognosis - 1 million species at risk, some within decades - is terrifying. How long before humans are on the hit list? Media coverage was understandably huge, but the report itself was disappointing. Essentially, a litany of factors driving biodiversity loss in our time: Habitat Decline, Direct Exploitation of Organisms (hunting and poaching), Climate Change, Pollution, and Invasion by Alien species.

Conspicuously missing was alarm over human population growth. Global population is projected to grow to anywhere between 8 billion and 11 billion by the middle of the century, with much of it expected to take place in sub-Saharan Africa and other tropical regions where species diversity is highest. Slowing population growth in those places is the most efficient way of slowing global biodiversity loss. Unfortunately, it is not a good fit for the UN’s political agenda.



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