

The perfect storm

This has been an unusually tough year. The SARS-CoV-2, severe acute respiratory syndrome coronavirus 2, emerged in January 2020. The World Health Organization announced “covid-19” as the name of this new disease on 11 February 2020 while the world kept looking to China. Within weeks, the virus managed to circumvent the globe and engulfed the world into a pandemic unlike any seen for generations (Platto et al. 2020). To date, more than 73 million people have been infected and some 1.6 million people have died according to the World Health Organization (WHO 2020).

Science has been issuing warnings of looming pandemics for decades. “The single biggest threat to man’s continued dominance on the planet is the virus.” A punching quote from the Nobel laureate Joshua Lederberg in the 1990s. Previous epidemics and outbreaks like SARS in 2003, bird flu H5N1 in 2005, and Ebola (2014–2016), were alarm bells (Servigne et al. 2020). Yet, we went about our business ignoring those early warning signs. It seems that our immediate priorities are more pressing, our collective memory short and the Spanish flu—the last global pandemic caused by the H1N1 influenza that killed more than 50 million people or more than 2.5% of the World population, within the span of 2 years—too distant in time to create concern.

The global society came to a quasi-standstill. Travelling dropped to almost zero during the first wave experienced in March and April this year. The skies were almost free of airplanes. Oceans free of boats. Streets almost empty. Many national borders closed. People forced to stay in their houses. Only Nature took a moment to breathe (Corlette et al. 2020). This situation of reduced human activities, coined “anthropause” by some scientists (Rutz et al. 2020, Stockstad 2020), led to dramatic drops in air pollution, and for example whales being seen in waters that usually are noisy and full of boats.

Impacts of this ongoing pandemic are devastating on several levels. The tragic loss of so many human lives due to this new disease risks leading us forgetting about HIV, Malaria, Tuberculosis, and other diseases, causing annually millions of casualties. The Pandemic has battered the economy, disrupted supply chains and slowed international trade. It has disrupted the livelihoods of most of humanity. Many governments are struggling with the devastating economic costs. Already unlikely to be reached by 2030 before the pandemic, the Sustainable Development Goals now need to be carefully reassessed, as the pandemic’s impacts likely further threaten many of the 169 SDGs targets (Naidoo and Fisher 2020).

So far, Africa remains one of the least affected regions worldwide by the virus despite an announced disaster (Nordling 2020). In Madagascar, a scientific study carried out over nine months by the Institute Pasteur and the Ministry of Health suggests a covid-19 prevalence level of close to 40% (Tétaud and Spiegel 2020). This means considerable spreading of the virus within the population, which is trending towards a level experts would label as herd immunity (but see Fontanet and Cauchemez 2020). Madagascar has officially accounted for less than 300 deaths. Taking this number

with a grain of salt, the reason may be found in its demographic profile: some 60% of 27 million inhabitants are of age 25 or younger, while the higher covid-19 risk groups (>55 years) comprise less than 10% of the population. Science still needs to find the answer to this question and many more (e.g., Nordling 2020, Zeberg and Pääbo 2020).

A rare positive note emerging from this pandemic: Science emerges as a winner. Never in human history was the development of vaccines—a global race leading to some +150 candidates, some with >90% effectiveness—so fast and efficient. It took science less than 11 months from the discovery of this new virus to the distribution of the vaccines. This is truly remarkable and a result of international collaborations. Now that first candidates are already on the market, it remains to be seen how distribution of these vaccines will play out. How collaborative will human society actually be? Who will get a shot first? Who will have to pay for it and how much? More importantly, who will likely never get a chance to be vaccinated against covid-19? We refrain from conspiracies, but politics has shown in this spectral year of 2020, that, if anything, it can be extremely disruptive and divisive—take the USA as a sully example. To date, 7.48 billion vaccine doses have been pre-purchased. Some 40% may go to middle- and low-income countries that account for some 85% of the world population (So and Woo 2020). Nine out of 10 people from 67 low- and middle-income countries are set to miss out on the covid-19 vaccination in 2021. Madagascar is one of those (Oxfam 2020). Sadly, maybe herd immunity—through exposure to the virus, not vaccination—might be a more realistic strategy after all for some countries.

A number of factors can come into play and potentially pave the way for the emergence of infectious diseases like covid-19. (1) The globe has become a village. Increased mobility allowed more than 4.5 billion passengers to fly in 2019. Within a day, one can hop around half the globe, and so can a virus. (2) Over half of the human population lives in urban areas. Increasingly high-density cities are an ideal habitat for a virus to jump from host to host. (3) Climate defines the biophysical boundaries that allow species or populations to thrive. Climate change—leading to increased temperatures, changing rainfall patterns, increased frequency of extreme weather events—are shifting these boundaries (Ceballos et al. 2020, Watsa et al. 2020) and laying grounds for vectors—insects, bats, people—and their diseases to spread and establish. (4) Digging deeper into natural habitats by ways of agricultural expansion, infrastructure, and wood extraction—to mention the most salient direct drivers of deforestation—are increasingly exposing humans to zoonotic diseases. Wildlife trade is yet another means to bring humans directly in contact with animals—while calls for bans only risk undermining their purpose (Roe et al. 2020)—potentially further opening the doors to viruses spreading (McCleery et al. 2020).

A tough year to say the least. The years to come, however, will only become more challenging. While we will eventually overcome this pandemic, the virus will likely remain amongst us, similarly to the flu viruses. A global economic depression is looming and recovering from this will be a gargantuan task, while the pandemic may have revealed that our economic system is sick and not adapted to the survival of our species. The biggest threat to all life on Earth is already underway and will only grow in severity—the climate crisis. All in all, the perfect storm.



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REFERENCES

- Ceballos, G., Ehrlich, P. R. and Raven, P. H. 2020. Vertebrates on the brink as indicators of biological annihilation and the sixth mass extinction. *Proceedings of the National Academy of Sciences of the United States of America* 117(24): 13596–13602. <<https://doi.org/10.1073/pnas.1922686117>>
- Corlett, R. T., Primack, R. B., Devictor, V., Maas, B., Goswami, V. R., et al. 2020. Impacts of the coronavirus pandemic on biodiversity conservation. *Biological Conservation* 246: #108571. <<https://doi.org/10.1016/j.biocon.2020.108571>>
- Fontanet, A. and Cauchemez, S. 2020. COVID-19 herd immunity: where are we? *Nature Reviews Immunology* 20, 10: 583–584. <<https://doi.org/10.1038/s41577-020-00451-5>>
- McCleery, R. A., Fletcher Jr., R. J., Kruger, L. M., Govender, D. and Ferreira, S. M. 2020. Conservation needs a COVID-19 bailout. *Science* 369: 515–516. <<https://doi.org/10.1126/science.abd2854>>
- Naidoo, R. and Fisher, B. 2020. Reset sustainable development goals for a pandemic world. *Nature* 583: 198–201. <https://doi.org/10.1038/d41586-020-01999-x>
- Nordling, L. 2020. Africa's pandemic puzzle: why so few cases and deaths? *Science* 369: 756–757. <<https://doi.org/10.1126/science.369.6505.756>>
- Oxfam. 2020. Campaigners warn that 9 out of 10 people in poor countries are set to miss out on COVID-19 vaccine next year. Press release published 9 December 2020. Available online <shorturl.at/jsEIP>
- Platto, S., Xue, T. and Carafoli, E. 2020. COVID-19: an announced pandemic. *Cell Death & Disease* 11(9): #799. <<https://doi.org/10.1038/s41419-020-02995-9>>
- Roe, D., Dickman, A., Kock, R., Milner-Gulland, E. J., Rihoy, E. and 't Sas-Rolfes, M. 2020. Beyond banning wildlife trade: COVID-19, conservation and development. *World Development* 136: #105121. <<https://doi.org/10.1016/j.worlddev.2020.105121>>
- Rutz, C., Loretto, M.-C., Bates, A. E., Davidson, S. C., Duarte, C. M., et al. 2020. COVID-19 lockdown allows researchers to quantify the effects of human activity on wildlife. *Nature Ecology & Evolution* 4: 1156–1159. <<https://doi.org/10.1038/s41559-020-1237-z>>
- Servigne, P., Stevens, R. and Chapelle, G. 2020. Another End of the World is Possible: Living the collapse (and not merely surviving it). John Wiley & Sons.
- So, A. D. and Woo, J. 2020. Reserving coronavirus disease 2019 vaccines for global access: cross sectional analysis. *BMJ* 371: m4750. <<https://doi.org/10.1136/bmj.m4750>>
- Stockstad, E. 2020. Pandemic lockdown stirs up ecological research. *Science* 369: 893. <<https://doi.org/10.1126/science.369.6506.893>>
- Tétaud, S. and Spiegel, A. 2020. Près de 40% des Malgaches auraient été infectés par le Covid-19. RFI Interview. Available online <shorturl.at/lxNR2>
- Watsa, M. and Wildlife Disease Surveillance Focus Group. 2020. Rigorous wildlife disease surveillance. *Science* 369: 145–147. <<https://doi.org/10.1126/science.abc0017>>
- WHO 2020. Coronavirus disease (COVID-19) dashboard. <<https://covid19.who.int/>>
- Zeberg, H. and Pääbo, S. 2020. The major genetic risk factor for severe COVID-19 is inherited from Neanderthals. *Nature* 587: 610–612. <<https://doi.org/10.1038/s41586-020-2818-3>>