



## CORRESPONDENCE

Joint letter inspired by Hymas et al. (2021) “There’s nothing new under the sun – lessons conservationists could learn from previous pandemics”

Raoul Manenti and Olivier Hymas

**Keywords:** COVID-19; wildlife; forest; conservation; anthropause

### INTRODUCTION

The paper by Hymas et al. (2021) (henceforth Olivier) stimulated a discussion between one of the authors cited in the paper (Manenti et al., 2020) (henceforth Raoul) and the principal author of the paper. Instead of going down the usual road of writing a reply, and counter-reply, the authors of these two papers decided to talk directly to each other. This reply is the fruit of several discussions undertaken over a period of a month. These discussions had the objective to better understand each other’s arguments, without trying to find consensus or unanimity of thought. This is not an exhaustive account of these discussions, but rather a summary of some interesting key points. In publishing this discussion, we hope to stimulate others to have their own discussions with people with different disciplinary backgrounds or career paths. After an initial introduction to each author and the original paper, this letter has an interview-like format, in which Raoul, sets out key point questions with the reasoning behind the question, and then Olivier brings in his own viewpoint and reasoning.

### AUTHORS’ BACKGROUND

While both authors work on conservation issues they come from different disciplinary backgrounds and have different career experiences. Olivier originally trained as an ecologist and later became an anthropologist. This change was due to his experiences in conservation that led him to 1) recognise the important role that people play in shaping ecology and conservation at various time and spatial scales, and 2) recognise that our cultural background influences how we do conservation and research. This recognition has led him to tweak the scientific methodology to question the cultural assumptions of the original observation that starts the scientific methodology cycle of observation, background research, hypothesis, experimentation and generalisation. This action research (Stephens et al., 2009) like approach, results in the researcher going to the field right at the start of the scientific methodology in order to 1) confirm that the original observation is applicable in the cultural settings of the field site, and 2)

get to grips with what background research and types of experimentation methodologies (ecological, social science, historical, etc.) will be needed to answer the original observation. Raoul is a zoologist interested in general conservation, behavioural and evolutionary questions of different animal groups from amphibians and various freshwater invertebrates to humans. Recently he has been trying to address how behavioural patterns of dominant species, like humans and some top predator species, can affect the functionality of the communities of various ecosystems, especially ecotones (like springs) placed at the interface between surface (streams, ponds, woods) and underground (subterranean aquifers, caves). For Raoul, the COVID-19 pandemic represented an interesting phenomenon to be approached from a scientific perspective.

This discussion provided an array of interesting stimuli on how global and sudden phenomena, like pandemics, impact the environment and whether they provide a research opportunity. The paper by Hymas et al. (2021) is of interest as it looks outside the silo of the recent ecological literature and answers a challenging question on how COVID-19 is new and worthy of investigation from a biological conservation perspective.

### INTERVIEW

Raoul’s key point 1 – is there true novelty from the point of view of biological conservation in the situation created by the COVID-19 pandemic or should the recognition of similarities with analogous historical events undermine the current rise in conservation literature on the subject?

A large number of recent studies have suggested that the COVID-19 pandemic allowed scientists to investigate the effects of a reduction in the activity of the worldwide dominant species *Homo sapiens* (e.g. Bates et al., 2020; Rutz et al., 2020). Many of these studies also claim that the current pandemic is an unprecedented occasion in human history (Bates et al., 2021; Kumar et al., 2020; Lopucki et al., 2021; McElwee et al., 2020). The novelty and the importance of studying COVID-19 is referred to

as the effects that a human pandemic and its consequences on a dominant species like humans may have for the conservation of ecosystems and wildlife (Manenti et al., 2020), irrespective of the novelty of the disease. The emergence of previously unknown human diseases is well-documented in the natural history of *Homo sapiens*. However, the temporal and spatial scale of the COVID-19 pandemic and the possibility to document its effects, scientifically and globally, are new.

**Olivier's reply to key point 1** – to be honest I initially struggled with this point. From a philosophy of science standpoint this is equivalent to throwing out the baby with the bath water, for I do not see why this should be considered a 'novel' situation as there is so much that can be learnt from past pandemics that are relevant to the current situation. However, I then realised that the issue is of temporal scale; historians and archaeologists work on very large time scales, while ecologists, who are faced with "pressing problems in ecology [that] often exist at the scale of decades" (Schneider, 2001), often work on much shorter time scales.

While it is true that scientific equipment is continually evolving, the scientific methodology itself has not fundamentally changed since the ancient Greeks (Stephens et al., 2009). Scientists, therefore, do not have to wait for advances in technology. If they did then there would be no point in doing science. We would not expect future scientists documenting a pandemic to ignore the current research on COVID-19 simply because they have more up-to-date technology which allows them to have access to live data collected through various chips and sensors implanted solar system wide in all humans, wildlife and ecosystems. There is only one case that I know of where scientists have waited for their gadgets to catch up before carrying out science and that is for the Herculaneum scrolls where scientists have patiently waited for over 250 years for new scientific equipment (Tack, 2016).

We need to recognise that "we stand on the shoulders of giants" (Merton, 1993); that knowledge and insight does not spring from nowhere but is dependent on the people who passed before us. Any situation is a novel starting point for research (e.g. COP26 is novel as we can study it using social media equipment). What makes the COVID-19 pandemic so special?

Does COVID-19 differ from the 1918 influenza pandemic? Relatively speaking both are very similar

(Morens et al., 2021a, 2021b): both are zoonotic diseases (Lycett et al., 2019); the state of medical knowledge is relatively the same (transmission of disease, its control and the need for a vaccine was understood in 1918; though mRNA technology was not yet available); all current transport forms existed (the first commercial flight was in 1914; though flight was not at the scale known today, boats were used much more; i.e. longer periods of time with people in close proximity); spatially, people lived across the globe but were more dispersed with rural to urban migration, since 1918, resulting in "global depeasantization" (Araghi, 1995) and forest recovery (Robson & Berkes, 2011; Ellis et al., 2013); the effect of the 1918 pandemic was also documented (including scientifically); people also spread both diseases back into wildlife (Morens et al., 2021a); and, most importantly, they both had an effect on conservation and wildlife (e.g. in Gabon, Hymas et al., 2021).

**Raoul's key point 2** – anthropause is an unprecedented pattern with implications for the management of protected areas

The actions taken to control COVID-19, such as lockdown and movement restrictions, have been considered a period of anthropause (Rutz et al., 2020), with several effects reported for a large number of animal and vegetal species (Kerber, 2020; Silva-Rodriguez et al., 2021; Stokes et al., 2020). Understanding the effects of current actions can allow us to replicate them for effective management of protected areas and conservation of endangered species. Focusing only on historical events may not offer insightful information for conservationists in the face of the COVID-19 pandemic and other global events.

**Olivier's reply to key point 2** – though a siloed approach (Tett, 2015), either just historical or just ecological, allows experts to produce very specialised knowledge, it can only produce limited insight for conservationists investigating the impacts of COVID-19 on the environment, as this involves many different sets of disciplines. The other, generalist extreme, could be to bring all the different silos of knowledge together to find insight (e.g. economics, politics, religion, philosophy, psychology, medical, social and so on). While this would be unwieldy and impossible to carry out, many interesting insights would be produced. This raises the question of how can a generalist approach facilitate the bridging of silos, especially when the academic system (funding, departments, journals) is geared to the siloed expert (Campbell, 2005).

**Raoul's key point 3** – the pristine myth and wilderness conservation: what insights come from the COVID-19 pandemic?

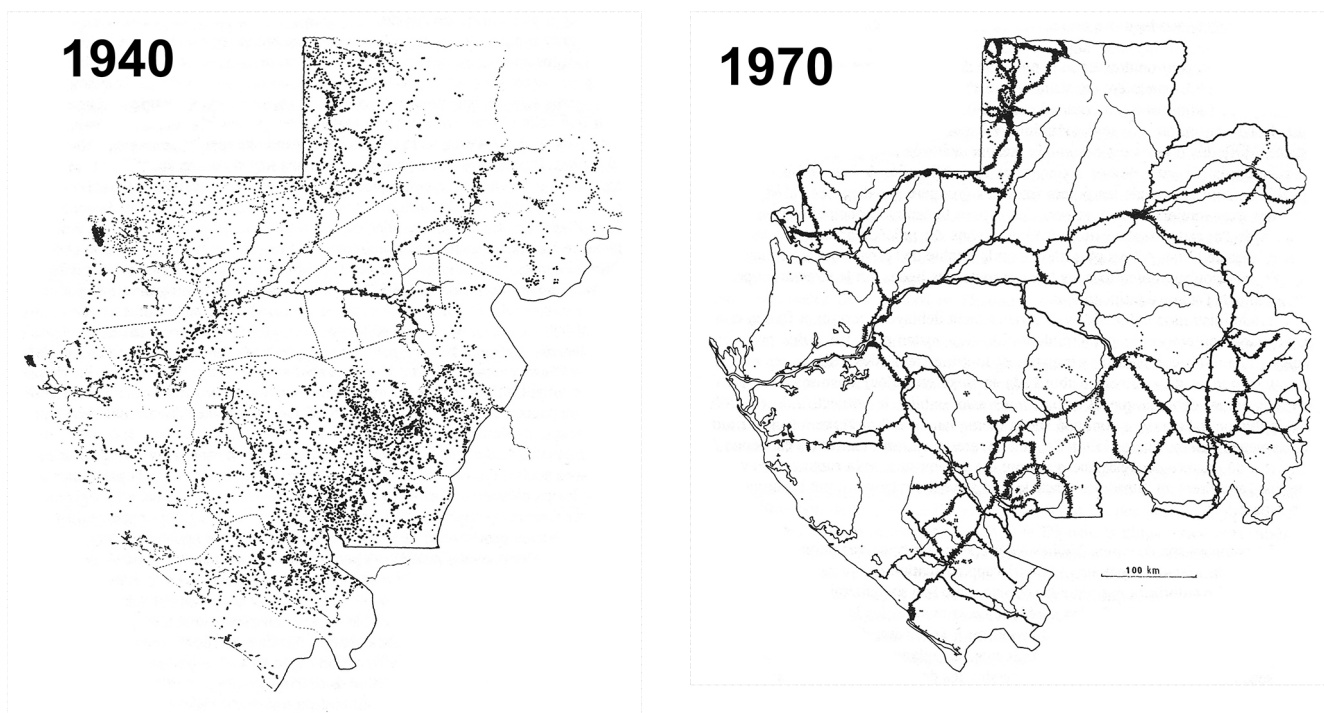
“Nature claims its space back” has been one of the commonest themes of the popular and scientific narrative during the COVID-19 pandemic and lockdowns. Both from considering past epidemics (Hymas et al., 2021) and analysing current patterns (Manenti et al., 2020), this claim appears exaggerated; however different effects occurred on wildlife although short lasting (Derryberry et al., 2020; Koju et al., 2021; Lopucki et al., 2021), suggesting that the actual pressure of humans on the environment is so high that even small reductions can positively affect the distribution and behaviour of animals. Moreover, evolutionary mechanisms can act more quickly than usually expected (Zhu et al., 2018; Melotto et al., 2020). Thus, replicating focused reductions of human impacts and pressures offers potential solutions for specific conservation purposes, at least in the short term. These reductions can both be spatially and temporally limited. An example could be the creation of community protected seascapes, where fishing is limited which can increase the density of fish populations outside these areas (Abesamis & Russ, 2005; Oliver et al., 2015); another example could be the nocturnal ‘lockdown’ of roads in spring to allow migrations of endangered amphibian

species where overpasses and direct rescue are not effective (LeClair et al., 2021).

**Olivier's reply to key point 3** – “Nature claims its space back” puts humans outside of nature, derived from Western religion (Gottlieb, 2006), reinforced in areas such as Africa by European colonial ideology that saw Africa as a wild continent empty of humans (Neumann, 1995). Yet humans are a part of nature, just like any other species, humans are impacted by nature and have an impact on nature. With few exceptions, humans are found in all of nature's environments. Dark earths, archaeological methods and colonial maps (Fig. 1) all attest to the fact that people existed in places that current ecologists previously thought were not populated. If nature and humans have been travelling along history's paths for time immemorial then the question arises, why did they disappear from some areas and how did this impact wildlife and conservation? There is therefore no need for a pandemic in order to investigate the results of totally excluding human presence from an area on wildlife and its implications on conservation.

## CONCLUSION

In conclusion an ecological contextualisation of past historical events should merge and not contrast the



**Figure 1. Population distribution of Gabon in 1940 and 1970. The province of Haute-Ogooué (Southeast) was added to Gabon in 1964 (adapted from Pourtier, 1989 and Sautter, 1966)**

understanding of the effects of the current pandemics and global events involving the conflicts between humans and wildlife. It is not just history that needs to be included in ecological and conservation science, but a whole host of social sciences. We need to climb out of our silos to look around.

Ecologists, entering a new study site empty of human inhabitants, need to make the default assumption that people did inhabit the site at one time. The question is then what happened that resulted in their disappearance, why did humans not come back and what disruptions occurred in the ecology of the site. At the same time, entering into a landscape with high human dominance could lead to the question of what is possible to learn from the past to understand and even plan for the future consequences and changes of such human pressures.

## REFERENCES

- Abesamis, R.A. and Russ, G.R. (2005). Density-dependent spillover from a marine reserve: Long-term evidence. *Ecological Applications*, 15: 1798–2812. DOI: <https://doi.org/10.1890/05-0174>.
- Araghi, F.A. (1995). Global Depeasantization, 1945–1990. *The Sociological Quarterly*, 36: 337–368. DOI: [10.1111/j.1533-8525.1995.tb00443.x](https://doi.org/10.1111/j.1533-8525.1995.tb00443.x).
- Bates, A.E., Primack, R.B., Biggar, B.S., Bird, T.J., Clinton, M.E., Command, R.J., Richards, C., Shellard, M. et al. (2021). Global COVID-19 lockdown highlights humans as both threats and custodians of the environment. *Biological Conservation*, 263: 109175. DOI: <https://doi.org/10.1016/j.biocon.2021.109175>.
- Bates, A.E., Primack, R.B., Moraga, P. and Duarte, C.M. (2020). COVID-19 pandemic and associated lockdown as a “Global Human Confinement Experiment” to investigate biodiversity conservation. *Biological Conservation*, 248: 108665. DOI: <https://doi.org/10.1016/j.biocon.2020.108665>.
- Campbell, L.M. (2005). Overcoming obstacles to interdisciplinary research. *Conservation Biology* 19: 574–577. DOI: <https://doi.org/10.1111/j.1523-1739.2005.00058.x>
- Derryberry, E.P., Phillips, J.N., Derryberry, G.E., Blum, M.J. and Luther, D. (2020). Singing in a silent spring: Birds respond to a half-century soundscape reversion during the COVID-19 shutdown. *Science*, 370: 575–579. DOI: <https://doi.org/10.1126/science.abd5777>.
- Ellis, E.C., Kaplan, J.O., Fuller, D.Q., Vavrus, S., Goldewijk, K.K. and Verburg, P.H. (2013). Used planet: A global history. *Proceedings of the National Academy of Sciences of the United States of America*, 110: 7978–7985 DOI: <https://doi.org/10.1073/pnas.1217241110>.
- Gottlieb, R.S. (2006). *The Oxford Handbook of Religion and Ecology*. Oxford University Press. DOI: [10.1093/oxfordhb/9780195178722.001.0001](https://doi.org/10.1093/oxfordhb/9780195178722.001.0001)
- Hymas, O., Rocha, B., Guerrero, N., Torres, M., Ndong, K. and Walters, G. (2021). There’s nothing new under the sun – lessons conservationists could learn from previous pandemics. *Parks*, 27: 25–40. DOI: <https://doi.org/10.2305/IUCN.CH.2021.PARKS-27-SIOH.en>.
- Kerber, G. (2020). “Everything Is Interrelated” The COVID-19 pandemic and integral ecology. *Ecumenical Review*, 72: 596–608. DOI: <https://doi.org/10.1111/erev.12549>
- Koju, N. P., Kandel, R.C., Acharya, H.B., Dhakal, B.K. and Bhujui, D.R. (2021). COVID-19 lockdown frees wildlife to roam but increases poaching threats in Nepal. *Ecology and Evolution* 11, 9198–9205. DOI: <https://doi.org/10.1002/ece3.7778>.
- Kumar, A., Malla, M.A. and Dubey, A. (2020). With Corona outbreak: Nature started hitting the reset button globally. *Front Public Health*, 8: 569353. DOI: <https://doi.org/10.3389/fpubh.2020.569353>.
- LeClair, G., Chatfield, M.W.H., Wood, Z., Parmelee, J. and Frederick, C.A. (2021). Influence of the COVID-19 pandemic on amphibian road mortality. *Conservation Science and Practice*, 11: e535. DOI: <https://doi.org/10.1111/csp2.535>.
- Lopucki, R., Kitowski, I., Perlinska-Teresiak, M. and Klich, D. (2021). How is wildlife affected by the COVID-19 pandemic? Lockdown effect on the road mortality of hedgehogs. *Animals (Basel)*, 11: 868. DOI: <https://doi.org/10.3390/ani11030868>.
- Lycett, S.J., Duchatel, F. and Digard, P. (2019). A brief history of bird flu. *Philosophical Transactions of the Royal Society B-Biological Sciences*, 374 : 20180257. DOI: <https://doi.org/10.1098/rstb.2018.0257>.
- McElwee, P., Turnout, E., Chiroleu-Assouline, M., Clapp, J., Isehour, C., Jackson, T., Kelemen, E., Miller, D.C., Rusch, G., Spangenberg, J.H., Waldron, A., Baumgartner, R.J., Bleys, B., Howard, M.W., Mungatana, E., Ngo, H., Ring, I. and Santos, R. (2020). Ensuring a post-COVID economic agenda tackles global biodiversity loss. *One Earth*, 3: 448–461. DOI: [10.1016/j.oneear.2020.09.011](https://doi.org/10.1016/j.oneear.2020.09.011)
- Manenti, R., Mori, E., Di Canio, V., Mercurio, S., Picone, M., Caffi, M., Brambilla, M., Ficetola, G. F. and Rubolini, D. (2020). The good, the bad and the ugly of COVID-19 lockdown effects on wildlife conservation: Insights from the first European locked down country. *Biological Conservation*, 249: 108728. DOI: <https://doi.org/10.1016/j.biocon.2020.108728>
- Melotto, A., Manenti, R. and Ficetola G.F. (2020). Rapid adaptation to invasive predators overwhelms natural gradients of intraspecific variation. *Nature Communications*, 11: 3608. DOI: <https://doi.org/10.1038/s41467-020-17406-y>.
- Merton, R.K. (1993). *On the Shoulders of Giants: A Shandean Postscript*. University of Chicago Press ISBN: 978-0226520865. <https://archive.org/details/onshouldersofgia0000mert>
- Morens, D.M., Taubenberger, J.K. and Fauci, A.S. (2021a). A centenary tale of two pandemics: The 1918 influenza pandemic and COVID-19, Part I. *American Journal of Public Health*, 111 : 1086–1094. DOI: <https://doi.org/10.2105/AJPH.2021.306310>.
- Morens, D.M., Taubenberger, J.K. and Fauci, A.S. (2021b). A centenary tale of two pandemics: The 1918 influenza pandemic and COVID-19, Part II. *American Journal of Public Health*, 111: 1267–1272. DOI: <https://doi.org/10.2105/AJPH.2021.306326>.
- Neumann, R.P. (1995). Ways of seeing Africa: Colonial recasting of African society and landscape in Serengeti National Park. *Ecumene*, 2: 149–169. DOI: <https://doi.org/10.1177/147447409500200203>

- Oliver, T.A., Oleson, K.L.L., Ratsimbazafy, H., Raberinary, D., Benbow, S. and Harris, A. (2015). Positive catch & economic benefits of periodic octopus fishery closures: Do effective, narrowly targeted actions 'catalyze' broader management? *PLoS ONE* 10: e0129075. DOI: <https://doi.org/10.1371/journal.pone.0129075>.
- Pourtier, R. (1989). *Le Gabon Tome 2: Etat et Développement*. Paris: L'Harmattan. ISBN 2-7384-0290-9
- Robson, J.P. and Berkes, F. (2011). Exploring some of the myths of land use change: Can rural to urban migration drive declines in biodiversity? *Global Environmental Change*, 21: 844–854. DOI: <https://doi.org/10.1016/j.gloenvcha.2011.04.009>.
- Rutz, C., Loretto, M.C., Bates, A.E., Davidson, S.C., Duarte, C.M., Jetz, W., Johnson, M., Kato, A., Kays, R., Mueller, T., Primack, R.B., Ropert-Coudert, Y., Tucker, M.A., Wikelski, M. and Cagnacci, F. (2020). COVID-19 lockdown allows researchers to quantify the effects of human activity on wildlife. *Nature Ecology & Evolution*, 4: 1156–1159. DOI: <https://doi.org/10.1038/s41559-020-1237-z>.
- Sautter, G. (1966). *De l'Atlantique Au Congo: Une Géographie Du Sous-Peuplement République Du Congo; République Gabonaise*. Paris: La Haye, Mouton.
- Schneider, D.C. (2001). The rise of the concept of scale in ecology. *BioScience*, 51: 545–553. DOI: [https://doi.org/10.1641/0006-3568\(2001\)051\[0545:TROTCO\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2001)051[0545:TROTCO]2.0.CO;2).
- Silva-Rodriguez, E.A., Galvez, N., Swan, G.J.F., Cusack, J.J. and Moreira-Arce, D. (2021). Urban wildlife in times of COVID-19: What can we infer from novel carnivore records in urban areas? *Science of the Total Environment*, 765: 142713. DOI: <https://doi.org/10.1016/j.scitotenv.2020.142713>.
- Stephens, J., Barton, J. and Haslett, T. (2009). Action research: Its history and relationship to scientific methodology. *Systemic Practice and Action Research*, 22: 463–474. DOI: <https://doi.org/10.1007/s11213-009-9147-7>.
- Stokes, G.L., Lynch, A.J., Lowe, B.S., Funge-Smith, S., Valbo-Jorgensen, J. and Smidt, S.J. (2020). COVID-19 pandemic impacts on global inland fisheries. *Proceedings of the National Academy of Sciences of the United States of America*, 117: 29419–29421. DOI: <https://doi.org/10.1073/pnas.2014016117>.
- Tack, P., Cotte, M., Bauters, S., Brun, E., Banerjee, D., Bras, W., Ferrero, C., Delattre, D., Mocella, V. and Vincze, L. (2016). Tracking ink composition on *Herculaneum papyrus* scrolls quantification and speciation of lead by X-ray based techniques and Monte Carlo simulations. *Scientific Reports*, 6: 20763. DOI: <https://doi.org/10.1038/srep20763>.
- Tett, G. (2015). *The Silo Effect. The Peril of Expertise and the Promise of Breaking Down Barriers*. Simon and Schuster.
- Zhu, W., Liu, L.S., Wang, X.G., Gao, X.Y. Jiang, J.P. and Wang, B. (2018). Transcriptomics reveals the molecular processes of light-induced rapid darkening of the non-obligate cave dweller *Oreolalax rhodostigmatus* (Megophryidae, Anura) and their genetic basis of pigmentation strategy. *BMC Genomics* 19: 422. DOI: [10.1186/s12864-018-4790-y](https://doi.org/10.1186/s12864-018-4790-y)

### **Raoul Manenti**

Department of Environmental Science and Policy,  
Università degli Studi di Milano, Milano, Italy

### **Olivier Hymas**

University of Lausanne, Faculty of Geosciences and Environment, Institute of Geography and Sustainability,  
Lausanne, Switzerland