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Reports & Opinions

Impact of the Coronavirus Pandemic on Biodiversity

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ARTICLE INFORMATION

ABSTRACT

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This paper is about Impacts of the corona virus pandemic on biodiversity and our ability to protect it. We focus here on conservation, this is first and foremost a human tragedy, disrupting lives and killing far too many people. Globally, the Covid-19 pandemic affected the environment, placing a strain on the economy and all parts of human society. The effects of Covid-19 are inevitable, as there is a reduction in human pressures on the natural ecosystem because of the lockdown of social and economic activities. At present, essential conservation work (protected area/national park staff still patrol and guard vulnerable species and landscapes) is still ongoing across the globe with the accruing positive effects of the pandemic—reduced air/water pollution, short-term disruption in wildlife trafficking and ecosystem restoration.

Introduction

The COVID-19 pandemic is impacting all parts of human society. Like everyone else, conservation biologists are concerned first with how the pandemic will affect their families, friends, and people around the world. But we also have a duty to think about how it will impact the world's biodiversity and our ability to protect it, as well as how it might affect the training and careers of conservation researchers and practitioners. The Covid-19 pandemic is affecting both the physical and social environment (Corlett et al., 2020). Pandemics are large-scale outbreaks of infectious diseases that increase morbidity and mortality over a wide geographic area and cause significant economic, social, and environmental disruption (Madhav et al., 2017). The Covid-19 case is over 108.2 million and over 2.3 million people dead globally and still counting (World Health Organization, 2021). In the past, several significant diseases and pandemic such as the Spanish flu, SARS, Hong Kong flu, Ebola recorded to cause extensive disruption of the economy and conservation of biodiversity across the world (Madhav et al., 2017). Traveling and integration on the global scale, urbanization, land-use changes, and greater biodiversity exploitation led to the recent increase in pandemics (Wu et al., 2017). The Covid-19 positive and negative consequences on biodiversity resources are predictable as the present pandemic increases according to human population growth globally. Therefore, the undue pressure posed a challenge to the protection and sustainable management of biodiversity and the environment. This paper highlighted the positive and negative effects of the Covid-19 pandemic on biodiversity conservation and the implications of temporary short-term and long-term policies by governments during the pandemic.

Objectives of biodiversity

1. Biodiversity underpins current and future human health, well-being and economic prosperity.
2. Protecting biodiversity is vital for avoiding the next pandemic.
3. While government and business leaders have acknowledged the importance of a “green recovery”, the focus has been predominantly on climate change. Yet biodiversity loss and climate change are challenges of a similar magnitude and urgency, and are fundamentally interlinked. They must be addressed together as part of a broader green and inclusive recovery.
4. The COVID-19 pandemic has led to widespread human and economic losses.

Methods of Biodiversity Conservation

The process of conservation of biodiversity involves sustainable development. It also involves the *in situ* conservation where conserving and protecting the ecosystem will protect the entire biodiversity. At the same time, it includes *ex-situ* conservation, which involves conservation measures when an organism is endangered. Therefore, this means that the conservation methods of biodiversity aim at preservation, maintenance, conservation, recovery.

Protecting conservation biology and biologists during and after the pandemic

Modify learning: Many conservation organizations, both governmental and some NGOs, recruit large numbers of seasonal employees, as short-term local contractors, student interns, and positions are an important source of training, experience, and income for people in the field volunteers, to carry out fieldwork, environmental education, trail maintenance, and other activities. This is conservation biology.

Maintaining research: University laboratories and other research facilities have shut down, ending many lab-based experiments and halting new research. Field research has been similarly impacted, with many field sites no longer accessible, because of travel and entry restrictions, and safety concerns. International travel has become all but impossible, and post-pandemic recovery may be slow if countries maintain entry restrictions. Researchers can no longer conduct field-based social research that requires interviews or focus groups, because of the possibility of disease transmission. Missed research means missed opportunities to identify conservation priorities, monitor the health of endangered species and ecosystems, and provide practical solutions for the protection and sustainable use of resources on which human well-being depends. As with many concerns discussed here, the impact will depend on how long shutdowns last and whether research projects are simply postponed or permanently cancelled.

Adjusting communication and networking: One immediate consequence of the pandemic is that conservation and ecology meetings of all sizes have been cancelled for the next few months, and probably even longer. For many small to medium-sized gatherings, online conferencing technology might provide an effective way for people to meet and exchange ideas. For large conferences—like those held by the Society for Conservation Biology and the Ecological Society involving many thousands of people, online meetings cannot replace the networking and interactions that happen at the in-person conferences. In face-to-face meetings, large venues provide unique opportunities to meet a wide range of people with varied expertise, to explore and learn about the latest developments in the field, and to get feedback on one's own projects.

Biodiversity now

How is the pandemic affecting biodiversity now? It is too early for a definite answer, but communications with our colleagues around the world suggest that essential conservation work is still going ahead. National parks and protected areas in many places are still being patrolled and vulnerable wildlife is still being guarded. This continued protection is a testament to the dedication of protected area staff during an extraordinarily difficult time. There may be problems we have not heard about, but on current evidence, practical conservation appears to be continuing in many places.

There have even been anecdotal reports of reduced human pressures on wild species. In protected areas, declines in visitor numbers caused by travel restrictions and park closures have reduced stresses on sensitive animals and trampling pressure on popular trails. Conservation derives much of its public support from the accessibility of wild nature in protected areas, but reduced human pressures in the most popular parks will be good for sensitive species. We have also seen reports of wild species venturing into rural and urban areas, including parks and beaches, where they have not been seen for many years, as traffic and other human activity declines. In areas where travel is still possible and protected areas remain open, visitation has often greatly increased, reflecting a widespread feeling that activity in a natural setting is both a physical and a mental antidote to the stress of the pandemic.

Conservation going forward

The positive impacts listed above are all likely to be temporary and it is currently not clear how conservation will fare in the aftermath of the pandemic. Noise, air, and water pollution, greenhouse gas emissions, and the many other adverse human impacts on wild nature will rebound, but funding and other support for conservation will have to compete with a wide range of new priorities for financial resources which are likely to be reduced overall, at least in the near future. On the other hand, if conservation must compete for resources, we may find that we have new allies. Experts in emerging infectious diseases have been warning for decades that habitat fragmentation and degradation, and live animal markets, increase the risk of diseases spilling over from wildlife into human populations. The emergence of many of the new scourges of our time—HIV, Ebola, Nipah, SARS, H5N1 and others—can be attributed, at least in part, to increased human impacts on natural systems. Research may need to be triaged; we should probably focus on the highest priority protection, including species recovery and enforcement, but in a way that minimizes negative impacts on education and career development. Researchers who have been studying systems prior to the corona virus pandemic are particularly well placed to monitor these systems during and after the

crisis. Biodiversity loss also means that we are losing, before discovery, many of nature's chemicals and genes, of the kind that have already provided humankind with enormous health benefits.

Impacts on research and conservation.

(A).What kinds of consequences will disruptions to field and lab work during the pandemic have for the species and ecosystems we are studying, monitoring, and protecting?

(B).What effects will reduced human impacts on wildlife and ecosystems during the pandemic have on wild species and ecosystems.

(C).Will conservation budgets be reduced because of the economic fallout from the pandemic.

(D).Will the ban on the capture, trade, and sale of live wild animals for food in China lead to reduced hunting pressure and the recovery of populations in the wild?

(E).How has the pandemic crisis impacted people whose livelihoods depend on conservation and ecotourism, especially local people who live near and inside protected areas?

Impacts on education, training, and networking

What role will innovations in online technology play in conservation learning and science post COVID-19?

Will the move to other models for conferences and networking have a permanent impact on if and how traditional conferences are held, and will these new models affect how research collaborations develop? Can lessons learned about online communication during the pandemic be used to reduce travel-related greenhouse gas emissions in the future?

Positive impacts of pandemic on environment

The rising threat of pandemic has increased awareness to protect the environment, as the cases of positive impact on the quality of air and water has been recorded across the world. The air quality improved due to various reasons, such as lesser travel, via road, air or water transport; closing of industries resulting in declined emissions, etc. The road traffic has reduced immensely, which has literally calmed the planet as there is a reduction in “cultural noise” than it was before the pandemic. (Watts, 2020) The reduced discharge of effluents from industries, and a tab on boats has improved quality of water. As a result, the marine life thrived, and an increased flow was observed in the rivers. The decline in the human interference with nature has given visibility to wildlife which went unacknowledged. The Ridley turtles were spotted in areas earlier abandoned by them to lay eggs. There is an evident change in lifestyle where people have recognized the value of limited resources. Hence, importance is being given to the concept of 3R's (reduce, recycle and reuse). The spiritual experiences and observations of what surround us is welcoming in the time spent in closed spaces with self. However, there were also reports for increased domestic violence cases across the world in this duration, which has to be responded strictly. The lockdown and scarce availability of resources (including food) may reflect in future behaviour in contributions to the society. This may reduce the wastage of resources, which eventually helps with environmental conservation.

Result

Change humanity's relationship with nature. Ecosystems are designed to be self-regulating, meaning they are built to maintain a balance between species and disease in a very natural way that should not be disturbed. This means leaving animals in their natural habitat and preventing the destruction of those habitats.

Conclusion

Impacts of the corona virus pandemic on biodiversity and our ability to protect it, but some preliminary conclusions are possible. At this point, protected areas appear to be safe and, in many places, biodiversity is benefitting from reduced human activities. However, this may not be true everywhere, especially where enforcement has weakened but threats have not. Finally, although we focus here on conservation, this is first and foremost a human tragedy, disrupting lives and killing far too many people. Society's priorities must be human health and the containment of the pandemic, but we also need to be thinking ahead to the resumption of conservation practice and education. There is an opportunity here to remind people of the links between healthy, resilient ecosystems and human well-being.

Recommendations

1. *Adopt a strategic long-term vision* – to make informed choices and considering the consequences of today's decisions, and building resilience against the long-term shocks that will affect the economy, society, and environment.

2. *Strengthen monitoring, reporting and evaluation systems* - to inform the design of coherent and sustainable recovery strategies and adjust recovery measures in light of potential negative effects on sustainable development.

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