

Impact of COVID-19 Pandemic on Ecosystem

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Abstract- The COVID-19 pandemic is a crisis that affects everyone. The ongoing pandemic caused by COVID-19 virus has paralysed everyday life across the globe. To limit spread of infection, the Government of various countries issued a Nationwide lockdown, with increase in COVID cases, more and more biomedical wastes were also produced. With a halt in manufacturing industries and automobiles plying, air pollution levels drops drastically and rare animal sightings were recorded by the media. Water Pollution levels were also recorded to be on the down trend. COVID-19 provides us an opportunity to both revisit our relationship with nature and rebuild a more environmentally responsible world.

Indexed Terms- COVID-19, Ecosystem, Biodiversity.

I. INTRODUCTION

The outbreak of coronavirus disease-2019 (COVID-19) first emerged at the end of December 2019, from the Hunan seafood market in Wuhan City of China, and declared as an international public health emergency in a couple of weeks by the World Health Organization (WHO, 2020a). It is an infectious disease caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) (Islam *et al.*, 2020; Nghiem *et al.*, 2020; Wang *et al.*, 2020).

The SARS-CoV-2 viral particles are spherical and have mushroom shaped protein called spikes protruding from their surface, giving the particle a crown like appearance (Kumari and Shukla, 2020). The spikes bind to the human cells and allowing virus to gain entry. The spike protein of novel corona virus shares 98% sequence identity with the spike protein of bat coronavirus. The researchers found that spike protein of SARS-CoV-2 binds to the cellular receptor called angiotensin converting enzyme 2, which is entry point into human cells (Verma and Prakash, 2020).

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. As editors of Biological Conservation, we have heard first-hand from colleagues, authors, and reviewers around the world about the problems they are facing, and their concerns for their students, their staff, and their research projects. Some of our colleagues have become infected with the virus.

II. IMPACT OF COVID-19 ON ECOSYSTEM

From the beginning of civilization, human beings gradually started manipulating the nature for its own benefit. In order to satisfy the demand of increasing population industrialization and urbanization became inevitable, and the obvious significance was proved to be detrimental on the global climate changes. The desire to drive the nature as per their own whims and desire, human beings started destroying the nature in numerous ways. As an inevitable consequence environment pollution has become a big issue of the present day. It is obvious that environmental pollution will change the distribution and burden of various vector borne infectious diseases including bacterial and viral diseases (Prakash, 2020).

But, due to the unusual outbreak of COVID-19, all local and central administrations restricted the free movement of their citizens outside their home. Various industries are not functioning and all types of travels like airplanes, rails, bus and private vehicle are restricted or cancelled. Due to non-functioning of industries, industrial waste emission has decreased to a large extent (Roy and Chaube, 2021). Vehicles are hardly found on the roads resulting almost zero emission of green-house gases and toxic tiny suspended particles to the environment. Minimal

activity from industrial sites, factories and construction sectors has minimized the risks for toxins to escape, in turn improving air quality. As such, aviation emissions, which accounted for 2.4% of global CO₂ emissions in 2018, according to the Environmental and Energy Study Institute (EESI) have dropped significantly (Prakash and Srivastava, 2020). Even NASA satellites from outer-space show the significant reductions in air pollutants, which supports Eco Watch's observation that the novel coronavirus pandemic has delivered the silver lining of decreased air pollution.

Significant falls in carbon emission in China (18%) and in US (nearly 40%) has been reported during lock down period. China has witnessed a drastic reduction in emission of NO_x, CO₂ and various hydrocarbons during the coronavirus lockdown (2020) as compared to the values last year (2019). Eastern and central China areas showed a significant reduction (10-30%) in NO₂ levels (Kulshrestha, 2020). According to Plumer and Popovich (2020), lockdown due to COVID-19, significant reduction in the air pollution in major cities of United State of America. The lockdown is a highly sustainable approach to reduce the noise and injection of tropospheric and stratospheric pollutants.

Due to lesser demand of power in industries, use of fossil fuels or conventional energy sources have been lowered considerably. Ecosystems are being greatly recovered. In many big cities the inhabitants are experiencing a clear sky and clear river water for the first time in their lives. After the lockdown, a variety of birds are seen in the localities. The pollution level in tourist spots such as forests, sea beaches, hill areas etc. is also shrinking largely. Ozone layer is also reported to be healing. The pandemic has displayed its contrasting consequence on human civilization, in the sense that, on one hand it has executed worldwide destruction, but created a very positive impact on the world environment on the other hand. Thus, the lockdown act as a healing dose for climate change, ozone depletion, human health, brown haze etc.

III. IMPACT OF COVID-19 ON BIODIVERSITY

Biodiversity refers to the existence of a wide variety of plant and animal species in their natural environments or the diversity of plant and animal life in a particular habitat (Prakash and Srivastava, 2019). Nature always favours and promotes the diversity and coexistence among all the organisms by providing suitable environment to all. Human always try to control the environment and its own society in order to get conducive ambience. But due to overexploitation of natural resources, increased anthropogenic activities and human centric environmental approach, we are facing global warming and COVID-19 like unprecedented threats. So, we have to develop environment centric approach to utilize the natural resources in such a manner so that we can achieve the inclusive and sustainable development with coexistence of all other species of organisms of the globe. The lockdown therefore provided us an opportunity to shift our ideology from anthropocentric or human centric worldview to eco-centric worldview.

The emergence of COVID-19 has underscored the fact that when we destroy biodiversity, we destroy the system that supports human life. The more biodiverse an ecosystem is, the more difficult it is for one pathogen to spread rapidly or dominate; whereas, biodiversity loss provides opportunity for pathogens to pass between animals and people. Due to lockdown, a large number of birds including vultures are clearly started to appear. Insect pollinators have appeared in abundance on crops and other plants. All these are good indication for ecological balance and biodiversity. Almost total lockdown due to COVID-19 outbreak has minimized the anthropogenic activities including overexploitation of natural resources. The major human population is bound to live in their homes, automatically prevented to cause various types of pollution. The surrounding environment is reflecting clean and green. We all are observing a clean environment where almost all animals including birds etc. have started to flourish. Almost all humans are feeling healthy without any major clinical problems.

It is too early to evaluate the overall impacts of the coronavirus 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. Thus COVID-19 provides us an opportunity to both revisit our relationship with nature and rebuild a more environmentally responsible world.

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