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The Means by Which COVID-19 Could Cause Extinction of All Life on Earth

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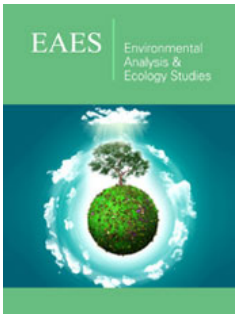

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Abstract

Loss of habitat for human animals on Earth is rapidly approaching. Shortly after habitat for humans is gone, our species will go extinct. The likely route by which near-term human extinction will occur is presented here, taking into account abrupt, irreversible climate change, the ongoing Mass Extinction Event, and the consequences of COVID-19.

Keywords: Abrupt; Irreversible climate change; Aerosol masking effect; Functional extinction; Habitat; Mass Extinction Event; Near-Term Human Extinction

Introduction

Earlier scholarship posed the question [1]: Will COVID-19 trigger extinction of all life on Earth? The current paper focuses on life after the trigger of SARS-CoV-2, with an analysis of the mechanisms and actions likely to follow the novel coronavirus and lead to planetary extinction. I conclude with suggestions about how we can live in light of our near-term demise.

Context

When discussing the concept of near-term human extinction, context matters. Human extinction probably was induced, albeit gradually, when we crossed 2 °C above the 1750 baseline in March, 2020 [2]. After all, an "increase of 1.5 degrees is the maximum the planet can tolerate; … at worst, [such a rise in temperature above the 1750 baseline will cause] the extinction of humankind altogether" [3].

In addition to the rapid contemporary increase in planetary temperature, ongoing and projected rates of change further indicate near-term extinction of Homo sapiens. The projected rate of climate change based on the gradualism assumed by the Intergovernmental Panel on Climate Change (IPCC), outstrips the adaptive response of vertebrates by a factor of 10,000 times [4]. Similarly, mammals cannot evolve rapidly enough to escape the current extinction crisis [5]. Humans are classified as vertebrate mammals, indicating that we will experience a fate similar to the one faced by an estimated 150-200 species of plants and animals each day (United Nations Environment Programme 2010). Loss of human habitat throughout the world draws near.

Earlier research indicates several means by which Homo sapiens could lose habitat on Earth [6]. As with other species that lose habitat, human extinction will follow shortly thereafter [7]. The current analysis describes the probable means by which humans will die as part of the extinction of our species.

Devilish Details

Postulating about the timing of extinction is fraught with peril. Once habitat is irretrievably lost, however, it is safe to assume that human extinction will follow. Extinction is irreversible,

notwithstanding myriad contemporary films and books based on contradictory fantasy.

The following information portrays a likely timeline to human extinction. It represents my educated opinion, based on a long career as a conservation biologist with an interest in the relevant issues of speciation, extinction, and habitat [7].

Habitat for Homo sapiens is already being lost around the globe. For example, lethal wet-bulb temperatures are already causing organ failure and therefore death, contrary to models indicating that such events lie decades in the future [8]. Lethal wet-bulb temperatures will continue to contribute to human extinction, particularly in tropical and subtropical areas.

What about other locations? Will moving to higher latitudes or higher elevations prevent extinction of humans? What about living in an artificial environment until the ongoing Mass Extinction Event ends?

The rapidity of change associated with loss of aerosol masking precludes retention of habitat for human animals anywhere on Earth. In addition, the catastrophic meltdown of the world's nuclear power facilities poses an additional threat to all life on Earth. These two existential threats are described below.

Atmospheric aerosols block incoming sunlight, thereby keeping Earth artificially cool. Reducing industrial activity, hence aerosols, by as little as 20 percent is expected to cause a global-average temperature rise of 1 °C within a few weeks (as reviewed by McPherson 2020a [1]). One means by which aerosol masking could decline is via reduction of industrial activity resulting from SARS-CoV-2. Initial measurements from the SARS-CoV-2 pandemic indicate a 17 percent reduction in daily global carbon dioxide emissions [9]. Whether this reduction in carbon dioxide emissions corresponds directly to a reduction in industrial activity is unknown. However, if this reduction in atmospheric carbon dioxide corresponds directly to industrial activity, then the change is like to drive a global-average spike in temperature sufficient to cause loss of habitat for humans in the near term.

Essential workers at nuclear power plants will stop working voluntarily or disappear as a result of human extinction. The absence of skilled workers will lead to the uncontrolled meltdown of nuclear power plants and therefore cause lethal mutations that result from widespread ionizing radiation. Such an event will destroy the plants at the base of the terrestrial food web, thus leading to loss of all organisms that depends upon plants [10].

How quickly will habitat for human animals disappear from Earth? Earth is in the midst of abrupt, irreversible climate change [11]. The ongoing rate of temperature rise indicates that the climate of Earth will resemble that of the Pliocene Epoch as early as 2030, even ignoring the aerosol masking effect and many self-reinforcing feedback loops. The mid-Pliocene was more than 2 °C warmer than contemporary Earth. The rate of change foreseen by Burke et al. [11] is occurring rapidly enough to assure the inability of vertebrates and mammals to adapt, thus leading to extinction of humans and most other life on Earth well before 2030.

I am not suggesting there will be humans on Earth in 2030. Rather, it seems unlikely there will be any life on Earth at, or shortly after, that time. The annihilation of all life on Earth, based on the idea of co-extinctions, is predicted to occur with a 5-6 °C rise in global temperature. This outcome results from "the obvious conclusion that a consumer cannot survive without its resources" [12]. Such a rise in global temperature will result from the forthcoming ice-free Arctic Ocean and its immediate impacts, or perhaps from other phenomena currently under way and accelerating [7].

How will all humans die within this relative short period of time? As already indicated, many more people will die from lethal wet-bulb temperatures [8]. Once industrial civilization ceases, millions of people currently dependent upon municipal water supplies will die from dehydration. Millions more will die from starvation, as suggested by "the obvious conclusion that a consumer cannot survive without its resources" [12]. Given the poor behavior exhibited by the mass of humans in the light of relatively minor inconveniences, it is easy to imagine additional means of death, including homicide (for cannibalism or access to items deemed valuable).

What about life in a bunker? Considering the inability to secure food beyond the bunker, it seems unlikely that such a life would prove worthy of the pursuit. Marinating in ionizing radiation as food and water run out would be quite unpleasant. Adding to the potential misery of "survivors" is the conclusion that recovery from the post-Cretaceous Mass Extinction Event some 65 million years ago required about 10 million years for the living planet to recover [13].

In summary, the future of life on Earth appears grim and short. How we respond to this diagnosis depends upon each of us. I recommend living urgently and intentionally, while pursuing excellence and love [6,14].

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