

# Vertebrate species populations in dramatic decline

Philip Guelpa  
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An alarming new study, the Living Planet Report 2016, prepared by researchers from the World Wildlife Fund and the Zoological Society of London, projects that by the year 2020, little more than three years from now, the population abundance of vertebrate species around the world will have dropped by two-thirds from what it was in 1970.

This dramatic decline encompasses species of fish, amphibians, reptiles, birds, and mammals. Invertebrates and plants are, undoubtedly suffering similar effects, as demonstrated by the recently reported death of a large portion of the Great Barrier Reef in Australia, a 2,300-kilometer-long system of coral reefs, which is a UNESCO World Heritage Site, and has existed for 25 million years.

The rate of decline shows no sign of slowing. Between 1970 and 2012, a span of 42 years, the overall vertebrate population abundance (the total numbers of animals for each species) dropped by 58 percent, according to the study. By 2020, only another eight years, that figure is expected to reach a 67 percent decrease. If this pace were to continue, total extinction (a decrease of 100 percent) would be reached by the middle of the 21st century. These figures are based on a large data set, the Living Planet Index (LPI), derived from the monitoring of 14,000 animal populations that encompass 3,700 species. While some level of uncertainty is to be expected when attempting to assess such a large and complex phenomenon, the general trend is clear.

This dramatic decline is mainly attributed to a combination of climate change, environmental pollution, the human-facilitated spread of diseases, over-exploitation, and habitat destruction. Vertebrate populations are clearly under tremendous stress, as indicated by the substantial decreases in population

sizes. The report identifies freshwater environments—rivers and lakes—as being the hardest hit, with an 81 percent decline in species abundance between 1970 and 2012. Terrestrial species abundance has fallen by 38 percent and marine species abundance by 36 percent.

Living Planet Report 2016 is but one of many studies in recent years that have identified a dramatic trend toward species decline and extinction.

The scale of the devastation documented in the 2016 LPR, occurring over a span of only 50 years, is on a trajectory to rival the five previous mass extinctions of life on earth. However, whereas the previous events were caused by a variety of natural processes, this impending sixth extinction is conclusively attributable to the anarchic development of the capitalist economy, which mindlessly pursues profit without regard to the consequences to society or nature.

In attempting to explain the forces driving these dramatic animal population declines, the Living Planet Report refers only to empirical trends such as human population growth, increases in carbon dioxide emissions and fertilizer consumption and the like, and offers only vague remedies such as the adoption of an “Earth system perspective.” No reference is made to the fact that decisions regarding industrial growth, resource exploitation, the development of more efficient technologies, and a whole range of other economic issues that affect the environment are made by the financial and corporate elites, a tiny minority of the world’s population, to protect their own interests.

The effects of unplanned development, undertaken with little or no scientific assessment of potential impacts to the environment, did not begin in 1970. Human activities have caused disruption of natural communities for thousands of years, beginning with the

development of agriculture. However, these effects have accelerated dramatically in scope and scale over the last several centuries, with the development of capitalism and the industrial revolution. The rate of change has now reached a qualitative transition, reaching a pace never before seen. The consequences of this hyper-acceleration cannot be precisely predicted, but will undoubtedly cause substantial disruption of both natural ecosystems and human communities.

Biological communities exist as complex, dynamic systems of interaction between a whole range of organisms, from top vertebrate predators to microorganisms, as well as the components of the physical environment in which they exist. The rapid removal, both quantitatively and qualitatively (i.e., by extinction) of growing numbers of species from this dialectical relationship renders such systems increasingly unstable and prone to catastrophic collapse.

This fundamental shift is now being officially recognized by the scientific community. Based on research spanning over two centuries, scientists have developed a chronological framework to study the development of life on earth. Successive periods of evolutionary change are defined, at least in part, by the existence of more or less distinct groupings of organisms, reflecting significant changes in the earth's fauna. The most recent major subdivision, the Cenozoic, termed the Age of Mammals, spans roughly the last 65 million years (i.e., since the extinction of the dinosaurs). It, in turn, is comprised of a series of smaller units (each spanning millions of years). The latest three are the Pliocene, Pleistocene, and Holocene, which encompass the evolution of human beings. The Pleistocene alone lasted roughly 2.5 million years.

The Holocene, characterized by the existence of the modern suite of mammals, began only 12,000 years ago, following the end of the last ice age. Therefore, compared to the length of previous periods, it has barely begun. Nevertheless, using the same procedure of defining geologic periods based on assemblages of species, some scientists have in recent years proposed that the Holocene has now ended and that a new period, the Anthropocene, has begun. The use of the prefix "anthro," the Greek word for man, in the name, is intended to indicate that humans have now become a major factor in both biological evolution and the linked

process of climate and environmental change.

Human science and technology have reached the point at which we now have an unprecedented capacity both to develop a much deeper understanding of the complexities of natural ecological systems and rationally plan an economy that takes this understanding into account in order to substantially reduce its impact on the natural world while, at the same time, meeting human needs.

However, unless capitalism is replaced by a planned socialist economy, and in relatively short order at that, the extreme negative effects of anarchic development make it highly likely that the natural systems which are fundamental to the maintenance of a livable planet will suffer drastic, and perhaps irreversible, degradation. Efforts by the rival capitalist nation states to address climate change and environmental degradation have been feeble and ineffective. The LPR 2016 report is a warning that the future of life on earth hangs in the balance.



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