The health effects of climate change impacts on biodiversity

The world's ecosystems, its living diversity and the goods and services it provides, are the life support systems upon which all of us depend. This is easily forgotten or taken for granted in a world where a rapidly growing population is increasingly urbanised, and where aspirations towards higher standards of living are often confused with improving quality of life. Our long-term good health is currently at risk due to the continuing loss of biodiversity and the global degradation of ecosystems. Anthropogenic climate change – caused by human activities which increase the atmopspheric concentration of energy-trapping gases – is increasingly seen as a driver of biodiversity loss and a threat to ecosystem sustainability.

Recently, the U.N. has stated that the biodiversity crisis is as significant, if not more so, than climate change as a threat to human well-being and to the global economic system. Climate change will exacerbate the rate of biodiversity loss, as species and ecosystems struggle to adapt to rates of change far greater than any period since pre-history, and species and ecosystems already under pressure from human activities are particularly vulnerable. Disturbances that will affect both wildlife and humans, such as drought, fires, floods and outbreaks of certain pests and diseases, are expected to become more frequent in the coming decades as a result of climate change.

Recognising the linkages between ecosystem health, human health and climate change, the World Health Organisation has stated that "climate change is a significant and emerging threat to public health, and changes the way we must look at protecting vulnerable populations." Increasingly, we see that it is the poor and vulnberable in society that bear the burden of ecosystem change and climate change impacts.

Disaster risk

It has been estimated that 75 % of disasters are triggered by weather-related events, and that the frequency of such events will increase as the result of climate change. Climate change is expected to increase the severity of natural events such as floods, landslides, droughts, heat waves, fire and storms. Where critical and fragile ecosystems are impacted by changes in weather patterns, or already damaged by human activity, communities are likely to be at greater risk. Recent evidence of this has been seen in the increased severity of storm damage, including landslides and flooding, resulting from deforestation and wetland reclamation.

Food and nutritional insecurity, non-communicable disease

Increased risks of species extinction, as well as drought, storms, floods and landslides, may affect essential food resources and the health of agricultural systems. This could lead to failures of harvests, loss of livelihoods, malnutrition and famine, with subsequent increased risks of non-communicable disease. Climate change is also likely to have a severe impact on ocean and aquatic ecosystems, affecting fishery resources that are already heavily impacted by overharvesting or pollution. Some communities have strong cultural associations with migratory species, which they may rely on for food or trade, and which may be significantly affected by climate change. Others have particular cultural traditions around the preparation and storage of foods – such as open air drying of wild caught fish in certain Arctic communities – which may be no-longer viable as a result of shifting temperature and rainfall patterns.

Increased infectious disease risk

Impacts on ecosystem structure and function may change the ecology of infectious disease organisms, or alter patterns of distribution of pathogens or their vectors, including changes in migratory behaviour. Some species may become more abundant as a direct result of shifts in seasonal weather patterns, while other species which are normally non-pathogenic or are normally associated with latent infection may cause disease in plants, animals and humans as ecological balance is affected. People, livestock, crops and wild species may also become more vulnerable to infection if they are subjected to heat stress, or water or nutritional deficiencies. Forced migration (climate refugees) and associated lack of basic sanitation and water resources may also facilitate the spread of disease.

Loss of important medicinal resources

Extinctions and the spread of diseases in wildlife could threaten many important medical resources, including undiscovered or unexplored species of potential significance to medicine or medical research. Marine species may be particularly vulnerable to the impacts of increased sea temperatures and acidification, and many plants and animals currently of value to traditional and modern medicine are believed to be at risk. The ongoing global declines in amphibian populations, including many species of interest to medical science, have been exacerbated by outbreaks of fungal infections which have caused the extinction of at least one species, and which may have been triggered by climate change.

The issue of climate change and its impacts upon humans and ecosystems is a critical area for co-operation between the health and biodiversity communities – protecting vulnerable wildlife populations and ecosystems can have direct benefits to the communities they support. But to date the linkages between these two sectors has been limited.

The COHAB Initiative urges the parties to the Convention on Biological Diversity and the member states of the World Health Organisation to build a closer collaboration on these issues, in order to mainstream biodiversity concerns and conservation strategies into local, national and global policy and action to mitigate and adapt to the health implications of climate change.

About COHAB

The COHAB Initiative (Co-operation on Health and Biodiversity) is an international programme of work established to address the gaps in awareness, policy and action on the links between human health and well-being and the conservation of biological diversity. The Secretariat of the COHAB Initiative is based in Galway, Ireland. Visit www.cohabnet.org or email info@cohabnet.org for more information.

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