

Planet Earth and the Collapse of the Global Biosphere: The Loss of Terrestrial Ecosystems

By [Glen Barry](#)

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An important scientific journal article published today finds that 66% of Earth's land area must be maintained as natural and agro-ecological ecosystems to sustain a livable environment. Yet about 50% have already been lost, threatening global biosphere collapse. In describing the paper, author Dr. Glen Barry suggests the Ebola epidemic, California drought, and Middle East revolutions indicate planetary boundaries have been exceeded.

New science finds that two-thirds of Earth's land-based ecosystems must be protected to sustain the biosphere long-term. Yet about one-half of Earth's natural ecosystems have already been lost. The scientific review article by Dr. Glen Barry – entitled “Terrestrial ecosystem loss and biosphere collapse” – was published today in the international journal “Management of Environmental Quality”.

The paper proposes terrestrial ecosystem loss as the tenth ecological planetary boundary (along with climate change, biodiversity loss, and nitrogen deposition which have already been exceeded, and six others nearing the limit). It is proposed that 66% of Earth's land – 44% as intact natural ecosystems and 22% as agro-ecological buffers – must remain intact to sustain the biosphere. This would require ending industrial primary forest logging and restoring old-growth forests to reconnect fragmented landscapes and bioregions. It is necessary to remain within planetary boundaries to ensure humanity continues to be surrounded by a healthy natural environment adequate to sustain the biosphere as well as local livelihoods and well-being.

“The emerging Ebola epidemic, California drought, and Middle East civil strife are all indicative of what occurs when planetary ecological boundaries remain unrecognized and are surpassed. It is my hope this paper illustrates the absolute necessity of protecting and restoring large, connected old-growth forests and other natural ecosystems, buffered by agro-ecological ecosystems, to ensure Earth remains habitable,” states Dr. Barry.

“For the future of the human family and all life, all necessary actions must be taken to protect natural ecosystems and eliminate fossil fuel emissions, in order to avert biosphere collapse and achieve global ecological sustainability.”

Dr. Barry is an internationally recognized political ecologist, data scientist, and writer living in Madison, and near Green Bay, Wisconsin. He is well-known within the environmental community as a leading global ecological visionary, public intellectual, and environmental policy critic. The abstract can be found, and the paper purchased here: <http://www.emeraldinsight.com/fwd.htm?id=aob&ini=aob&doi=10.1108/MEQ-06-2013->

[0069](#) (the media can email the author for a copy to report upon).

The paper proposes the first measurable and spatially explicit terrestrial ecosystem loss threshold as part of planetary boundary science. What ecological science knows about biodiversity and old-growth forest loss, abrupt climate change, and ecosystem collapse is reviewed. It is suggested patterns of habitat fragmentation identified in ecosystems and landscapes – that ecological systems “percolate” to a new simplified state and often collapse when ~40% are lost, and noting the critical role of habitat connectivity – also hold true for the biosphere (the sum total of global ecosystems).

Building upon the planetary boundary scientific tradition, the scientific purpose of the journal article “is to propose a measurable terrestrial ecosystem boundary to answer the question: what extent of landscapes, bioregions, continents, and the global Earth System must remain as connected and intact core ecological areas and agro-ecological buffers to sustain local and regional ecosystem services as well as the biosphere commons?”

Dr. Barry proposes a new planetary boundary threshold: “...that across scales 60 percent of terrestrial ecosystems must remain, setting the boundary at 66 percent as a precaution, to maintain key biogeochemical processes that sustain the biosphere and for ecosystems to remain the context for human endeavors. Strict protection is proposed for 44 percent of global land, 22 percent as agro-ecological buffers, and 33 percent as zones of sustainable human use.”

Excerpts of the paper’s conclusion include:

“It is prudent not to dismiss the possibility that the Earth System – the biosphere – could die if critical thresholds are crossed... Humanity’s well-being depends upon complex ecosystems that support life on our planet, yet we are consuming the biophysical foundation of civilization... Scientists need to take greater latitude in proposing solutions that lie outside the current political paradigms and sovereign powers... By not considering revolutionary change, we dismiss all options outside the dominant growth-based oligarchies”. Dr. Barry goes on to propose a revolutionary global carbon tax to “establish and protect large and connected core ecological areas, buffers, and agro-ecological transition zones throughout all of Earth’s bioregions.”


[1] Rockstrom et al (2009a), “A safe operating space for humanity”, Nature, Vol. 461 No. 7263.

For more information and how to support Dr. Glen Barry’s pioneering work in political ecology please visit: <http://EcolInternet.org/>

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