

Environmental Limits

All natural systems and species demonstrate some degree of tolerance to natural or human-caused disturbances. However the ability of humans, as well as other species, to survive and maintain a healthy existence is constrained by environmental limits, which now occur at several geographic scales.

Environmental limits are those thresholds, which if exceeded, cause major damages to either humans or natural systems; if severe enough the exceedence can cause the collapse of a species or whole ecosystem. (Note: The natural variation in sensitivity among individual members of a species make the environmental limits harder to determine).

A familiar example has been the growth of air and water pollution at local and regional scales from human activities which may produce more pollutant emissions than can be safely assimilated by airsheds and bodies of water, respectively. At some threshold of ambient concentration, air pollution will cause sickness, disease and even death to significant portions of a human population and also will cause major damage to forests and crops. Similarly, at some threshold, water pollution, either leading to toxic episodes or depletion of oxygen, can result in fishkills and major disturbances to ecosystems. With respect to ecosystems, another form of “environmental limit” may simply be overharvesting a population or converting habitat beyond a threshold at which the population will be able to sustain itself.

What is of unprecedented concern, now in the 21st century, is the ability of humans to threaten truly global environmental limits. The combination of population growth, advanced technologies and economic demands has already caused global damage to the long-term stability of the atmospheric ozone layer, tropical rainforests and ecosystems, ocean fish stocks and coral ecosystems. Now rapidly increasing emissions of greenhouse gases (primarily carbon dioxide and methane) are causing global climate change in the form of increased temperatures, drought, severe storms and wildfires, which also promise severe damages to terrestrial and marine habitat and ecosystems and major extinctions of species.

Environmental Limits: Up Close and Personal

As noted above, many of the important environmental limits now occur on regional and global scales. Although these may seem rather complicated, distant and detached from everyday life, there are nevertheless many things which individuals can do to help protect and sustain the ambient environment:

- (1) Look for wood products and furniture which have been certified as production from sustainable forest practices or from (domestic) beetle-kill trees.
- (2) Work to reduce your household carbon footprint, including energy consumption and household waste generation.
- (3) Take care that food and clothing items are not derived from endangered species.
- (4) Support conservation organizations which seek to promote the protection and sustainable use of important habitat in tropical forest regions.
- (5) Support government and private efforts to preserve wilderness habitat.