

# ECOLOGY IN 2020

**Robert D. Holt**

*Department of Biology, University of Florida*

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The greatest practical challenge facing ecologists over the next decade is that much of what we wish to study may vanish before we can really fathom it. The planet is increasingly dominated by ersatz ecosystems — human-sculpted landscapes occupied by haphazard assemblies of introduced species and tolerant natives. These are legitimate objects of study, but there are considerable practical, aesthetic and moral costs of losing natural ecosystems before we can even fully document and understand them.

A key task will be to predict and mitigate this loss of biodiversity and the degradation of ecosystem function. One step is to gauge the resilience of ecological networks such as food webs — in particular, their capacity to withstand disturbance and species loss. This will require insights from many disciplines. Stable isotope analysis and genetic bar-coding should provide a clearer picture of who eats whom in a community.

Change takes place at multiple levels, from individuals to populations, to spatially linked ecosystems. I predict that by 2020, ecological theory will be increasingly concerned with the often subtle biological details of organisms, as well as the implications of evolutionary dynamics. Microbial ecology will become mainstream. At the same time, it will be essential to look at how species and communities fit into Earth's history. In a decade's time, ecology will be viewed both as a core part of biology, and increasingly as an essential dimension of the Earth sciences.