

# Using Ants to Monitor Environmental Change

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Ecological assemblages are in a constant state of flux. Individuals reproduce and die. Populations cycle and are buffeted by factors ranging from random to predictable. Species are introduced and go extinct. Parts of the landscape are disturbed and recover. The role of human perturbation in this dynamic is not new, nor is it restricted to advanced industrial societies. But the availability of cheap energy combined with human population pressures has produced agriculture, urbanization, and resource extraction on a grand scale. As a result, habitats are increasingly changed and fragmented. Introduced species invade these disturbed areas and infiltrate pristine habitats. Waste products that result from the production and use of this “cheap” energy accumulate in the soil, water, and atmosphere.

## The Challenge

Society calls upon the ecologist and resource manager primarily to do two things. First, we are asked to monitor extant, pristine environments and warn society of looming change. But ecosystems naturally vary in almost every property. We require a detailed “baseline” so as not to cry wolf every time a population dips or becomes locally extinct. In other words, ecologists need an *expectation of normalcy* and a protocol to achieve it. Second, ecologists and resource managers are presented with degraded ecosystems in various stages of recovery and asked to evaluate the reconstruction of these ecosystems.

Central to both endeavors is an understanding of the variability inherent in ecosystems. But