

SOLS SNIPPETS



What makes a population viable?

Leah Gerber

Assistant Professor, Ecology, Evolution and Environmental Sciences

My research program integrates field work and modeling to address critical questions at the interface of science and conservation policy. We develop approaches to connect scientific uncertainty to decision-making in **endangered species recovery, marine reserve design, and disease and conservation**. My approach integrates a field program aimed at estimating key parameters that may be incorporated into models that are useful for decision-making.

Our work has focused on empirical and theoretical aspects of marine reserves and linking disease into population analyses. I have also initiated a long-term research program on integrating behavior and conservation, with sea lions in the Gulf of



California, as a study system. This work has developed into an international program involving Arizona State University undergraduate and graduate students, conservation organizations and Mexican natural resource agencies.

Funding from: NSF Biological Oceanography, Animal Behavior, International Programs; The David and Lucile Packard Foundation, The Tinker Foundation, Conservation International, World Wildlife Fund.

What plants and lichen tell us about air pollution?

Thomas Nash III

Professor, Curator of the Arizona State University Lichen Herbarium



How do we recognize and describe similarity?

Two broad themes dominate our research: studies of the effects of air pollution on plants, and studies of the biology of lichens, symbiotic organisms that dominate over 10% of terrestrial North America.

We have examined vascular plants around Arizona's copper smelters and tree rings along the Columbia River (British Columbia/Washington) whose well-documented pollution record provide a unique model for long-term SO2 dose-response relationships.

Lichens are also excellent indicators of air pollution, because they are dependent on atmospheric sources of nutrients. We have conducted extensive laboratory and field investigations to document both occurrence of pollution and its effects. We have also conducted

basic field studies on photosynthesis, respiration and nitrogen fixation in Alaska, Arizona, and California, and controlled fumigation tests of lichen to help elucidate the basic response mechanisms of plants to gaseous pollutants.

Systematic studies conducted in our lab over the last 15 years have examined the lichen flora of a large region centered on the Sonoran Desert. More than 80 experts from 20 countries have mounted 14 major expeditions throughout the target region. Specimens are collected and databased (<http://seinet.asu.edu/collections/selection.jsp>) and descriptions and identification keys are being published for nearly 2000 species of lichens and lichenicolous fungi in three volumes of books. For North America, it's the first complete lichen flora available for such a large region outside of the Arctic.

Funding from: NSF, EPA, DOE, Alexander von Humboldt Foundation (Germany), NPS, USDA-Forest Service, BLM.