

The Global Demise of Springs Ecosystems: Who's to Blame?

Lawrence E. Stevens, Director, Museum of Northern Arizona Springs Stewardship Institute, 3101 N. Ft. Valley Rd., Flagstaff, AZ 86001; Larry@SpringStewardship.org

Abstract: Springs ecosystems are among the most biologically and culturally diverse, productive, and threatened ecosystems on earth, occurring in abundance in both terrestrial and subaqueous settings. Springs support disproportionately large numbers of rare and endangered species, and springs ecosystem goods and services include high quality water, vegetation, fauna, habitat, mineral deposits, and recreation, other economic, and aesthetic and spiritual resources. However, springs have been broadly neglected or overlooked by modern society, land management agencies, and the scientific community. In this talk I describe five reasons that contribute to this unusually broad neglect of springs. 1) As the language of science, homology in English results in confusion of springs with mechanical devices and seasons. Also related to language, the scientific community has not agreed on a lexicon to describe springs classification, identification of rare types, and assemblage characteristics. 2) Federal policy in the United States and elsewhere excludes consideration of groundwater-dependence among wetland ecosystems, resulting in failure to recognize springs as wetlands, thereby excluding springs from consideration in federal habitat management. 3) Springs are complex, highly individualistic, multi-gradient, linked aquatic and riparian ecosystems that have long been regarded as hydrologic features, and only relatively recently as ecohydrological systems. Such complexity and multi-dimensionality generates the need for interdisciplinary research teams and led, in relation to (2) above, confusion over appropriate funding agencies, further limiting research. 4) Although ecosystem ecology was first thoroughly explored at Silver Springs in Florida, (2) and (3) have led to a lack of scientific interest in springs ecosystem ecology. 5) The legal emphasis on appropriation of “every last drop”, and policy-based separation of surface and ground waters (2 above) has engendered a highly polarized public sentiment to ever more jealously guard private water rights and ignore appropriate ecosystem management practices. The result of these interacting factors has been systematic state-based, national, and global neglect and degradation of springs ecosystems, with estimates of levels of ecological impairment exceeding 90 percent in many regions, and undocumented extinctions of springs-dependent species. By describing the reasons for, and extent of this neglect, we hope to renew public, scientific, and governmental awareness and interest in springs ecosystems, whose ecological importance in landscape, water, natural, and cultural resource integrity, function, and management warrants consideration of a global springs ecosystem stewardship initiative.