

Western Ecological Research Center <http://www.werc.usgs.gov>

Research Support for Urban-Wildland Planning in Southern California

Southern California is a region characterized by both unparalleled natural biodiversity, and an enormous human population whose continued growth and expansion threaten many native species and habitats. As a result, this region has more endangered and threatened species than any other area in the continental United States, and once-extensive natural communities, many of which are unique to the area, have been reduced to fragmented remnants. Conserving natural areas and the species reliant upon them in this rapidly urbanizing area has greatly challenged managers.

Historically, wildlife protection has taken the form of single-species management as provided for under the Endangered Species Act (ESA). There is a growing shift towards multi-species and habitat-based planning in the form of habitat conservation plans (HCPs), legal agreements that are promoting protection under the ESA. The most recent generation of HCPs emerged with the incorporation into California law of the Natural Communities Conservation Planning (NCCP) program in 1991. The pilot project of this ambitious program focuses on protection of coastal sage scrub communities within a 6,000-square-mile planning area spanning five southern California counties. This planning effort is the subject of a USGS study and research support for partner agencies. USGS, in collaboration with the University of California,



Red diamond rattlesnake: a declining species. Photo: C. Brown

Research is still needed on:

- Life history for species documented as declining
- Edge effects impacting reserves
- Exotic species invasions into natural habitat
- Monitoring program development to ensure that reserves are functioning

San Diego, is conducting research on the ecology and conservation biology of reptiles and amphibians. This work focuses on determining habitat-use, seasonal activity patterns, diversity patterns, timing of reproduction, and other life-history parameters for all the species that occur in the study area. Stations within more than 30 study sites across this region are monitored ten days every two months. To date, 46 native species, representing more than 36,000 amphibians and reptiles have been captured, marked and released at the sites of capture.

A major discovery of this work is that several of the species considered sensitive at the onset of the study, including the orange-throated whiptail, are widespread and abundant at certain sites, including isolated reserves, and would be adequately protected under some new HCPs. Totally unpredicted was the magnitude of local extirpation of several other species, primarily snakes, over the last 70 years. Habitat fragmentation by roads and death from vehicular traffic may be one of the causes of these declines. Vehicular traffic has increased significantly this century and is projected to continue as urban populations expand, further threatening these reserves.

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