

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

## The Response and Recovery of Animals and Plants to the 2003 and 2007 San Diego County Wildfires

The U.S. Geological Survey is investigating how plant and animal communities are responding to and recovering from the massive 2003 and 2007 San Diego County wildfires. The taxa being investigated include vegetation, invertebrates (selected terrestrial macro-invertebrate taxa and ants) and vertebrates (reptiles, amphibians, small mammals, birds, bats, and carnivores). Investigations include comparisons of post-burn conditions to pre-burn baseline conditions and comparisons of responses of the various taxa between burned and unburned control sites based on available pre-burn data and data collected over the multi-year study. The goal of this study is to inform future land management/planning, reserve design, and monitoring decisions to include considerations of the effects of large wildfires on the biological community structure and function, especially those species covered by habitat conservation plans such as the San Diego County Multiple Species Conservation Program (MSCP).

*Satellite imagery of the massive Santa Ana-driven 2003 southern California wildfires (Image courtesy of Jacques Descloitres, MODIS Rapid Response Team at NASA GSFC).*



*Example of post-fire succession at a pitfall trap array burned during the Cedar Fire. Photo taken approximately 18 months prior to fire.*



*Photo taken at same pitfall trap array approximately one month after the fire.*



*Photo taken at same pitfall trap array approximately 18 months after the fire.*





## Products:

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- Rochester, C.J., Brehme, C.S., Clark, D.R., Stokes, D.C., Hathaway, S.A., and R.N. Fisher. In press. **Reptile and amphibian responses to large-scale wildfires in southern California.** Journal of Herpetology *In press*.
- Brown, C.W., Mitrovich, M.J., Rochester, C.J., and R.N. Fisher. 2010. **Effects of large-scale wildfires on the scorpion and solifugid communities of the San Diego MSCP region.** U.S. Geological Survey Data Summary prepared for San Diego Association of Governments. 45 pp.
- Turschak, G.M., Rochester, C.J., Hathaway, S.A., Stokes, D.C., Haas, C.D., and R.N. Fisher. 2010. **Effects of large-scale wildfire on carnivores in San Diego County, California.** U.S. Geological Survey Data Summary prepared for San Diego Association of Governments. 36 pp.
- Rochester, C.J., Mitrovich, M.J., Clark, D.R., Mendelsohn, M.B., Stokes, D.C., and R.N. Fisher. 2010. **Plant community responses to large-scale wildfires in southern California.** U.S. Geological Survey Data Summary prepared for San Diego Association of Governments. 88 pp.
- Rochester, C.J., Backlin, A.R., Stokes, D.C., Mitrovich, M.J., Brehme, C.S., and R.N. Fisher. 2010. **Bat communities of Rancho Jamul Ecological Reserve and Santa Ysabel Open Space Preserve before and after the 2003 wildfires.** U.S. Geological Survey Data Summary prepared for San Diego Association of Governments. 57 pp.
- Brehme, C.S., Clark, D.R., Rochester, C.J., and R.N. Fisher. In review. **Effects of large-scale wildfires on rodents in southern California.** Submitted Journal of Mammalogy.
- Matsuda, T., Turschak, G., Brehme, C., Rochester, C., and R. Fisher. In review. **Effects of large-scale wildfire on ground foraging ants (Hymenoptera: Formicidae) in southern California.** Submitted Environmental Entomology.

## Key Findings:

- Bats and carnivores show little measurable effect of wildfires. Recommendation – discontinue investigating these taxa.
- Birds show some changes in community structure post-burn. Some species increased or decreased in detection. Few scrub species showed significant declines in scrub habitat. Recommendation – revisit point counts in future if habitat recovers.
- Small mammals, ants, reptiles, and amphibians showed increases in generalists, and decreases in closed habitat specialists. Several species common prior to fires are still absent from burned sites. Recommendation – continue monitoring pitfall trap arrays. Re-trap small mammals using Sherman traps. Sort additional ant samples already collected.
- Coastal sage scrub and chaparral habitats changed drastically post-burn and have yet to recover. Specific species such as California sagebrush and California buckwheat declined drastically. Recommendation – continue to monitor transects at pitfall trap sites.

### For more information, contact:

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