

Teaming up to track down endangered species

By Michelle O'Herron



JESSICA WEINBERG, NATIONAL PARK SERVICE

AS THE LONGTIME PARTNER OF THE GOLDEN GATE

National Recreation Area, the Golden Gate National Parks Conservancy's Park Stewardship Program has contributed tens of thousands of hours of staff and volunteer time to the park. In 2011 alone, they planted 39,323 plants, managed 188 acres (76 ha) of invasive species, and engaged 7,045 volunteers who gave 61,734 hours.

Impressive though these numbers are, there is another side to the Park Stewardship Program that few people know about: its contributions to park science. Data from the program's long-term monitoring of endangered mission blue (*Icaricia icarioides missio-nensis*) and San Bruno elfin (*Callophrys mossii bayensis*) butterflies and threatened California red-legged frogs (*Rana daytonii*) have been used to inform park management decisions and assess the success of restoration projects aimed at helping these species.

Mission blue butterflies

Each spring, National Park Service (NPS) and Golden Gate National Parks Conservancy biologists and trained interns walk

Figure 1. An endangered male mission blue butterfly nectars on a newly blossomed native yarrow plant (*Achillea millefolium*).

established transects through the park's scrub-laced grasslands looking for mission blue butterflies at some of the few remaining places where this species can still be found (fig. 1). Seventeen years of mission blue monitoring in the Marin Headlands north of San Francisco, and at Milagra Ridge to the south of the city, have revealed wide fluctuations in butterfly numbers, but an overall decreasing trend at both sites.

Program staff also maps mission blue habitat and tracks outbreaks of a fungal pathogen that, in a wet year, can decimate entire swaths of the butterflies' preferred lupine host plant. Data indicate that periodic, dramatic dips in mission blue population numbers may be related to these pathogen outbreaks.

As a result, the National Park Service and the Conservancy have begun a project to diversify single species lupine stands by interplanting two other lupine host plant species that are less susceptible to the pathogen. Future monitoring should help reveal if this provides a buffer for the butterflies during the next pathogen outbreak.



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Figure 2. An endangered San Bruno elfin caterpillar and its Pacific stonecrop host plant make a colorful pair along windy northern slopes in the Golden Gate National Recreation Area.

San Bruno elfin butterflies

Widespread development and habitat loss have forced the San Bruno elfin butterfly into just a few isolated places along the San Francisco peninsula where rocky, wind-swept northern slopes support their preferred host plant, Pacific stonecrop (*Sedum divergens*) (fig. 2). Since 1999, monitoring of San Bruno elfin caterpillars on park lands by Conservancy staff and volunteers has tracked wide population fluctuations, including an apparent local extinction of the species in 2007–2009.

In 2010, relieved monitors found a handful of caterpillars, and in 2011, counts jumped to numbers never before seen at the site. It is too soon to tell if this increase signals a turning point for the San Bruno elfin or if it is merely part of a natural population cycle.

Survey results are sent to the National Park Service, the U.S. Fish and Wildlife Service, and local land managers who are keeping a close eye on this species. Photo monitoring points will help track the condition of San Bruno elfin habitat, but because the butterflies seem to be making a comeback, no further management actions are planned at this time.



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Figure 3. Federally threatened California red-legged frog egg masses like these are counted by NPS and Golden Gate National Parks Conservancy staff members throughout park lands.

California red-legged frogs

In the winter, Conservancy and NPS staff monitors trends in abundance of threatened California red-legged frogs by counting egg masses in park ponds and slow-moving waters (fig. 3). These data are used to track breeding population size over time and have been helpful in assessing the success of wetland habitat enhancement projects.

Monitoring results from the southern end of the park at Mori Point have shown that with the construction of new ponds, egg mass numbers increased from just three in 2003–2004 to 128 in 2010–2011. Egg mass data and juvenile surveys from NPS monitoring north of San Francisco also indicate that there are small breeding populations in two recently restored watersheds.

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