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# Science by the Sea

## Natural Resources and Science in the Mediterranean Coast Network Summer/Fall 2017

### Volunteers Take On Invasive Plant to Restore Zuma Canyon



Ninety-three volunteers pulled carnation spurge in Zuma Canyon for a total of 267 volunteer hours this summer. Volunteers and Ecohelpers will have another chance to pitch in this winter, when 2,000 native seedlings will need to be planted in the cleared areas. NPS.

Populations of an aggressive and toxic invasive plant have been exploding in Southern California over the last decade. Known as carnation spurge (*Euphorbia terracina*), the plant is native to Europe and a fairly recent California arrival. It started colonizing disturbed coastal sites in the early to mid-1980s. The first reports of it in the Santa Monica Mountains National Recreation Area are from Solstice Canyon in 1987.

Solstice Canyon is also where park ecologists discovered that restored native vegetation does a decent job of keeping carnation spurge at bay. As a result, the recreation area's restoration ecologist,

Joey Algiers, set out this year to intensify restoration efforts along trails at Zuma Canyon, a park site in Malibu that has also been dealing with carnation spurge infestations. While high school students in the Ecohelpers program have worked since 2005 to help keep the infestations under control, Joey knew he needed more hands. The park advertised four weed-pulling volunteer events early this summer, and the community response was amazing! [Learn more.](#)

## What the Beeps Tell Us: Tracking Rattlesnakes at Cabrillo National Monument

“Beep...beep...beep”

Wielding a rather large antenna connected to a small, radio-like box, researcher Roman Nava listens closely to the faint pings emitted from the receiver in his hand. The young herpetologist maneuvers the metal wand back and forth tracking the sound – the closer together the beeps, the closer we are getting.

“She’s this way,” Roman breaks the silence as he tromps down the hillside into the coastal sage. I decide to watch from the safety of the ridge.

A Masters student in the Department of Biology at San Diego State University (SDSU), Roman works in the lab of Population Ecologist Dr. Rulon Clark.

One of the main goals of this lab group is to understand how animal populations are connected and restructured as an effect of human habitat fragmentation. In Roman’s case he focuses on one of Cabrillo’s top predators – the Southern Pacific Rattlesnake (*Crotalus oreganus helleri*). **Keep reading.**



Masters student Roman Nava using radio telemetry to track down the location of a tagged Southern Pacific rattlesnake. NPS / Alex Warneke.

## Scorpion Rock: A Model of Seabird Restoration Success



Cassin's auklets use their wings to “fly” underwater to depths of more than 100 feet in pursuit of small crustaceans. When they come ashore to breed, they need habitat that is free of land predators, and that has either crevices to nest in, or vegetation and soil to build burrows in.

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For Cassin's auklets, good nesting habitat must have lots of natural crevices or lend itself to the construction of nest burrows. Scorpion Rock was great for burrowing until crystalline iceplant, an invasive species, began driving out native vegetation and triggering soil erosion. Between 2008 and 2012, the Montrose Settlements Restoration Program sponsored a huge push to remove crystalline iceplant from Scorpion Rock, help native species take root, and stem erosion. David Mazurkiewicz, a seabird biologist with Channel Islands National Park, lead the effort. His team of staff and volunteers planted more than 9,000 native plants of 21 different species on Scorpion Rock over a four year period.

Many plants did not survive the harsh island conditions, but everyone remained

hopeful and persistent. By 2012, invasive plants covered less than 3% of the Scorpion Rock, down from 94% in 2008, and native species covered 58%. Today, native plant cover is even higher, at around 70%. David's team also found more than



two dozen natural nest burrows this year, up from a low of about a half-dozen. Biologists are now undertaking on a new project to restore seabird nesting habitat on East Anacapa Island, based largely on what worked at Scorpion Rock. [Read more](#) on the web.

## Researchers Investigate Link Between Rodenticides and Mange in Bobcats

National Park Service wildlife biologists have been studying bobcats in and around Santa Monica Mountains National Recreation Area for over 20 years. In 2002, many of their study animals began dying of notoedric mange, a disease caused by a skin mite (*Notoedres cati*). The disease was thought to be mostly non-lethal—mange had only rarely killed wild cats in the past. Further investigation revealed a promising lead. Besides having mange, 100% of the dead bobcats had rat poisons known as anticoagulant rodenticides in their systems. As evidence for a connection grew, park biologists speculated that high susceptibility to severe mange was a sort of rodenticide exposure side effect. Still, a specific account of how rodenticide exposure increases mange susceptibility



A healthy bobcat, ear-tagged and examined as a part of a Santa Monica Mountains National Recreation Area study that began in 1996. The study examines the behavior, ecology and conservation of bobcats. In 2002, study animals began turning up dead with severe cases of mange. NPS.

remained elusive. Now, researchers are closing in on an explanation. Laurel Serieys, a former park intern who recently completed her PhD at UCLA, studied 65 health parameters and found that bobcats exposed to rodenticides had dysfunctional immune systems. Devaughn Fraser, a UCLA graduate student, drew a similar conclusion using genetic research techniques. She found that rodenticide exposure seems to alter how genes are expressed, including for a host of genes related to immune function. Now she is working on another experiment that could tell us even more. [Get the full story.](#)

## Microplastics on National Park Beaches



Staff collect sand samples at Cabrillo National Monument. Testing revealed that Cabrillo sand had the lowest average concentration of microplastics of all of the West Coast parks studied. Point Reyes and

Every beachgoer has probably noticed plastic trash littering their favorite beaches, however remote. A new study of microplastic distribution on national park beaches indicates that whichever one you visit, there is probably also some amount of plastic that goes unnoticed, mixed in with the sand between your toes. The study, funded by the NOAA Marine Debris Program, and led by the National Park Service and Clemson University, provides a snapshot of microplastic concentrations at 37 beaches in 35 parks throughout the country. Microplastics were found on

Golden Gate had the highest. NPS.

every beach sampled, nearly all in microfiber form. Certain Pacific Island

and Great Lakes beaches had the highest concentrations, while some remote beaches in Alaska had the lowest. West Coast beaches generally had more moderate microplastic concentrations. Among the West Coast beaches sampled, three of the four lowest microplastic concentrations were recorded in Southern California national parks. In fact, Cabrillo National Monument had one of the lowest average microplastic concentrations recorded in the entire study. [Find out](#) how other California park beaches fared.

## Events & Announcements

### Cabrillo National Monument "Naturally Speaking" Science Education Series

- [The Amazing World of Bats – Nature’s Tiny Fighter Jets](#), Don Endicott - November 30, 6 – 8 pm
- [Life on the Rocks – The Geology of the Point Loma Peninsula](#), Dr. Stephen Schellenberg - December 14, 6 – 8 pm
- [Nature in Balance – The Delicate Balancing Act of Resources Management in the NPS](#), Superintendent Andrea Compton - January 18, 6 – 8 pm

Additional Cabrillo National Monument events and event details are available from the park's [schedule of events](#).

### Channel Islands "From Shore to Sea" Lectures

- [Santa Rosa Island Mammoth Discovery](#), Justin Wilkins New Insights into the Story of the Lone Woman - December 14, 7 pm

For further details about these free talks at the the Channel Islands National Park Robert J. Lagomarsino Visitor Center, visit <https://www.nps.gov/chis/planyourvisit/from-shore-to-sea.htm>.

### Upcoming Santa Monica Mountains Events

- [Medicinal Plant Walk with Jim Adams, PhD @ Anthony C. Beilenson Interagency Visitor Center](#) - November 18, 9:30 am – 3:00 pm
- [Rambling Raptors and Hovering Hawks @ Rancho Sierra Vista](#) - November 25, 8:30 am – 11:00 am
- [Birds of the Santa Monica Mountains at the King Gillette Ranch @ Anthony C. Beilenson Interagency Visitor Center](#) - December 2, 8:30 am – 10:00 am

Additional events and event details are available from the Santa Monica Mountains National Recreation Area [schedule of events](#).

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