

The

EXPLORER

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*Newsletter of
Cabrillo National Monument
and the Cabrillo Monument Foundation*

The coastal sage scrub ecosystem

*By Terry DiMattio, Superintendent,
Cabrillo National Monument*

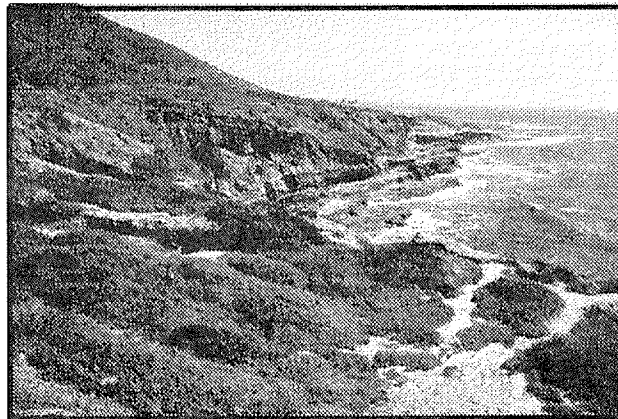
Spring is here at Cabrillo National Monument. Everywhere you look there is evidence that the season of rebirth and growth has arrived.

The lemonadeberry and toyon are sporting new stems. The bright yellow blossoms of the *Encelia californica* and *Coreopsis* are waving in the breeze, and the red of the Indian paintbrush catches your eye as you walk the Bayside Trail. There is a hint of sage in the air, and the baby ground squirrels are becoming bolder and starting to venture further from their burrows. It will not be long before we have reports from our visitors that they have seen lizards and snakes sunning themselves on the warm concrete.

This issue is about the coastal sage scrub ecosystem that endures on Point Loma. There are, in fact, five native habitats on Point Loma: southern foredune, southern coastal bluff scrub, maritime succulent scrub, Diegan coastal sage scrub, and south-

ern maritime chaparral. The U.S. Fish and Wildlife Service considers each of them to be sensitive and in need of protection. Compared to what once existed in southern California and what once existed in the four other Mediterranean coast ecosystems around the

world, these habitat types are very rare. Due to the growth in population over the last 50 years and the need to provide these people with the homes and services they need, only a small percentage of the



coastal sage scrub habitat that once existed in this region exists today. The same climate that nurtures coastal sage scrub—warm, dry summers and moderate winters with relatively little rain—attracts people who want to live and play near the ocean.

The result has been the steady decline and loss of coastal sage scrub habitat. The Natural Diversity Data Base (NDDB) has identified coastal sage



Springtime in the coastal sage scrub

We're focusing on the coastal sage scrub ecosystem in this edition of the *Explorer*, and we invite you to come out to the monument and examine it in person! Take a walk on the Bayside Trail or drive down the hill

toward the tidepools. Look back up at the hillside to see the display of greens and yellows. Then look closely at the plants around you to see small blooms of purple, red, white and pink. Springtime has arrived!

We offer a free **natural history checklist** and **bird checklist** in our visitor center, which will help you to identify species of plants, birds, reptiles, and mammals while exploring the monument. We also offer **ranger-led talks** about the coastal sage scrub. For times, check the schedule in the visitor center or call the information desk at (619) 557-5450.

Welcome to the coastal sage scrub!
And welcome spring!

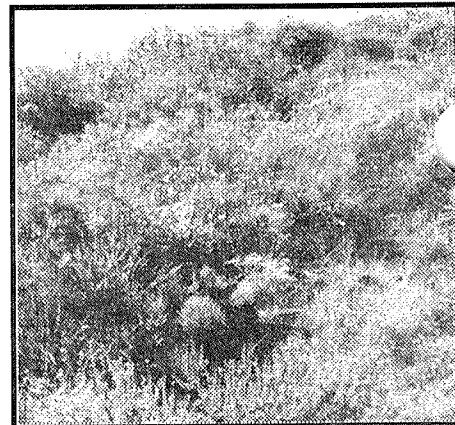
Patricia Heusner,
Editor



scrub habitat as one of the most threatened habitat types in the world. Not only is it one of the most threatened, but it is also one of the most biologically diverse habitat types in the world. There are hundreds of different native plants and animals that call coastal sage scrub habitat home. There are more threatened and endangered species in coastal sage scrub habitat than in any other on the continental United States.

This may be hard to believe. After all, it does not look that inviting or interesting. For most of the year it is dull, gray-brown or deep, lackluster green. There are no tall trees, no lofty pines or massive sequoias. There is no charismatic megafauna—no bison, moose, elk, or deer, no big-horn sheep, black bear, or grizzly.

Still, it deserves our attention and care. The city and county of San Diego have created the Multiple Species Conservation Program, or MSCP for short. This is an effort to set aside over 170,000 acres of undisturbed habitat while at the same time, providing for the county's continued growth. On Point Loma we are doing something similar, only on a much smaller scale. In 1995, the Navy, Coast Guard, Department of Veterans Affairs, the City of San Diego, and the National Park Service signed a memorandum of understanding (MOU) with the U.S. Fish and Wildlife Service. We each agreed to set aside some of the native habitat within our boundaries in an ecological reserve and, unless absolutely necessary, not build within the reserve. Our goal is to ensure that these five sensitive habitats that exist within the reserve are preserved in perpetuity. As with the MSCP, there is a practical purpose for the reserve. It serves as long-term mitigation for construction projects outside the reserve. Another purpose is to avoid incremental habitat loss, offer a certain amount of protection for Federally listed threatened and endangered species, and provide long-term habitat conservation. If any of us needs to build in undisturbed habitat, we can set aside land within the reserve to offset, or mitigate, the loss of native habitat. Or, we can add land to the reserve or restore disturbed habitat to mitigate for this loss.



Caring for the Point Loma Ecological Reserve has been more of a challenge than I imagined.

At this time, approximately 660 acres of the almost 1500 acres within the Federal reservation on Point Loma are in the reserve. Since inception, the Navy has added several parcels and we have added one small parcel. The Veterans Administration is about to remove some land from the reserve on the east side of the cemetery so it can build new columbaria, and, as called for in the MOU, add land it owns on the west side so there is no overall loss of acreage.

Caring for the Point Loma Ecological Reserve has been more of a challenge than I imagined. While we all share a common desire to preserve the native habitats on Point Loma, each of us has our own mission to accomplish. This is a voluntary union that we have all joined, and we are free to depart. None of us gets extra money to care for the reserve. In fact, we always seem to be looking for funds to remove exotic vegetation, to restore disturbed habitat, or define the reserve boundary on the ground. In the almost seven years of the reserve's existence we have discussed a number of issues as we try to reach consensus. We five landowners, along with the FWS, meet every other month. We discuss projects that

may affect the reserve, studies/research being conducted within and adjacent to the reserve, proposed adjustments to the reserve, and restoration projects. In the process, we are defining how we can work together to ensure the perpetuation of

this unique ecosystem on Point Loma while recognizing and appreciating that each of us has our own unique mission that needs to be achieved. Only by working together can we hope to preserve the biodiversity of these sensitive and increasingly rare

habitats on Point Loma so our children's children can enjoy watching the wildflowers bloom in the spring and the red-tailed hawk soaring on the breeze.

Confessions of a marine biologist lost in the scrub

by Bonnie Becker, Marine Biologist, CNM

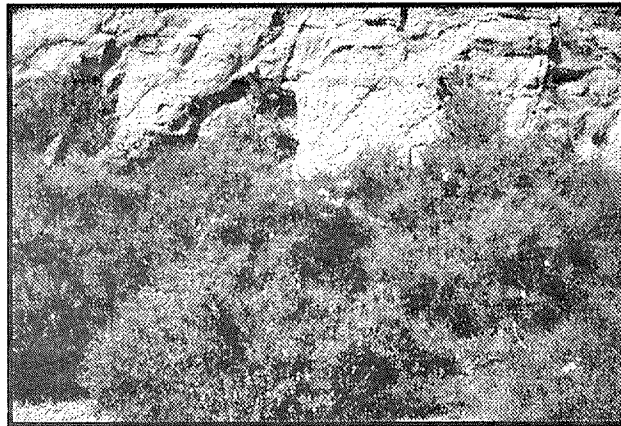
I admit it. For many years, I have had my head in the water. The wonderful tan and sage hues on the hills above the tidepools make a spectacular backdrop for my work there. I appreciated this community for its beauty, both visual and olfactory, but I didn't know much about it. As the park Marine Biologist, I could tell you about the three species of Tegula snails in the park, but I couldn't tell chamise from ceanothus!

Last year I decided to lift my head up, dive into the scrub and learn the species in my free time. I am very far from being an expert botanist, but I have managed to learn many of the common plants in the park. Because I am such a novice, I think I can offer some sound advice for other "botanist-wannabes" who are new to this community. There are many ways to learn species, but these are my suggestions:

Getting started

- *Find a good book.* Field guides vary a lot, and they do not all serve the same purposes. The Jepson Manual is a very large, comprehensive tome that is indispensable for botanists and other ecologists. However, it is not intended to be used in the field by amateur—it is too heavy, and too difficult to access at first. Spend some time browsing books, looking for ones that have good pictures, a local focus, and are easy to carry. I like *Coastal Sage Scrub Plants* by Albert

Grennan and *Flowering Plants of the Santa Monica Mountains* by Nancy Dale. But there are more out there for you to discover. The Cabrillo National Monument Foundation Book Store, the San Diego Natural History Museum, or the Torrey Pines State Reserve Visitors' Center are good



places to look for relevant books.

- Don't get intimidated by jargon. Jargon serves a purpose—it is much easier for the author to write "leaves alternate and serrate" than "leaves with little serrations along the edges, and oriented along the branch on the opposite side of the next leaf, but not directly across from it." See what I mean?

Unfortunately, this shorthand can make it difficult for you to use a field guide, since it is not very interesting to memorize these words before you learn the plants, and you cannot learn the plants until you learn these words. I suggest finding a good, illustrated glossary—either in your field guide

or at the library. Photocopy it and keep it handy, folded and stuck into your field guide.

- *Get some help.* My first day in the scrub was very frustrating. I kept getting confused between plants that I thought should look very different, such as chamise and baccharis. I would think we had learned one and then stumbled upon another that looked a little similar and then get confused again.

Then I spoke to Ranger Marty Lane, who mentioned that baccharis leaves are flat and chamise leaves are small, succulent nubs that are round in cross-section. *Voila!* A few minutes with someone who knows something about plants can get you off on the right foot. Alternatively, looking for native plant gardens with labeled specimens

can be very helpful. Look for helpful plaques at Cabrillo and at the Visitors' Center in Torrey Pines.

- *Start small.* Learn a few easy and common plants, like encelia (yellow flowers with dark centers), lemonadeberry (large shrub with leathery leaves), black sage (oh, that smell) and yerba santa (very distinct shape). Then hike around and look for them for a while. You will have a sense of satisfaction in being able to recognize some plants, and will naturally become curious and encouraged to learn some more. Spend some time in the plant community, get some air, smell the smells. The plants will come gradually. Learning plants

should be fun!

• *Season matters.* Although it is possible to see plants all year, it is far easier and more rewarding to look for them when they are green and flowering. Our Mediterranean climate is characterized by dry summers and wetter winters, and most of these plants are adapted to drop leaves and generally look brown and boring when it is dry. They can take advantage of rain quickly and will bloom and grow in spurts after the rainy season. We have had the wettest winter in years, and the plants are looking great right now. So get out there ASAP!

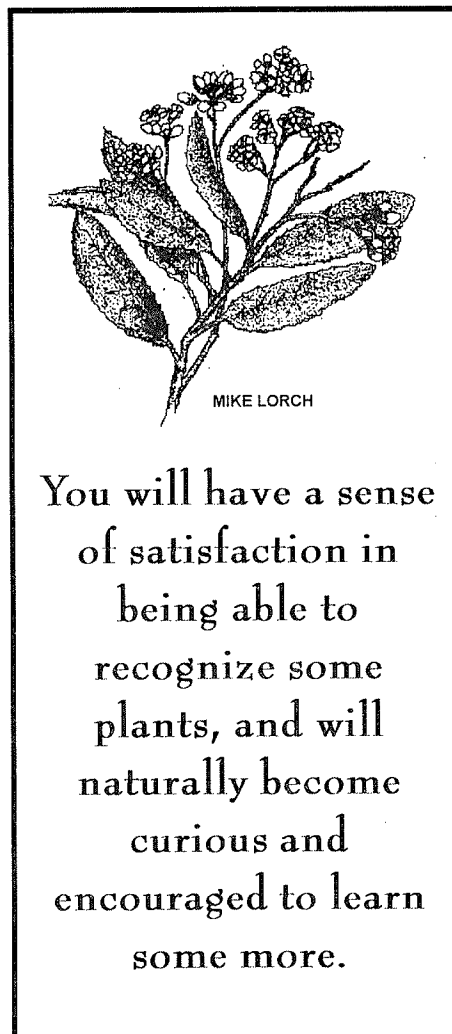
Learning Plants

• *Associations help.* Try to link a plant to a characteristic you can remember. Laurel sumac leaves look like taco shells. Mohave yucca grows on a trunk. Sagebrush has feathery leaves and smells like sage. It won't work all the time, but I find it's effective to look for something unique about a plant.

• *Learn what it does.* If you know more about a plant's role in the community, its special adaptations, or its human uses, you are more likely to want to remember it. Put the plant in context, and you will start to recognize patterns. Is it found on sunny slopes? Do you normally see it near specific plants? Is it an exotic species? Check the Cabrillo NM webpage for a list of common species with interesting natural history information.

• *Scientific or common names?* Many people are intimidated by the Latin and Greek tongue-twisters associated with each species. These scientific names serve a very important purpose, since they are standardized. To prove this to yourself, flip through a few guidebooks and try to look up chamise. You will quickly notice that one author's chamise is another author's greasewood. But they all use the same scientific name, *Adenostoma fasciculatum*. Can you see how the variety of common names can get really confusing?

That said, I find it is much easier to associate a plant to its common name first. Usually, I learn the scientific names later (using flash cards), using the common name as a link. This is a matter of personal prefer-



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ence, but if you are getting bogged down in scientific names, you might want to follow this suggestion.

Taking botany to the next level

Now that you know most of the major plants, you might want to learn more about rare plants, or put your knowledge to use!

• *Different books.* Remember when I said that different field guides serve different purposes? I have found that I can outgrow books, or that books that seemed too detailed for me at one point become ideal for me later. Revisit the store and the library, since there are many resources out there to learn more.

• *Join a group.* There are lots of people who love coastal sage scrub plants, and you might consider joining an organized group. The California Native Plant Society and the San Diego Natural History Museum have interesting meetings and programs you can attend.

And of course, there are many

ways you can use your new skills as a volunteer here at Cabrillo! Contact Volunteer Coordinator Marcy Marquez (marcy_marquez@nps.gov) and we'll put you to work.

I believe that the best way to learn about natural history is to spend time and observe nature. For me, the first step toward being able to see patterns and behaviors in a community is to learn who the main players are in that system. The suggestions above are specific to learning plant names, but the same general principles will hold true with most other taxa. Now that you have tackled the coastal sage scrub, you are primed to learn about birds, marine invertebrates, or small mammals. Dive in!

As your understanding of the community grows deeper, you will find that the experience you have in nature will grow richer. Happy botanizing!

For more information, and lists of suggested resources:

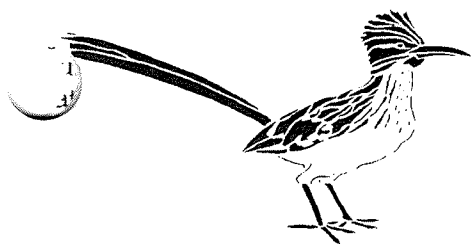
Cabrillo National Monument—
Coastal Sage Scrub
<http://www.nps.gov/cabr/florafau.html>

California Native Plant Society
<http://www.cnpssd.org/index.html>

San Diego Natural History
Museum—Plants page
<http://www.sdnhm.org/fieldguide/plants/index.html>

Torrey Pines State Reserve—Plants
page
<http://www.torreypine.org/tpplants.htm>

Point Loma Native Plant Garden
<http://watershare.mp.usbr.gov/resources/gardens/details.cfm?GardenID=58>



COOing around the CSS with roadrunners

by Mark Mendelsohn

Mark Mendelsohn, a graduate student at San Diego State University and biologist with the U.S. Geological Survey, began a study on local roadrunner populations in 2003. His study aims to closely analyze the effects of habitat fragmentation on this species in San Diego County. He will survey for roadrunners in about 30 of the county's public open spaces, including Point Loma Ecological Reserve. In the future, he plans on attaching radiotransmitters to the birds. These radio-signal-emitting backpacks will help Mark investigate the constraints juveniles must face in dispersing across fragmented lands to set up their own territories. So if you see Mark looking for roadrunners out at Cabrillo, give him a wave, but please...avoid the temptation to holler out "Meep! Meep!"



or riparian corridors on their hunting voyages. Additionally, just because you don't see a roadrunner itself, doesn't mean you can't study the dirt for its classic "K" or "X" footprints.

This unique bird, also known as *el paisano* (compatriot / fellow countryman) or *correcaminos* "runner of the road" in Mexico, the chaparral cock in Texas, and the war bird, snake eater, or medicine bird by Native Americans, has earned many

ing as, and quite similar to, our familiar mourning dove. Sorry, but not too much about the cartoon roadrunner, including its vocalizations, are very biologically correct.

What is it about this member of the large, worldwide Cuckoo family that makes it so different from most other southern California shrubland birds, and causes it to require such large areas of native habitat? When it comes to territory requirements, roadrunners are not like most passerines (perching songbirds). On average, each roadrunner pair requires and fiercely defends 124 acres of prime southern California native scrub habitat—an area two-thirds the size of Sea World San Diego! For comparison, the federally threatened California gnatcatcher requires less than 25 acres of CSS. Roadrunners are also relatively large birds, measuring 24 inches in length from bill to tail-tip and weighing 2/3 of a pound. They are voracious omnivores, consuming a diverse prey base of arthropods, lizards, snakes, mice, other birds, and cactus or other fruits. Finally, as you may know, roadrunners are non-migratory and primarily move around by walking or running rather than flying, which limits how they find open spaces in which to live.

These characteristics—their size, diet, year-round residency, and land-bound nature—all combine to make large patches of native habitat critical for the survival of roadrunners. Furthermore, since roadrunners eat many different animals that in turn consume many other food items, they act as top predators in the ecosystem. So, it fulfills a critical position in the food web, just like the



nicknames because of its distinctive characteristics. For example, it runs at speeds up to 15 mph and kills and eats everything from grasshoppers to rattlesnakes. Often giving it a comical appearance, the bird can raise its blue-black crest (head feathers) and foot-long tail, and expose its blue-orange-white facial skin at will. Its song of five low-frequency, downward slurring "coo" notes is intriguing, although it sounds nearly as depress-

An animal that you may have been fortunate enough to spot while hiking or driving around the back country is the Greater Roadrunner (*Geococcyx californianus*). This well-liked bird maintains large territories (compared to most other local birds, reptiles, or mammals) in coastal southern California, nearly always containing coastal sage scrub (CSS). Some of its favorite prey—such as horned lizards and whiptails—and preferred nesting vegetation, such as prickly-pear cactus, are fellow inhabitants of this plant community. If you see a roadrunner outside of CSS, look around—it's probably not that far to stand of sagebrush, sage, buckwheat, cholla and prickly-pear cactus, sumac, yucca, and/or jojoba. Roadrunners will also use roads or paths created by large mammals (including humans), as well as edges of fields

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coyote, mountain lion, and golden eagle. These species are responsible for helping to keep the balance in an ecosystem. The presence of natural predators and resources in a system regulates the populations of many species over time. Thus, without protecting large areas of open, natural lands, we are in danger of losing not only top predators, but also many species with which they interact.

Southern Californians seem to have an affinity for the roadrunner, their friend of the backcountry. Everyone has a sighting to report, whether yesterday on a hike or 15 years ago in her/his backyard. The best action you can take to defend roadrunners is to support the establishment of new, large reserves and wildlife corridors, especially those associated with the ongoing habitat-conservation programs in our area. Enjoy roadrunners and their amusing habits in their native settings, and pass this appreciation on to others. Roadrunners may not exist anymore at the Point Loma Ecological Reserve (which includes Cabrillo National Monument) because the native habitat on the peninsula may be too isolated from larger tracts of open space, due to urban development. However, there is still much to be learned about this popular, but uncommon, bird.

To learn more about the roadrunner, visit the California Partners in Flight Greater Roadrunner Species Account by Pete Famolaro online at

<http://www.prbo.org/calpif/htmldocs/species/scrub/grroacct.html>.



Contribute your roadrunner sightings to exciting scientific research! Please email Mark the date, time, exact location, number of roadrunners, your name, and any other relevant notes to:

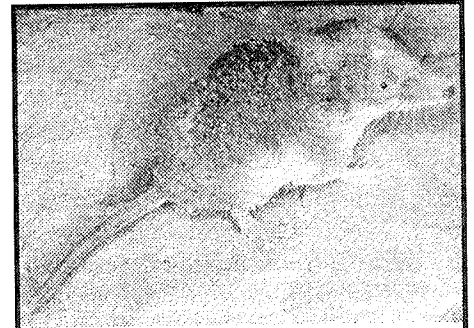
mmendels33@hotmail.com
and mmendelsohn@usgs.gov.

Thanks!

Coastal sage scrub spotlight: the desert shrew *by Tiffany Luas*

The coastal sage scrub habitat houses many creatures that thrive in its Mediterranean climate characterized by dry warm summers and cool damp winters. The structure of the scrub provides shade to these creatures, protecting them from overheating and providing cover which keeps them out of view of predators. During our herpetology surveys, we find many types of organisms utilizing the brush and soil in the coastal sage environment. A few are: striped racer snakes, rattlesnakes, alligator lizards, side-blotched lizards, salamanders, mice, desert shrews, and many terrestrial arthropods. One of these organisms, the desert shrew (*Notiosorex crawfordi*), is often found in our herpetology traps, yet when people hear we have shrews, they are often surprised. At first glance one would think the desert shrew is a gentle and timid creature. However, the shrew's metabolism forces it to be a vicious predator.

The desert shrew is a small mammal similar to a mouse, but much smaller in size. It has dark gray fur on top, pale gray fur underneath. A few characteristics to note when determining whether an animal is a shrew or a mouse are the size, the snout length, and the eye size. The shrew is much smaller than a mouse. The average length of the desert shrew (including its tail) is 3.5 inches, and its tail is only about 1/3 of its total size. The shrew also has a more pronounced pointed snout than a mouse. This aids in foraging; you can observe the shrew twitching its snout and following its nose to a nearby meal. The eyes are beady, whereas a mouse has larger eyes. The shrew's eyes are so small they look to be the size of a pin head. Although small, the beady eyes help in locating food; in fact it has been found that the eyes are more accurate in searching for food than the nose is. Using both its



At first glance one would think the desert shrew is a gentle and timid creature. However, the shrew's metabolism forces it to be a vicious predator.

eyes and nose, the shrew forages day and night because it has a very high metabolism. It is estimated that the shrew must eat every few hours in order to survive.

The desert shrew is an insectivore and has a vast selection of food within the coastal sage scrub of Cabrillo National Monument. Typical entrée items include crickets, cockroaches, flies, grasshoppers, moths, beetles, earwigs, and centipedes. As mentioned earlier, the shrew must eat every few hours to ensure survival. This means that it may resort to cannibalism to keep up its metabolism. If the shrew is searching for its next meal and then stumbles upon a carcass of a bird, lizard, or another small mammal (including another shrew), it will consume that to hold it over for another few hours. It is estimated that the shrew eats 75% of its body weight each day.

In addition to cannibalism giving the shrew a bad reputation, its man-

ners while eating are not exactly what we would call "polite." Shrews are known to immobilize their prey by eating the legs and then moving to the core of the meal. This adds to the shrew's reputation as a vicious predator.

Although the shrew may seem like an atrocious animal roaming the coastal sage scrub, it is just one of the creatures that help keep all elements of the ecosystem in balance. The only known predators of the shrew are owls, though there is the possibility of snakes eating shrews just as they eat other small mammals and lizards. The shrew also utilizes the vegetation to build its nest; some components that have been found in shrew nests are leaf litter, twigs, grasses, dried vegetation, and even cactus spines. It is obvious that although some organisms, such as the desert shrew, may appear fierce in their habits, they are simply ensuring their survival and helping to keep the ecosystem in balance.

References:

Armstrong, D. M and J.K. Jones. 1972. *Notiosorex crawfordi*. In: *Mammalian Species* No. 17, pp. 1-5.

www.dfg.ca.gov/whdab/html/M014.html

visited 18 April 2003

www.nsr1.ttu.edu/tmot1/noticraw.htm

visited 18 April 2003

Rehabilitating the grounds of the Old Point Loma Lighthouse

by Terry DiMattio

This spring or early summer we will begin rehabilitating the grounds around the Old Point Loma Lighthouse. We will not be trying to recreate the historic landscape at the lighthouse exactly as it was in the 1880s. According to National Park Service policy on reconstructions, you may only recreate historic buildings and landscapes if you can do so with a minimum of conjecture, and if it is essential to visitor understanding of the primary theme of the park. Our goal rather is to rehabilitate the grounds so they resemble what the area looked like 120 years ago. We will be trying to give our visitors a sense of what the lighthouse grounds were like so they will understand how the setting may have affected the lives of the keepers and their families. So, you may be asking, "How did you decide what the area around the lighthouse should look like?"

This project first came up as we were preparing the draft General Management Plan about 1993. To help us decide what we should do, the regional landscape architect prepared a cultural landscape analysis for the lighthouse. This analysis concluded that there was not enough left from the 1880s period to recreate the landscape from that era, and the landscape from the mid-1930s had been modified so much that it too had lost its integrity. As a result, we could design a landscape that best met the monument's interpretive, natural resource, and management needs.

We decided that we wanted to cre-



ate a semblance of the historic setting at the Old Point Loma Lighthouse. In doing so, we made some concessions to the 21st century and the fact that one million people of all ages, abilities, and backgrounds visit the lighthouse each year.

To get an idea of what the lighthouse grounds looked like in the 1880s, we did some research. We reviewed the historic structure report for the lighthouse and the book *The Old Point Loma Lighthouse* by F. Ross Holland, the monument's first historian. We looked closely at a number of historic photographs that showed the lay of the land before the loop road and parking lot were built. Based

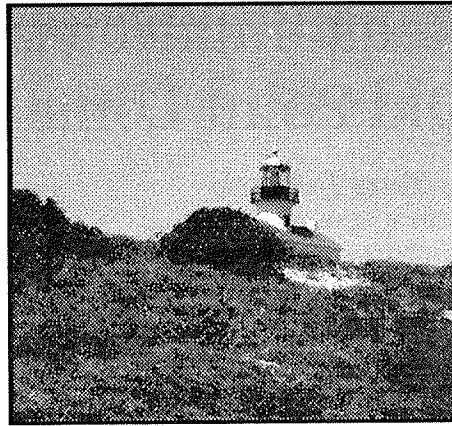
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on these photographs and maps of the area, Landscape Architect Gary Hurelle created a grading plan designed to reestablish the historic ground contours while leaving room for the concrete perimeter walk and roadway on the back side of the lighthouse. To try and find evidence of the assistant keepers' quarters, rain catchment basin, barn, oil shed, picket fence, and signal pole, NPS Archeologist Roger Kelly excavated parts of the yard. Unfortunately, the terrain had been so disturbed by the 1930s restoration of the lighthouse that no evidence survived.

Here is where we made some concessions. Using the historic photographs, Gary determined where to locate the keepers' quarters, catchment basin, picket fence and signal pole and where to lay out the routes for the walks. He designed the catchment basin, picket fence, and other features based on the best information we had, speculating on some of the minor details. In addition, he drew the walks not where they were historically, but where they are needed to bring visitors to the lighthouse in a manner that makes them accessible to everyone. Likewise, the walks will not be dirt, as the paths were originally; they will be decomposed granite treated with an organic emulsion that binds the granite together, making it easy for people pushing strollers or using walkers or wheelchairs to come and go.

We also had to make a concession regarding the native vegetation while trying to stay true to the spirit of the history of the lighthouse. The historic photographs show native plants outside the picket fence that defined the grounds and kept the animals off the rain catchment basin in the front yard. It is hard to determine from the photos exactly what kinds of native plants were there. The plants appear somewhat smaller than those we see there today, and there is more open space in between them.

We know that the last keepers, the Israels, had a horse or two for their wagons, and some goats and chickens. How much these animals may have affected vegetation we do not know. The goats and horses may have eaten the plants, keeping them



This project to rehabilitate the grounds around the Old Point Loma Lighthouse has been interesting.

It combines both cultural and natural resources management.

cropped lower than they would have grown naturally. (We probably will not have a horse, or goats, or chickens to help us manage the landscape.)

Unlike the Israels, we will be able to water the plants in the yard. The contractor will install water lines, and our staff will install the drip lines and emitters, and plant the native plants. We have selected the smaller variety of native plants and shrubs, such as the buckwheat, black sage, deerweed, sea dahlia, and locoweed. We are staying away from the larger plants such as lemonadeberry and toyon that are not seen in the historic photographs and which tend to obscure the view from the lighthouse and the grounds.

This project to rehabilitate the grounds around the Old Point Loma Lighthouse has been interesting. It combines both cultural and natural

resources management. We will be replacing hardscape—old asphalt that does nothing to sustain life—with earth, plants, insects, reptiles, birds and mammals—with all the elements of life itself. And in the process, we will not only be helping our visitors understand the environment in which the keepers and their families lived and worked, but will be restoring sensitive coastal sage scrub habitat as well.

New ranger-led program on Cabrillo's native habitats

Krista Pease, a Cabrillo VIP and graduate student at San Diego State University, is creating a new ranger-led program for the Interpretive Division as her Masters project. The program will feature the biology, ecology, geography, and geology of native habitats found within the monument, and will likely focus mostly on coastal sage scrub. As with the current ranger-led programs, the new habitat program will be designed for third through fifth grades and will meet current state and federal education standards. The project is already underway, and will be initiated in fall 2003 when students go back to school and the interpretive programs for school groups begin again. Krista welcomes your suggestions for interesting or important facts to include in the program. Feel free to email her at

kpease7@hotmail.com

A labor of love: restoration and preservation of coastal sage scrub

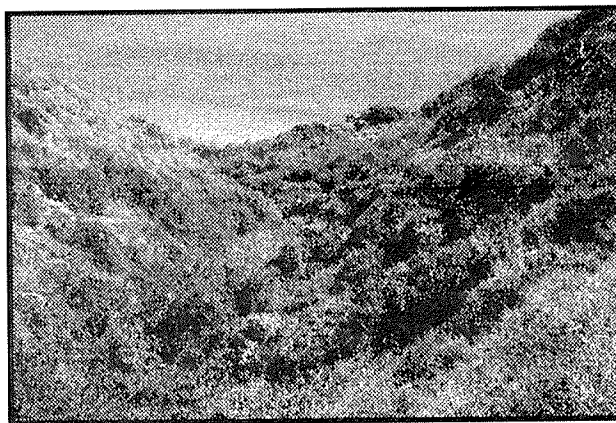
by Carol A. Martin, interpretive park ranger, CNM

I enjoy getting dirt under my fingernails and sliding down embankments alongside Andrea Compton as plant surveys are recorded every half meter over a 50-meter distance. We carefully try to avoid the fragile lichen, moss, grass, native and non-native plants that make up part of the coastal sage scrub ecosystem within the boundaries of Cabrillo National Monument. Plant and animal species interact with each other to form a community. These communities and their environment function together as an ecosystem. They are often identified as the major plant type located within them—thus, we have a coastal sage scrub. It is a much-endangered ecosystem, so we try to be careful. Out of the original five somewhat small areas where this Mediterranean climate-based environment is found, approximately 10 percent remains worldwide. Suddenly our feet seem very big, as we cannot avoid some of the soil crust holding precariously to the steep slope.

How does Cabrillo National Monument plan now and in the future to protect this fragile environment? "An isolated but viable remnant of the sensitive coastal sage scrub ecotype is being preserved on Point Loma," states a theme of this park. However, according to one of the planning issues of resource management, "In the mid 1960s some of the grounds of the monument's development zone were extensively planted with non-native vegetation." Many of these species require irrigation and care that natives do not. Monument staff has reconsidered landscape planting in the development zone in the context of natural and cultural resource management objectives, bird habitat, water conservation, economy of maintenance, vista clearing, and pub-

lic amenities. In addition, the park is actively pursuing a program of non-native plant removal, revegetation and erosion control within the natural zone to enhance the health of the coastal sage scrub habitat.

One of the areas impacted by visitor use is between the parking lots in the tidepool area. Visitors have established numerous "social trails" which channel runoff, cause soil erosion and damage plants. The visitors need to have access to appropriate areas but, identification of social trails which could be closed and reveg-



etated to decrease damage to monument resources should be identified. Education plays a key role, not only for the visitor but for park staff as well, so that everyone is reading from the same page to facilitate preservation. Change happens and over time plans are reevaluated for what is best for the park. As laid out on the General Management Plan, current staff numbers are inadequate to provide necessary levels of resource protection and visitor service. This is due mostly to budget constraints.

It is important that endemic plant species be used in restoration of the natural environment. As the non-native species are removed, the more sensitive plants need to be propagated to increase numbers so the monument does not lose sensitive

vegetation. Studies and surveys have been done throughout the park and species identified. In 1994, an inventory in the monument identified 974 species of plants and animals. The 1996 General Management Plan for CNM identified the following plant communities within the boundaries of the monument: southern coastal bluff scrub, maritime succulent scrub, Diegan coastal sage scrub, southern maritime chaparral, Diegan coastal sage scrub/southern maritime chaparral, and maritime succulent/southern maritime chaparral. Here

are some of the definitions as explained in the General Management Plan:

• **Southern Coastal Bluff scrub:**

This community has a range restricted to a few sites along the coast. It is a low; sometimes prostrate scrub, often dwarfed due to almost constant exposure to coastal, moisture-laden winds with high salt content. Representative plant species include California desert thorn, sea blite, and lemonadeberry.

Disturbed areas often contain

nonnative crystal ice plant and Hottentot fig. Several sensitive species including Shaw's agave and sea dahlia are associated with this community, along with the orange-throated whiptail lizard, Bewick's wren, song sparrow, rufus-crowned sparrow and bush rabbit.

• **Maritime Succulent Scrub:** This community is currently restricted on the mainland to a few miles of the coast. It is a low-growing, open scrub habitat. Only a few native grasses and low-growing succulents are able to grow between the shrubs. This habitat typically occurs on thin rocky or sandy soils, often on steep slopes of coastal headlands and bluffs. Plants include California sagebrush, California

...the park is actively pursuing a program of non-native plant removal, revegetation and erosion control within the natural zone to enhance the health of the coastal sage scrub habitat.



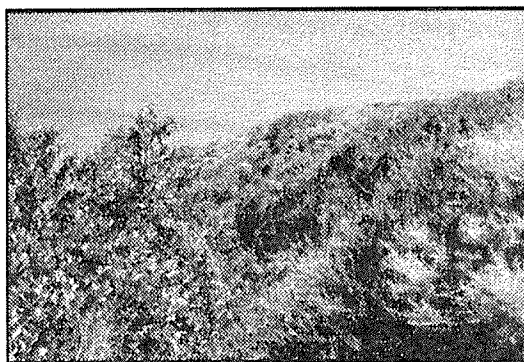
encelia, cliff spurge and flat-top buckwheat. Succulent plant species include dudleyas, fishhook cactus, sea dahlia and San Diego barrel cactus. Sensitive plant species includes snake cholla, San Diego barrel cactus and cliff spurge. Animals include California towhee, Anna's hummingbird, bush rabbit, desert wood rat, cactus mouse, California pocket mouse and gray fox. This community is most commonly found on the steep west-facing slopes on the sea-side of the point. It is a preferred habitat of the California gnatcatcher, the federally threatened songbird. Maritime succulent scrub can remain healthy on Point Loma if it is not fragmented or invaded by exotic species.

• **Diegan Coastal Sage Scrub:** This community comprises low, soft woody sub-scrubs to about 3 feet high. It is found on dry sites, such as steep, south-facing slopes. Species include laurel sumac, black sage, California sagebush, flat-top buckwheat and lemonadeberry. The scrub layer ranges from dense growth with few plants growing beneath to widely spaced shrubs with many plants growing beneath. Animals are the same as in the maritime succulent. 72% of this habitat has been destroyed, primarily due to urban expansion. Declining species dependent upon it includes cactus wren, rufus-crowned sparrow, California gnatcatcher, orange-throated whiptail, and sensitive plant species. The coastal scrub oc-

cupies the north-facing slopes while maritime succulent is found on the drier south facing slopes and ridges. This is considered a sensitive habitat and is given the highest priority. Seeds are dispersed by self, wind, or animal.

• **Southern Maritime Chaparral:** Occurs on weathered sandstone within the coastal fog belt. It is relatively open, and low-growing plant species on Point Loma include chamise, lemonadeberry, toyon, black sage, scrub oak, and mission manzanita. Sensitive plant species include wart-stemmed ceanothus and sea dahlia. Animal species include western fence lizard, side-blotched lizard, California towhee, wrenit, song sparrow, striped skunk, gray fox, and coyote. It is found most abundantly on the central north-south ridgeline of the peninsula and on north-facing slopes along drainages in the eastern portions. It is a sensitive natural community.

• **Maritime Coastal Sage Scrub/Southern Maritime Chaparral:** This is a transitional community created by the mixing of plants and animals of two sensitive and distinct habitat types.



Plant growth includes about equal amounts of scrub and chaparral species.

• **Diegan Coastal Sage Scrub/Southern Maritime Chaparral:** This is a transition community composed of elements of two sensitive and distinct habitat types. This association occurs mainly on the bay side of the point. This association not only occurs in transition areas between the two component habitats, but also appears after disturbance.

Two other plant communities exist:

• **Eucalyptus Woodland:** Eucalyptus is a nonnative tree species well adapted

to the Mediterranean climate of Point Loma. Eucalyptus is invasive and can completely displace native vegetation. Plants do not grow easily beneath these trees. Mature trees create a toxic effect through their litter, inhibiting germination of other plants. Most of these trees have been removed from within the park boundaries.

• **Landscaped/Developed:** Landscaped areas are those on which nonnative ornamental species have been planted for appearance, erosion or visitor control. These areas are located near buildings, roads, and storage structures. Within the monument, Natal plum, myoporum, bottlebrush, Monterey cypress, ivy, acacia and ice plant have invaded and reduced the quality of surrounding native habitat.

Listed and proposed threatened and endangered coastal sage scrub species that occur at Cabrillo National monument include: coastal dunes milk vetch, Orcutt's spine flower, San Fernando Valley chorizanthe, Shaw's agave, Palmer's grappling hook, Coulter's saltmarsh daisy, and coast scrub oak.

Upon further survey support, this list might also include Aphanisma blitoides, wart-stemmed ceanothus, summer holly, coast wallflower, San Diego barrel cactus, prostrate lotus, snake cholla, and short-lobed broomrape.

With plans for the Lighthouse Museum moving forward, the surrounding area will be planted with native species. The new greenhouse is currently being used to propagate plants for use throughout the monument, thanks to our fee demonstration project. Cabrillo National Monument's Natural Resource Protection, Interpretation, Gardeners, Volunteers and Resource Science departments play a significant role in protecting and providing this labor of love for our coastal sage scrub community.

A mini environmental history of Fray Juan Crespi and the coastal sage scrub

by George Herring

The most observant early recorder of California's landscape was Fray Juan Crespi, writing in his journals of the Portolá expedition in 1769 and 1770. Here are a few thoughts about on his observations of coastal sage scrub habitat in coastal California:

Traveling up the Baja California peninsula, Crespi wrote: "The country continues like the rest ... sterile, arid, lacking grass and water, and abounding in stones." Comparatively, the plant life of the coastal plains, valleys, and hills around San Diego seemed lush and beautiful. Near present-day Del Mar, he observed, "All the land is level, very verdant, with much pasture, many wild grapes, and other herbs."

In good interpretive fashion, Crespi sought to connect his readers with what he saw. Just north of San Diego Bay he writes: "On some parts of the road there are rosemary and other small bushes not known to us." The rosemary genus, (*Rosmarinus spp.*) is not native to California. It is, however, a common member of coastal chaparral communities in the Mediterranean Basin. Nonetheless Crespi periodically refers to a plant on the hills which he refers to as "... a species of very fragrant wild rosemary." What he seems to refer to is *Artemisia californica*, or California sagebrush. "Rosemary," however, is easy for his audience to understand. It also provides an idea, by association, about what the other "unknown bushes" were like.

Incidentally, he is not using "rosemary" to refer to white (*Salvia apiana*) or black sage (*S. mellifera*). He referred to these separately as "sage" in Spanish (*salvia*).

Crespi frequently observed that Native Americans set fire to coastal grasslands. In a study of central and

southern coastal ranges, biogeographer Jon E. Keeley found evidence that natives set fire to coastal sage scrub to increase area for the growth of seed-bearing plants. Timbrook et al. found that of 70 genera of plants used by the Chumash people in the Santa Barbara region, "...35 occur after fire and an additional 15 reach their peak of abundance in areas that were burned the previous year." Particularly, chia and redmaids "occur most abundantly after fires."

Crespi wrote that grasslands were "...burnt off by the heathens for the purpose of hunting hares and rabbits." Crespi's connection of fire with hunting reflects the perspective of his male informants, who traditionally were the hunters. The larger impact was that fire clears space in scrub habitat for the growth of seed-bearing food plants that native women harvested.

No evidence exists for native burning on Point Loma. Nonetheless, Crespi's observations suggest native burning may have played a prominent role elsewhere in the range and extent of coastal sage scrub before the advent of fire suppression.

Sources:

- Juan Crespi, *Description of Distant Roads: Original Journals of the First Expedition into California, 1769*, trans. Alan K. Brown, (San Diego: San Diego State University, 2001).
- Jon E. Keeley, "Native American Impacts on fire Regimes of the California Coastal Ranges," *Journal of Biogeography*, 29, (2002).
- Jan Timbrook, John R. Johnson, and David D. Earle, "Vegetation Burning by the Chumash," in *Before the Wilderness: Environment Management by Native Californians*, eds. Thomas C. Blackburn and Kat Anderson. (Menlo Park: Ballena Press, 1993).

Cabrillo National Monument Participates in Museum Month

by Karl Pierce

For the second straight year, Cabrillo National Monument participated in Museum Month. This month-long promotion was sponsored by the San Diego Museum Council and the Robinsons-May Company with additional funding from the City of San Diego Commission for Arts and Culture and a generous donation from Visual Asylum. During the month of February, museum-goers could obtain a free "Culture Card" at all San Diego County Robinsons-May stores which entitled the bearer and up to three other people to half-off admission at 25 participating museums and historic sites throughout San Diego County, including Cabrillo NM. A total of 40 culture cards were redeemed at Cabrillo NM during the promotion. Thanks to Robinsons-May, Visual Asylum, and the City of San Diego Commission for Arts and Culture for their sponsorship of the San Diego Museum Council's Museum Month in February.

Hidden in plain view—our chaparral birds

By V.I.P. Claude G. Edwards

Birds that are closely tied to chaparral can be subtle and overlooked, literally hiding in plain view. They come in a variety of shapes and sizes, exhibiting different methods for exploiting the vegetation for their benefit. They reveal themselves to those who are sensitive to the subtlety of their surrounding, to the shades of green and brown comprising this environment.

Nearly ten species of birds occurring on Point Loma prefer the chaparral. Most of these are year-round residents and are among the more regularly encountered species on the monthly bird walks at Cabrillo National Monument. You can learn more about them, and the other 300-plus bird species, on the new list "The Birds of Cabrillo National Monument and Point Loma." One unifying quality of chaparral birds is their generally somber coloration. Most wear shades of brown. Some are patterned with combinations of black, gray, rust, tan, or white. In context with their environments, these qualities help them blend into their surroundings. Notwithstanding their dull and similar-looking plumages, they can be more easily differentiated by the size and shape of their bills, the length and shape of their tails, and by their behaviors.

The most conspicuous bird of the chaparral is the bold and familiar western scrub-jay (*Aphelocoma californica*). These birds are unique among their neighbors by their blue coloration patterned with brown and gray. They are large and raucous, relatively smart and tame, and are quick to adapt to human-enhanced conditions. Jays utilize the fruits produced by scrub oaks, which they often hide; most are forgotten, effectively becoming planted.

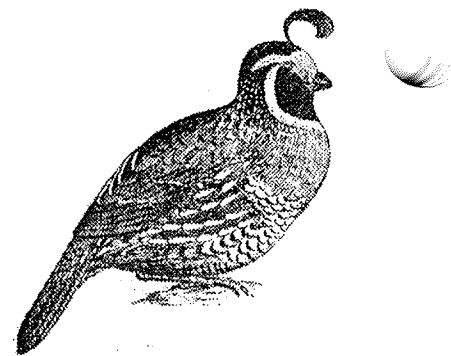
Two other Chaparral birds that are almost as conspicuous but are better known for their distinctive voices are California quail and Bewick's

wren. Both are clothed in brown, but this is where the similarities end. California quails (*Callipepla californica*) are "dimorphic," among those species where males and females appear different. Male and female quails wear teardrop-shaped plumes, but the male has a boldly patterned face. Although shy by nature, males sit atop shrubs and give a well-known song, "chi-CA-go," repeated three to four times. On the other hand, if one is heard "south of the border," it might be translated as "mu-CHA-cho."

Male and female Bewick's wrens (*Thryomanes bewickii*) look alike—distinctive with a long white eyebrow stripe and a long, straight bill, good for plucking small insects from stems and leaves. It is an active little bird that easily flits through dense vegetation, often with its tail held upward. The male's loud song seems out of proportion to its small size, an energetic combination of buzzes and trills that rise and fall during its delivery.

The spotted towhee (*Pipilo maculatus*) is a handsome bird, dressed in a boldly patterned plumage of black, chestnut and white. The sexes are similar-looking and both have striking red eyes. It is most often encountered on the ground, feeding by kicking up leaf litter with its feet. The loud song varies from one male to another, but is basically a harsh buzz or rattle. However, the usual call note given by both sexes sounds vaguely like a husky-voiced cat!

There are three similarly colored birds frequenting Chaparral habitat: the wrentit (*Chamaea fasciata*), California thrasher (*Toxostoma redivivum*), and California towhee (*Pipilo crissalis*). All three wear the same basic shade of dull grayish-brown, but otherwise they can be easily distinguished when heard or seen well. In terms of tameness, the towhee is the most outgoing and likely to be seen without much effort. At Cabrillo NM, it frequently appears



on sidewalks and in flowerbeds. In size, the wrentit is the smallest and the thrasher is the largest. The wrentit is most closely tied to the vegetation while the towhee is the most terrestrial. The song of the thrasher is the most varied and melodious of the three, and its bill is the most distinctive of all its neighbors, being long, thin, and decurved. It is used for "thrashing" through the leaf litter. They also walk or run, rather than hop or shuffle, like the towhee.

At the other end of the color spectrum, the diminutive orange-crown warbler (*Vermivora celata*) is a dull, olive-green, somewhat paler and yellower below. Of all the many species of warblers that have been recorded on Point Loma, this is the only one that nests in our area, the subspecies *sordida*. Male and female look alike, but on a rare occasion one may be able to see the male's dull pumpkin-orange crown patch. The bill is very thin, as with most insectivores. Two migratory forms are barely distinguishable from the resident birds.

Finally, three species that are commonly associated with chaparral on Point Loma are hermit thrush (*Catharus guttatus*), fox sparrow (*Passerella iliaca*), and golden-crowned sparrow (*Zonotrichia atricapilla*). These three are winter visitors and are basically similar in size. On the other hand, they vary from one another in shyness and behavior, shades of brown coloration, amount, type and extent of field marks, and vocalizations.

More about these three at another time.

The yellow sea

 Joe Wilson

 encelia swaying in the breeze surrounds the intrusions of humanity on Point Loma. Yellow petals radiating from dark brown centers floating on green leafy bushes dominate the landscape. Five inches of winter rain changes what visitors see at Cabrillo National Monument.

Sea dahlia with centers of yellow tucked in yellow petals intensify the sea. Above the Sea Dahlia and encelia, bladderpod bushes blossom pale yellow. Spice bush is below: just specks and points of yellow. In between, locoweed flutters pastel yellow blooms.

 Sunlight shadows the sea as the colors mix their richness in the green of spring. Broom baccharis sweep feathery clusters of gold spraying like surf in the wind.

The Yellow Sea created by coastal sage plants reflects the blue sea of the Pacific. The spray of surf and the spray of color make a spring visit to Cabrillo a lasting experience. Stop at the old lighthouse. Sit awhile; surround yourself with the splash of yellow and enjoy the sea.



Mother talks to me now
A shroud of color
the color of life
She bestows it
She nourishes it
She is it

Mother yells to me now
A cacophony the sound
the melodies of life
She composes it
She orchestrates it
She is it

Mother whispers to me now
A veil of air
the breath of life
She exhales it
She animates it
She is it

Mother talks to me now
A dance of rhythm
the timing of life
She choreographs it
She performs it
She is it

Mother yells to me now
A palette of textures
the emotions of life
She reflects it
She understands it
She is it

Mother whispers to me now
A resting place for all
the home of life
She preserves it
She evolves it
She is it

Gaza

By Ted Washington

Researchers at Cabrillo National Monument

by *Andrea Compton*

As you read through this issue of the Explorer, I hope that you are getting a sense of the uniqueness and value of the coastal sage scrub that makes up a large portion of the terrestrial habitat of Cabrillo National Monument. There are three components that add to this value: First, this habitat is rare and becoming rarer in the San Diego area and all along the southern California coast. Second, Cabrillo is uniquely situated such that some of the species present are not found any farther south than the park (i.e., this is the furthest extent of their southern distribution). Alternatively, we have some other species for which this is their northern-most distribution and others of that species are found in Baja. Thirdly, the habitat at the monument is protected and because of that protection, it is also fairly undisturbed. All of these three components lead to opportunities and a strong interest by scientists to conduct research here. I wanted to provide a quick summary of some of the topics that are currently actively being studied here by scientists outside of the National Park Service.

Shana Dodd, California Department of Fish and Game and the U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife service is interested in evaluating habitat for the endangered Pacific pocket mouse. Shana Dodd (SC Dodd Biological Consulting) and her associates took soil samples to determine if the soil could potentially contain or if it has historically contained Pacific pocket mice. These small mice (about the size of your thumb) use only certain soils that are sandy enough to dig in, and yet have enough clay in them to hold loosely together.

Dr. John Emmel, Natural History Museum of Los Angeles County

Dr. Emmel and his brother, Tho-

mas, are studying the genetics of several species of butterflies in comparison to other populations throughout southern California.

Dr. Marshal Hedin, San Diego State University

Dr. Hedin and his students are studying the natural history and population age structure of our California trapdoor spider populations as well as invertebrates in general. Not much is known about this spider and this research will gain some basic information about this species—for example, how long do they live? This information will help to understand the species, its ecological role, and the strength of this population. A strong involvement with students and the potential for additional research are interesting components of this project.

Krista Pease, U.S. Geological Survey and San Diego State University

Ms. Pease is completing, in conjunction with NPS staff, a study of the terrestrial macro-invertebrates that are present at the park and is compiling a list of species that are present. Ms. Pease is also completing her master's degree at San Diego State University and her thesis work involves developing curriculum on coastal sage scrub at the park. (Ms. Pease is partially funded by Cabrillo National Monument Foundation.)

Jian Peng, University of Southern California

Mr. Peng is studying the tidal exchange and sediment transport in San Diego Bay. This research will lead to a Ph.D. thesis. He is studying some naturally occurring geochemical tracers in the water and sediment columns of San Diego Bay. One of the sources of these tracers is the atmosphere; Mr. Peng periodically collects atmospheric "fallout"—particles located in the air.

Matthew Rahn, San Diego State University

Mr. Rahn is concluding a two-year study of ground beetle diversity that will lead to a Ph.D. thesis. Every other

month, Mr. Rahn collects beetles using shallow pitfall traps and is studying the distribution and habitat correlations throughout San Diego County in association with the U.S. Geological Survey and Dr. Robert Fisher's lab. In general, he is finding that certain species are present only if there are large sections of fairly undisturbed habitat, and there are other species associated with those particular beetles. For example, in areas where certain beetles were recorded but are no longer present, scorpions have also died out. We still have scorpions so this is indicative of some higher quality habitat.

Drew Stokes,

U.S. Geological Survey

Mr. Stokes conducted a bat inventory in 2002 to determine which species are present and their potential use of the monument. Four species were detected (western red bat, big brown bat, Mexican free-tailed bat, and big free-tailed bat). Mr. Stokes is involved with assisting NPS personnel and volunteers to develop and establish surveys, and to continue to study the bats of the monument.

Dr. Andrew Suarez, University of Illinois

Dr. Suarez is conducting research on the impacts of exotic species in natural systems, and specifically the role and distribution of Argentine ants relative to ice plant (both are introduced species). Environmental conditions that are created by exotic plants can change the natural conditions and ultimately favor the non-native animals as well, to the detriment of natives. Dr. Suarez conducted a study in 1999 and is hoping to continue this research in the future to look at changes in the distribution of the Argentine ant in the places where ice plant was removed by NPS staff.



Marcy's Morsels

Marcy Marquez, Volunteer Coordinator

This past month, while walking around Cabrillo National Monument, I have noticed some volunteers and staff members with spots all over their uniforms! What is occurring? Have they been wandering throughout our native coastal sage scrub environment? Did they have a scientific permit for this? After some interesting investigations and treacherous tests, I have concluded that they have been engaging in hand-to-survey combat with our native plants.

Our Natural Resource Science staff and beloved volunteers have been working throughout the slopes of Cabrillo National Monument. These diligent people have set approximately 20 plots around our boundaries to monitor what native plants we have, their depth, and if any non-native plants have "mysteriously" appeared in these areas. This has been no easy task! Lemonadeberry, Mojave yucca, California sagebrush, and pretty steep slopes have brought on many scrapes, falls, and bruises. This survey will use Geographic Information System (GIS) techniques to map out where these awesome plants are found, so that in the future we can see the progress of preserving our natural resources for future generations.

A handful of volunteers has been doing an incredible job in our greenhouse. Ranger Marty Lane in the division of Natural Resource Management & Visitor Protection supervises them. I recently had the honor of shadowing the volunteers in the greenhouse. It just happened to be a stormy afternoon. Not a streak of sunshine helped our duties. It was raining and rather windy. We all were soothed by these natural sounds, working with native plants. The volunteers had gathered together cuttings of ceanothus and we were in

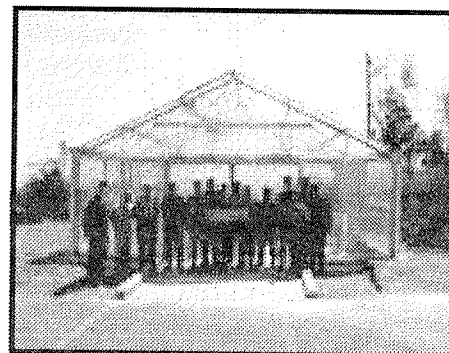
the process of planting them into tiny little pots. In just a couple of months these volunteers will go around the 160 acres of Cabrillo National Monument and find little niches for these plants to call their own. The greenhouse volunteers will monitor them



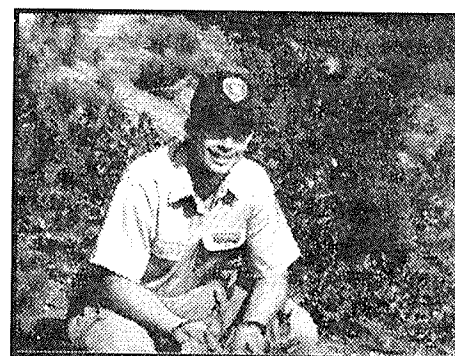
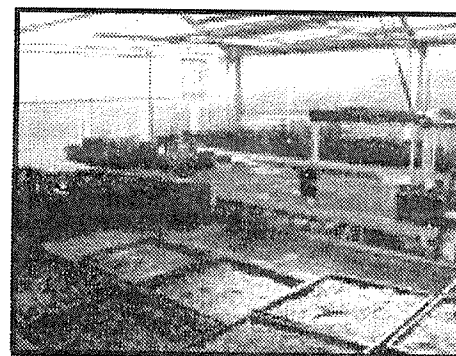
for the next three years and then let nature take its own course.

These volunteers do many things depending on the time of year: collecting native seeds and cuttings, removing non-native plants, and keeping an eye on the greenhouse at all times!

Thank you, volunteers for keeping our coastal sage scrub native. If any of you readers would like to help this incredible team, don't be shy; just call or stop on by.



The new CNM greenhouse on Navy property with Seabees who built it. Below is an interior view.



Vegetation Management Volunteer
Don Hayes

Point Loma revisited: the lichens of Cabrillo National Monument

by Charis C. Bratt, Lichenologist
Santa Barbara Botanic Garden

Landscapes change—they are never static. Somehow, even though I know this, I'm never quite prepared for it to happen. In March I came back to Point Loma to lead a lichen walk with Andrea Compton and lichen enthusiasts from the San Diego area.

In 1983–84 I studied and documented the lichen flora of the Cabrillo National Monument and compared this information to the historical records from the turn of the century. In 1988 I conducted a transplant study to see if a fruticose lichen (*Evernia prunastri*) known to have previously existed would survive today. None of the 36 transplants did. The reasons for this are unknown but could be due to changes in air quality. In 1994 I was here with a photographer taking pictures of the lichens of the monument. The photo album is still here and available—ask Andrea. This was a great opportunity to see what has happened in the last twenty years.

Coming back this year to lead the lichen walk, I was struck by the changes. I was so pleased that Andrea wanted to go with us and find where some of the lichens were. First of all, the shrubs are bigger. That seems to fit in the plan of things as the habitat ages. However, some places that I was able to access previously are no longer assessable. The amount of open ground between the shrubs has shrunk. The lichens that were found on the shrubs and on the soil around them can still be found, although not as readily. The areas of coastal sage scrub and the soil around them remain the best places to find lichens in abundance.

Walking down the Bayside Trail was more puzzling. A couple of the lichens (*Acarosporas*) I expected to

find on the banks acting as soil consolidators were not found. This calls for a more thorough search at a later time. Others of the soil-consolidating lichens were there and doing their job. Andrea asked how long it takes for lichens to recolonize a bank, for we were seeing places where visitors could not resist leaving their initials. That's something we just don't know but could take decades, so Andrea started to document this process by taking photos. If she continues this each year, in a few years we may know the answer.

The Eucalyptus trees are gone. Hurrah! They aren't even good hosts for lichens, so I don't miss them at all. However, I have to shed a few tears for the disappearance of the oaks that grew nearby. They were small and sort of scruffy. There is no sign of them. I do know that they suffered severely in the years of drought. Several of the lichens documented by me in 1984 grew only on those oaks. Sadly those lichens are missing. Chances of finding them elsewhere on the Monument are slim, but they may well be elsewhere on Point Loma. I have to wonder if there used to be more oaks on Point Loma.

The Monument remains a great place, for lichens as well as other things. It's so nice to be able to come back and greet old friends. Many thanks to Andrea for extending the hospitality of the Monument to us!



LICHEN RESEARCH



The Peter Rabbit connection

Lichens are not single organisms like most other living things; rather they are a combination of two organisms—an alga and a fungus—living intimately together. Most of the lichen is composed of fungal filaments, but among the filaments are algal cells, usually from a green alga or a cyanobacterium. The alga contains the pigment chlorophyll which it uses during photosynthesis to produce carbohydrates. These are required by the alga itself but are also absorbed and used for growth by the fungus. Thus the fungus obtains nutrients from the alga; the fungal tissue in turn may provide shelter for the alga, allowing it to grow in harsh conditions such as rock surfaces where it would otherwise be destroyed.

Interestingly, the identity of lichens as symbiotic associations of two different organisms was first proposed by **Beatrix Potter** (1866–1943), who is best remembered as the creator of Peter Rabbit and Jemima Puddle-Duck. An avid, self-taught naturalist, she began studying mushrooms and other fungi at age 21. She developed a theory on the germination of fungal spores which, though rejected by the scientific establishment of the day, is now recognized as being ahead of its time. Because she was female, her scholarly work was not published or exhibited during her lifetime. Her illustrations of lichens are still appreciated today, however, for their detailed and accurate portrayal of the delicate beauty of these fascinating organisms.

Jim Nauman

Cabrillo People

Chris Anderson

In this edition of *Cabrillo People*, we welcome two new people to our staff. Both men were born in the Midwest, came to Cabrillo NM from the Veterans' Administration and are now part of our maintenance division. Please give a warm welcome to **Dean Robinson** and **Rob Hilkert**.

Dean was born in Chicago, but grew up in Kokomo, Indiana. He spent 24 years in the United States Army, where he specialized in logistics. During his tenure with the Army, Dean traveled to 26 foreign countries. His favorites were the Italian Riviera and Japan. Dean eventually came to San Diego on vacation and decided this was home; well, actually that

Escondido was home. In an attempt to lessen his daily commute of 2 hours, Dean recently moved to Old Town. With his commute significantly shorter, Dean will have more time to leisurely pursue his interests in oil painting, antique collecting, and photography.

Dean's interest in the arts stems from his studies at Indiana State University, where he studied fine arts, with an emphasis on photography. Pop quiz for you basketball fans out there: what NBA star also attended Indiana State University, incidentally at the same time Dean did? (Enter Jeopardy music), your time is up! Survey says; the one and only Larry Bird. Besides artistic exploits, Dean enjoys spending time with his two daughters, who live in Indiana with their mother, but come out to visit Dad and sunny San Diego. His favorite food is shrimp, with lobster a close second runner up. Many of you learned from watching *Forrest Gump* that shrimp has an infinite number of ways of being prepared, so I asked Dean which was his favorite. He said he liked them all.

You may have seen Dean out on Point Loma before. For the last year, before coming to Cabrillo NM, Dean

had been working at Fort Rosecrans National Cemetery.

Our second newcomer is not really a newcomer at all. For those of you who have been around Cabrillo NM for a while, you may remember Rob Hilkert. He worked here seasonally as a Visitor Use Assistant in 1999. Since then, Rob has kept busy by working at a local platinum processing plant and at the Veterans Administration hospital in La Jolla. While working for the VA, Rob specialized in information technology, i.e. communications and computers. However Cabrillo NM is not Rob's only park experience: He has spent time working in Balboa Park and Torrey Pines.

Rob was born in Cleveland, Ohio, and moved to San Diego in 1966. Prior to that, he served in the Army for three years as an Artillery Forward Observer. As part of his military duty, Rob served in Vietnam. After he got

out of the Army, he headed off to school, which is what brought him to San Diego. He attended San Diego State University, where he studied liberal arts. When asked about his hobbies, Rob said it varies

with the seasons. During the winter he enjoys downhill sledding, during the fall and spring he spends time hiking. His favorite spots are Big Laguna Meadow, Sunrise and Sunset Trails, and Peñasquitos Canyon. He lamented that the summer was just too hot to do anything but party and hang out at the beach. When not at work or outdoors enjoying his seasonal activities, Rob enjoys collecting antiquities. His favorite food is real honest to goodness, authentic North Chinese food or South Vietnamese seafood.

So when you see these two gentlemen around the park, make sure to stop and say hello and introduce yourself. We wish Dean and Rob the best and hope they enjoy their time at Cabrillo National Monument.



This month one of our favorite "Cabrillo People," the writer of this column, will be heading for a new adventure. Law Enforcement Ranger **Chris Anderson** is on

his way to the Bureau of Customs and Border Protection, now under the U.S. Department of Homeland Security. Chris will be an Investigative Assistant, working with ten special agents to help them coordinate their investigations by arranging court dates, helping with evidence storage, and facilitating special operations with other law enforcement agencies.

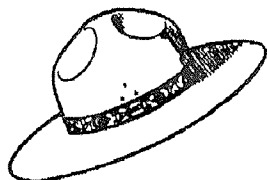
Chris worked at Mount Rainier National Park as a seasonal interpretive park ranger and backcountry ranger during the summers of 1997-1999. He completed his law enforcement training in February 2000, and he worked a short time as a law enforcement ranger at Olympic National Park before coming to Cabrillo National Monument in May, 2000.

Chris has enjoyed the opportunity to grow and diversify his skills at Cabrillo. During his three years here, He coordinated many Eagle Scout projects, arranged volunteer projects for National Public Lands Day and Keep California Beautiful Day, served on details to fires and to assist with homeland security, and managed the Tide Pool Education and Resource Protection (TPERP) program. As I talked with Chris about his experience working with volunteers, he reflected, "We have so many talented people. I've always been extremely impressed with their dedication and willingness to come in and help at a moment's notice. They're just a great group of people to work with."

Chris is thankful to the staff of Cabrillo National Monument and the Cabrillo National Monument Foundation for being warm, welcoming, and helpful, and for their support of the TPERP program. He also is grateful to have worked with the outstanding law enforcement staff, and for their willingness to cover for each other when needed.

Chris will be living and working in San Diego and he promises to bring all his guests to Cabrillo to enjoy the best view of the city. We thank Chris for his excellent service to Cabrillo National Monument and wish him success and happiness.

Patricia Heusner



Looking for More Information?

Try the CNMF Bookstore! *By Mary Northrop*

The Cabrillo National Monument Foundation has some exciting new items offered for sale in the Visitor Center. Of special note are these titles:

Peterson Field Guide Color-In Birds by Peter Alden and John Sill
Peterson Field Guide Color-In Wildflowers by Roger Tory Peterson and Frances Tenenbaum

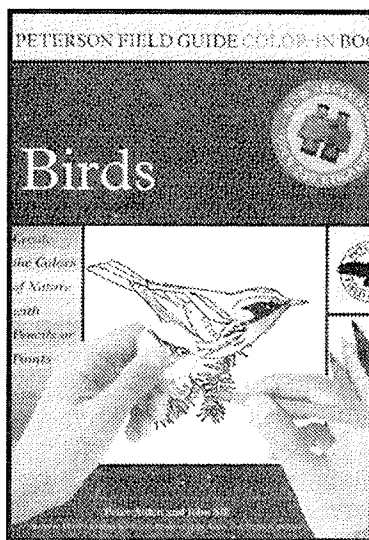
These Peterson Guides have detailed drawings and a brief description that is educational. The young ones will love the included stickers. Fun for children and adults too.

Coastal Sage Scrub Plants by Albert J. Grennan

This book has actual photographs of pressed plants, making identification of an individual plant a snap. This guide will be invaluable when used in conjunction with other guides to plants that give more information.

Wildlife of Cactus & Canyon Country by Marj Dunmire

A great way for children to learn as they color and complete the puzzles in this information-packed book.

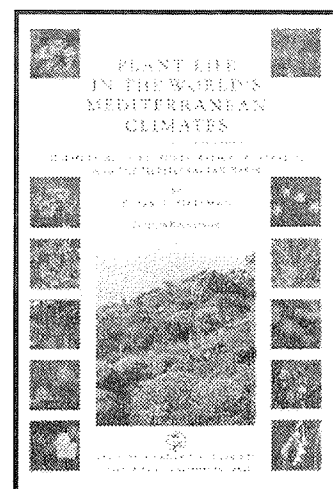


Some other titles carried in the bookstore on this subject are;

Plant Life In The World's Mediterranean Climate by Peter Dallman. This \$29.95 paperback illustrated with photographs, drawings and charts, gives an overview of the five regions of the world that have a Mediterranean climate, including the California coast.

An Amateur Botanist's Identification Manual for the Shrubs and Trees of the Southern California Coastal Region and Mountains by Jim Dole and Betty Rose. Paperback, \$14.95.

The California Chaparral: An Elfin Forest by W. S. Head is written in a narrative form with checklists for the reader, this book encourages a close look at this ecosystem.



NOTICE... A SPECIAL HEADS UP

Get an early start on Christmas!
The lighthouse ornaments are
back in stock and are selling
quickly.



Cabrillo National Monument Foundation

Association of Partners for Public Lands

APPL is a nonprofit national umbrella organization for all of the nonprofit partners of federal and state land management agencies. Cabrillo National Monument Foundation is a member of this group and in February I attended its annual convention along with three CNMF trustees: Bob Clopine, Bill Griswold, Charlie Wean. We attended five days of workshops covering such topics as: board readiness for fundraising, the legal side of hiring and firing, grant writing, disaster planning, risk management, interpretive product development, membership development, web site development, inspirational leadership, advocating for public

lands, publishing law & contracts, and others. The sessions at this convention are the best source of information and training available to cooperating boards and staff because they are specifically prepared for our unique organizations. The Foundation was especially pleased that CNMF's two newest trustees, Bob Clopine and Bill Griswold, were able to attend this year. Networking with others in their same position coupled with appropriate and timely informational sessions accelerated their knowledge of our mission and really motivated their involvement with the foundation and the park.

Karen Eccles,
Executive Director

CALENDAR

May 26, 2003
Memorial Day Military History Talk

June 29, 2003
Preview showing of Cabrillo drama

July 2003
Living History with
Ranger Bob Munson

August 2003
CNMF Annual Meeting

New Members

We welcome the following new
members joining from January 1
to April 21, 2003

Kevin Ashley
Sally Ault
David Ball
Marsha Bettis
Myra Davis
Karen Diede
Benjamin Dillingham III
Phil Farquharson
Doug Garfield
Margery Grant
Thomas Hampton
Mark & Nancy Hunter
Robert & Joy Jones
Jacquelynn Kresman
Mrs. Thomas Lynch
Angie Mauricio
Frances Moan
Virginia Moats
Linda Orsag
Patricia Ortlieb
Mrs. K "Fran" Perry
Barbara Ritz
Connie Robbins
Gary Russell
Judy Smith
Harris & Ardetta Steiner
Richard Townsend
Jay Wells

We greatly appreciate your
support.

Make a Lasting Legacy



The CNMF Endowment Fund, established in 1997 with the San Diego Foundation, is another way you can support the endeavors of Cabrillo National Monument. Interested donors can call (619) 222-4747 or log onto www.CNMFKaren@aol.com



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