

The Explorer

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

VOL V, No. 7

Autumn 1998



Natural resource management for the next century



**Guest Editor
Samantha Weber**

**Natural Resource
Scientist, Cabrillo
National Monument**

I suppose my favorite thing about advancing technology is how it benefits the little guy. Kids in a dilapidated school with a hopelessly out-of-date library can, if they have access to the Internet, find all sorts of wonderful information. They can track the progress of a migrating sea turtle and download her picture in full color. Or even do research in the Library of Congress. You don't have to be wealthy, brilliant, or well connected to pursue your goals. You don't even have to be a big park.

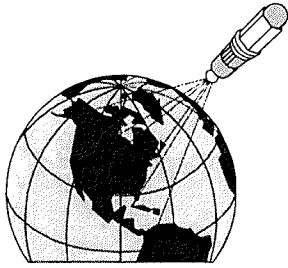
This issue of *the Explorer* is dedicated to electronic exploration. The focus is the use of technology in natural-resource management and science, but the same sorts of questions are relevant no matter what the topic. What new discoveries can be made through this wonderful equalizer? How can we employ technology to achieve our goals?

Does anybody out there remember when microwaves were one of the seven wonders of the world? I do. In sixth grade I didn't have one, my best friend didn't have one, but her neighbor did, so we took a special trip to watch him heat

up hot dogs on a napkin: We were transfixed. A lot has changed since then.

Like most changes, the current surge of technological sophistication is a mixed bag. Advances in technology mean that it's easier for the ever-growing world population to get anywhere on the planet in no time at all. People bring their families, their pets, their off-road vehicles, buy houses and move in. Development follows, and this seldom bodes well for natural resources.

However, it's not all grim; technology is also making life easier for natural-resource managers and scientists. Or, at least, making more work feasible in less time. Our job may be 80 times harder than 80 years ago, when vast stretches of uninhabited, ecologically healthy land surrounded the national parks, buffering them from the impacts of civilization. But today natural-resource managers and scientists are better equipped than they were 80 years ago—better equipped to try to understand, and in some cases mitigate, the impacts of urban sprawl and unprecedented levels of visitation at national parks. Most will at least agree that we have learned a lot in the last 100, or even 30 years.



The science of conservation biology is very young—even when compared with other branches of biology. Tremendous advances in technology are aiding its growth. The Internet makes data swaps, rapid exchanges of ideas, and calls for help visible to the world in seconds. Using global-positioning systems (GPS) mounted in helicopters, maps of fire, deforestation, or species distribution can be updated before the helicopter lands. Globally linked genealogies help zookeepers reduce the effects of inbreeding on critically endangered species. Geographic Information Systems (GIS), roughly equal to computerized maps plus associated information plus analytical power, weigh the impact of different reserve designs on populations of rare, threatened, and endangered plants and animals. Microchips planted into rhinoceros horns help African national park rangers catch and convict poachers. No doubt they are using cell phones to stay in touch on the Serengeti.

You get my point.

How have some of these advances in technology affected natural-resource science and management here at little ol' Cabrillo National Monument? What's coming up for the 21st century? The following are enviro-tech topics that will be covered in this issue:

- George Herring is working to make Cabrillo National Monument and its educational activities available to teachers and students throughout the world via the Internet.

- Lisa Schwartz, graduate student at San Diego State University, utilizes familiar technology in an unfamiliar way at CNM to learn some interesting things about the battle of boats vs. baleen.

- Debbie Younkin, CNM Intern, relates what she's been doing with GPS, GIS, and other thoroughly modern media

for the Natural Resource Science Division.

- A Fortune Told: what this writer hopes to see at CNM very soon, as we begin "the new millennium."

But wait, there's more! Plenty of less techno-centric tales (phew!):

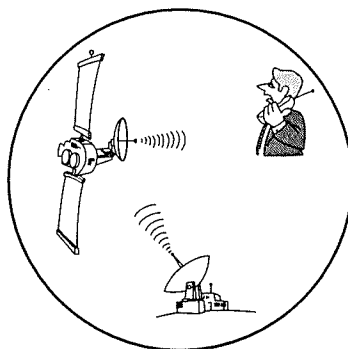
- Good old fashioned sweat and elbow grease get the job done: Emily Troxell relates the story of environmental progress and education through the Youth Conservation Corps and Resource Management/Visitor Protection Division.

- The Mystery of the Mormon Coal Mine is revealed through the stealthy investigation of Ranger Debbie (Sherlock) Stetz.

- What, you want to get paid? How the Cabrillo National Monument Foundation supports science-based management through fostering the fiscal fortitude of CABR. (This included saving the herp study from a fate worse than death: huge data gaps during temporary penury.)

- Cabrillo NM collects crates of cash from Canon U.S.A./National Park Foundation to investigate the disappearance of over one-third of Point Loma's reptile species in the last 70 years ("Vanishing Herps Get A Helping Hand").

This wealth of literary beauts, in addition to our "In Every Issue" articles, requires just the turn of a page. I hope you enjoy the ride. Just remember, if the techno-thing becomes overwhelming, you are learning about it right now by doing something humans have done for thousands of years: *reading*. Most of all, keep in mind the most important part of this whole techno-whirl ride we're on: you don't have to be over 42" tall to get on.



Technology in Natural Resources Management at Cabrillo National Monument

by Samantha Weber



Technological advances have changed the lives of many (if not most) of us, whether we know it, or like it, or not. When I was a kid, it was the wonder of microwaves. But now, people are positively blasé about cell phones,

surfing the Internet or editing reports on their laptop computer while parked at a coffee shop (telecommuting). However these changes may have affected you, have you ever stopped to think how technology has changed the life of a marine biologist, for example? How about a park ranger who bravely battles exotics, a budding naturalist, an NPS intern, or a herpetologist? In this issue we hope to illustrate how technology has been used to benefit natural resource science, management, and the public through its role at Cabrillo National Monument. The more advances technology makes, the more the "little guy" (or "little park") can afford it to do things they probably couldn't have without it.

More powerful computers can mean smaller staffs can accomplish bigger tasks than ever before possible. A researcher or manager may even determine, through surfing on the web, that the work has already been done, and all that remains to do is ask for the results. That saves dollars, and that's a good thing. The attendees at the last *Explorer* staff meeting decided to illustrate a few

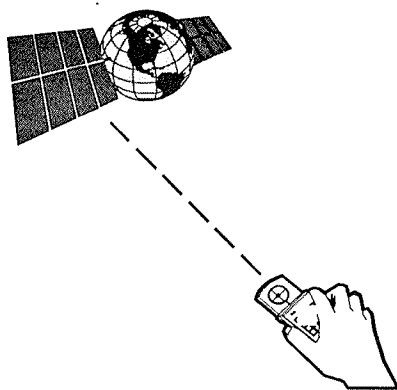
of these changes while updating you on the latest in natural resource science and management at Cabrillo National Monument.

Ten years ago, to map a patch of “ice plant” (*Carpobrotus spp.*), I would have needed to go find an old printed map, copy it, walk outside, and eyeball a drawing for that copy. Clearly, without the help of a professional (and no doubt expensive) cartographer, I could not count on this being terribly accurate. For a large park, this would be totally impractical.

However, things have changed. Now, in order to get a really accurate map, all I need is my computer, some good software, a little yellow device called a Global Positioning System (GPS) receiver, and about an hour. In far less time that it takes me to write this piece, I’ll have that map updated and printed in full color, legend and all!

An example of how accurate these maps can be: I was GPS-ing a herpetology array and briefly jumped to my right about 3 feet to avoid a poisonous plant—BRIEFLY, say 15 seconds. Then, when I got to my computer, downloaded the file and corrected it, a little spike stuck out of the nice, straight array lines. I wondered what that was from, and Anita Burkett, herpetology volunteer (and now professional field biologist) said, “That’s the spice bush jump.” “What?,” I asked. While peering over my shoulder into the screen, she reminded me where I’d hopped to avoid that less-than-friendly plant. In that tiny window of time, the little yellow GPS receiver in my hand had read the satellites flying high above our heads and determined exactly where it was: on the OTHER side of that bush. That’s almost too accurate.

Not only are the maps accurate, but the GIS program can be used to view and manipulate them. Resource Management/ Visitor Protection (RMVP) Division folks have access to other information about each patch of *Carpobrotus*. For example, Marty Lane, RMVP’s “plant man,” can click on any patch he sees and learn the intensity of the non-native plant invasion (light, medium, heavy); whether there are any federally sensitive species present (no, yes, which); and slope of the site (how steep is it?). Marty can then figure out how many people and days it will take



In order to get a really accurate map, all I need is my computer, some good software, a little yellow device called a Global Positioning System (GPS) receiver, and about an hour.

to eradicate the site, whether or not he can use Roundup™ to kill it (no, if federally sensitive species present), and who is safe to assign to it (high slope: adults only; nearly flat: younger groups are O.K.). This information was added while mapping each site through a custom “data dictionary” Marty made working with Brent Long, Joshua Tree National Park Cartographic Technician, so Marty and the rest of the Resource Management Division can use this information to help plan habitat restoration efforts.

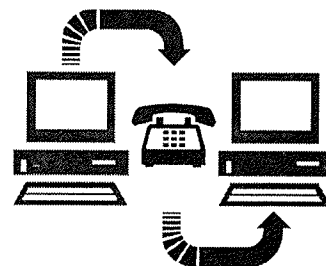
Sitting at my desk in Battery Ashburn, typing on a new laptop computer, I find it pretty easy to wonder at the role technology has in Natural Resources Management. Before long this office will have phones, be connected to other computers in the park by the LAN (Local Area Network), and the rest of the world through the Internet at unprecedented speed, thanks to the Internet connection provided by the U.S. Navy.

What does the future hold?

My vision for Cabrillo NM, in particular the Natural Resource Science division, in the next 5-10 years:

- All park staff members are on the LAN and are comfortable with it.
- All park staff members know how to create and print simple maps through the park’s Geographic Information System (GIS).
- The GIS program has a set of the top 5 or 10 most requested maps as part of a more user-friendly interface (point and click) to increase staff use of GIS.
- GIS and the Inventory and Monitoring program database are fully integrated. This means staff can ask questions about the location or status of different organisms being monitored in the park science program and see their answers on a map, when appropriate. Example: a ranger wants to know where sensitive breeding populations of birds may be while the Youth Conservation Corps are in the park, so they can avoid disturbing those areas.
- A 3-D image of Point Loma is available on the web, and with a click of a “surfer’s” mouse, overlays can be placed over it (e.g. vegetation types, roads, land ownership, historic buildings, etc.).
- All non-sensitive information gathered from inventory and monitoring work at CNM is available on the web.

The strange thing about these goals is that they could all be met now, given enough expertise, time, training, and money. With patience and persistence, I have faith that they will be met. We’re getting closer and closer every year. Just you wait!



Superintendent's Report

by Terry DiMattio



Summer is waning, and I am wondering where it went; it has been a very busy time. We completed some projects and made progress on others. At the same time, we are getting ready for the 35th Annual Cabrillo Festival.

In the last issue of *The Explorer* I told you about the exhibit plan for the Radio Station, the revision of the account of Cabrillo's voyage of exploration that will be published soon, and some of the improvement projects being funded by the Recreation Fee Demonstration Program. We are making progress on each of them, and they are moving steadily toward completion. But they are not the only projects in the works.

This year we received funding for other projects that will help us take better care of the cultural resources under our stewardship. They are not as glamorous as the ones I mentioned above, but they are just as important. The first is a partnership with the Urban Corps of San Diego. Under the National Park Service's Public Lands Corps Program, we are entering into a cooperative agreement with the Urban Corps to perform preservation maintenance on several of our historic military structures. The Urban Corps' young people will remove encroaching soil and vegetation from around these base-end stations, searchlight shelters, and generating stations; remove graffiti, lubricate door hinges and window coverings; remove rust and scale from metal elements and sand, prime, and paint them; and secure these structures against unauthorized entry. In return, we will teach them about the monument and its resources, and instruct them in the philosophy and care of historic structures and the conservation

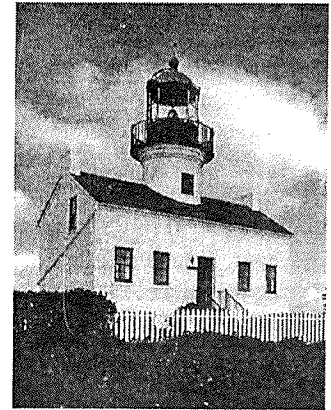
of the nation's resources in the National Park System.

The second project related to the care of our cultural resources is the preparation of an historic structures report (HSR) for our military structures. This document is essential for the long-term preservation of these remnants of Fort Rosecrans's coastal defense system. The HSR will provide us with the architectural information we need to implement a program to stabilize, restore and/or rehabilitate these increasingly significant military features. It will document the condition of each structure, contain accurate architectural information, including historic or current drawings, propose a specific treatment program for each one and an estimate to perform the work, and recommend any further studies that may be necessary.



Recently, the architect and historical architect who will be preparing the HSR visited the park to become familiar with the location of each structure. Some of these buildings are easy to reach, while others require climbing up and down hills and through the coastal sage scrub vegetation. The architects will be back in October to begin preparing the drawings and documenting the condition of each structure. We hope that by next fall, we will have the completed HSR and can use it to initiate our long-term preservation program for these curious remnants of the US Army's weapon system that defended San Diego during World War II.

The last project is the preparation of a plan that will help us improve the care of our museum collection and archives. Since the late 1950s, we have been collecting artifacts—furnishings, uniform items, lighthouse implements, and military hardware—related to Cabrillo



It has been a very busy summer for the entire staff: administration, maintenance, and rangers alike. I would like to thank them for all they have done to serve our visitors while protecting and enhancing this special place that is Cabrillo National Monument.

NM and its history. Each one is catalogued and the information about it recorded. Many of these artifacts, such as pieces of furniture, books, kitchen utensils, and articles of clothing are on display in the Old Point Loma Lighthouse. Others will be used in the new exhibit on Point Loma's military history. The rest are in storage.

In June, a team of National Park Service curators, conservators, and archivists spent two weeks at Cabrillo NM. They talked to the staff and examined the collection, the storage area, and the items on display. In the course of their examination, they discovered that we have a wealth of information in our regular files that should be transferred to the

museum collection and made available to the staff. As a result, we will be adding over 200,000 pages of archival material, mainly correspondence and reports, to the museum collection.

The Museum Management Plan has been drafted and is being edited now. It will contain recommendations for improving access to the museum collection, removing inappropriate items, and expanding the collection to make it more useful to both the staff and the public.

It has been a very busy summer for the entire staff: administration, maintenance, and rangers alike. I would like to thank them for all they have done to serve our visitors while protecting and enhancing this special place that is Cabrillo National Monument.

The Cabrillo Festival traditionally marks the end of the summer season. I hope you will join us for all the activities, and especially the Open House on Sunday, October 4. It promises to be a day the whole family can enjoy—one full of history, good food, and great music.

The Explorer

is published quarterly
by Cabrillo National Monument,
funded by
Cabrillo National Monument
Foundation.

Staff:

Jim Nauman, Editor
John Golda
George Herring
Debbie Stetz
Emily Troxell
Mary Beth Vygrala
Samantha Weber

1800 Cabrillo Memorial Drive
San Diego, CA 92106
www.nps.gov/cabr

printed on recycled paper

"Virtual Cabrillo"

A new voyage of discovery: 16th-century exploration on the Internet *by George Herring*

Young students reading a textbook are transported to many places and into many time periods to learn the lessons that civilization feels are necessary. Reading textbooks in school is essential, of course, but National Parks also make excellent classrooms. Most of them preserve an important natural or cultural resource, teaching us about an event important to our understanding of ourselves as a people, or about a place that is of some great inherent value to us and the future. Unfortunately, however, students may learn about an important event in history, such as the Cabrillo expedition, but never hear about Cabrillo National Monument. How do we reach them? How do we get materials into the hands of teachers so they can learn about the park?

Increasingly, publishing companies are incorporating a wide range of educational technology into the curriculum layout of their textbooks. For instance, teachers may show their class a video suggested by the publisher that fits in with a particular chapter the class is reading. McGraw Hill recently produced a video about national parks and explorers which teachers may use in conjunction with their social science textbook. [This video features the author of this article in the role of the "Cabrillo National Monument Park Ranger."]

The next generation of textbooks is being designed to incorporate educational websites into the learning process; Cabrillo National Monument is taking advantage of this exciting new technology. As I write, a website to support 4th-

and 5th-grade curricula nationwide is being developed. We hope to bring the Monument to students anywhere in the world with teachers of these grade levels who are interested in teaching their students about 16th-century European exploration generally, and the Cabrillo and DeSoto expeditions particularly.

Cabrillo National Monument and DeSoto National Memorial in Florida (under the leadership of its Chief Ranger, Brian Loadholtz), each successfully applied for an Albright-Wirth grant to help pay for the development of the site. Now, nine months later, artwork is completed, a HTML template is finished, text is being written, and we are about to develop curriculum activities. All this is being done with the assistance of San Diego State University art and educational technology students to whom the grant provides small stipends.

I could say much more about what the completed site will accomplish, but I won't. Instead, you can see for yourselves when it is finished. I will, however, let you take a sneak peek at the site template: <http://www.nps.gov/cabr/voyage/voyage.html>. That's it, though, for now.

If we can't get them to come to us (or if, heaven forbid, they don't know we exist), then we'll just have to go to them. That's what makes educational web technology such a special opportunity: bringing stories of the parks and their educational activities to the schools even if they can't get to us, and selling them on the National Park Service idea in the process.



The use of technology in marine mammal studies

by Lisa Schwartz, Graduate Student, Department of Psychology, San Diego State University



Technology developed over the last twenty years has made my research possible. Unfortunately, technology is what has made my research necessary. I study the effects of man-made noise on the southward gray-whale migration. Marine mammal science is a field known for utilizing technology originally intended for other uses. Before I even started my study, I had used a very sensitive Global Positioning Satellite system (GPS), which is used mostly as a navigation device on water and land. My primary tools are a theodolite—a surveyor's instrument—and a hydrophone, a device built by the Navy to listen to submarines and ships.

Surveyors use theodolites to measure heights and contours of land rises and buildings. In fact, most people have seen a theodolite while driving down the road and encountering someone using a strange-looking instrument on a tripod. A theodolite really measures angles. The horizontal angle gives the researcher an angle with reference to the horizon, whereas the vertical angle is in reference to a predetermined zero point. With a little trigonometry we can calculate the position of whatever we are looking at. So, what I do is stand on a 125-meter hill overlooking the ocean at Cabrillo National Monument and point the theodolite at surfacing whales and boats. The theodolite is directly connected to a computer which records the angles when given a command. The computer then calculates the position of the object, give or take three meters. With the computer program I use, called Aardvark, I can also record behavioral data. The program has the ability to calculate the migrating whales' swimming speeds, breathing rates, and tracks, as well as boat speeds and tracks. I can even

get a graphic representation of everything on a map.

In order to record accurate whale positions, which can be miles from my theodolite station, I first had to know the latitude, longitude, and altitude of my theodolite station as well as my zero point. The GPS system gave me the ability to determine my points on the planet within 10 centimeters. Of course, computers play an integral role in my research.

Another aspect of my research involves looking at the environment the whales encounter as they pass through the study site. Most environmental factors probably do not affect the whales; the species has endured many climactic and oceanic changes over the centuries, and they migrate regardless of these changes. They also do not feed during the migration, so they are not concerned with prey availability.

The preliminary results of my study showed that at least one environmental factor seems to be altering the gray whales' behavior: man-made noise. Gray whales vocalize (and probably hear) at very low frequencies. Their vocalization/hearing frequency range is very similar to the range of boat engines and water pumps. Using a hydrophone, an underwater version of a microphone, I am able to record ocean sounds. The simpler version of the listening device is just a submersed hydrophone connected to a recorder. I receive very good data about the frequency range and amplitude of different boat engines by following them around and recording their sounds. For recording over long periods of time and to gather data on more consistent forms of sound, I use a more complicated system. The system consists of a hydrophone connected to a



The preliminary results of my study showed that at least one environmental factor seems to be altering the gray whales' behavior: man-made noise

recorder which in turn is connected to a timer. Everything except the hydrophone is encased in a water-tight tube and mounted to the ocean floor with epoxy. The system takes data for five minutes every half hour. Placing the system and retrieving the data requires a lot of SCUBA diving. I eventually take all the raw data back to the lab and analyze it on a computer.

Over-hunting brought the gray whale to the brink of extinction twice in the past two hundred years. Although gray whales are now protected and have been taken off the endangered species list, we must be very careful not to harm them indirectly by altering their habitat too much or too quickly. Although theodolite tracking can show short-term changes in behavior, we have no idea how the noise we create will affect the species over a long period of time. The ocean is a very noisy place, and every cetacean species has adapted to it by vocalizing within certain frequency ranges. The sounds we produce can seriously affect these animals by altering their ability to communicate with each other, navigate, feed in certain areas, and even breed. We need to study this issue now before we turn the ocean into just a roar of noise.

Environmental Research at Cabrillo National Monument

A CNM intern's experience *by Deborah L. Younkin*

My experience as a Natural Resource Science Intern this past summer has been one of diversity, both in the tasks I have undertaken and what I have learned about Cabrillo National Monument and the National Park Service.

In working with Samantha Weber, the Chief of Natural Resource Science at Cabrillo National Monument, no single day has ever been the same. Some days are spent collecting and recording information about reptiles, the tidepools, or the large variety of plant species—both

indigenous and exotic—that one finds at Cabrillo National Monument. Other days are spent processing and organizing the information that I have collected. Of particular interest to me as an intern has been the documentation and recording of much of this information with the use of a Global Positioning System (GPS), which uses specially coded satellite signals processed by a GPS receiver, enabling the receiver to compute geographic position, and the transition of that information to a Geographic Information System (GIS), a computer information system that provides a means of creating maps for data analysis and display.

As a senior Geography student at San Diego State University, my area of interest has been Environmental Analysis which includes the use of both GPS and GIS for documenting and tracking sets of spatial data. This internship has given me the opportunity to see the entire process from field-data collection with the GPS to the creating of detailed and informative maps using the data mapping system of GIS. I also have gained a greater appreciation for the ongoing efforts of the National Park Service to preserve the natural resources of Cabrillo National Monument.

Meet Cabrillo's new marine biologist

Allow me to introduce myself. My name is **Bonnie Becker**, and I am the new marine biologist at Cabrillo National Monument. I will be working with Samantha Weber in the Natural Resource Science Division, conducting research on Cabrillo's extraordinary tide pools.

I am originally from New York City, where I grew up dreaming of moving to California. Last year that dream came true when I packed up my car and moved to the Bay Area. For the past year, I have been working for a marine environmental consulting firm in Santa Cruz. I made the move southward and started working at Cabrillo on August 20. Beginning in September, I will start my doctoral studies at Scripps Institution of Oceanography with Paul Dayton as my advisor. So while working here I will be wearing two hats—my ranger hat for the Park Service and my student hat for Scripps. My

research should serve both purposes.

Since 1990, the National Park Service has been monitoring the populations of animals and plants in the rocky intertidal area (the zone between low and high tides) of Cabrillo. Twice a year, volunteers and scientists conduct surveys of birds and marine organisms. Since monitoring began, 7 of the 13 key species being monitored have either declined or are absent from the park. The question is, what is causing a drop in these populations? My job will be to continue tidepool monitoring and to conduct additional studies to determine possible

causes for these changes in our intertidal region. The purpose of this project is to use this information to develop sound management practices to preserve the health of the tidepools.

After only a week of living here, I already feel at home in San Diego. Thank you for making me feel so welcome here. If you see me around the park or down at the tidepools, come and say hello. I am looking forward to meeting everyone and working in such an interesting and beautiful setting.



The Mormon Coal Mine: Point Loma's mysterious natural resource

by Debbie Stetz

PHOTOS: SAN DIEGO HISTORICAL SOCIETY
PHOTOGRAPH COLLECTION

A rush of immigrants spurred by the 1849 discovery of gold at Sutter's Mill swelled California's population as thousands of men driven by a sense of adventure swarmed into the Sierra Nevada foothills. Many of these adventurers, sometimes referred to as Argonauts, traveled overland to the new Eldorado, but many more came by ship, which was the reason for building a series of lighthouses along the California coastline, including one at Point Loma.

But a number of Americans were already established in California before the Gold Rush, having come at the outbreak of war between the United States and Mexico in 1846. Many of them were soldiers who were raised in working-class families on the east coast and transported west to an unfamiliar land and culture. Robert Israel, for many years the Old Point Loma Lighthouse's keeper, was one such easterner who came to San Diego as a result of the war.

The first homes in San Diego were built after Spain conceded California to the Republic of Mexico in 1821. A settlement of approximately 350 people formed along the banks of the San Diego River, down the hill from the abandoned walls of the Royal Presidio. One-story homes and shop buildings made of adobe with red tile roofs dotted the perimeter of a barren dirt plaza.

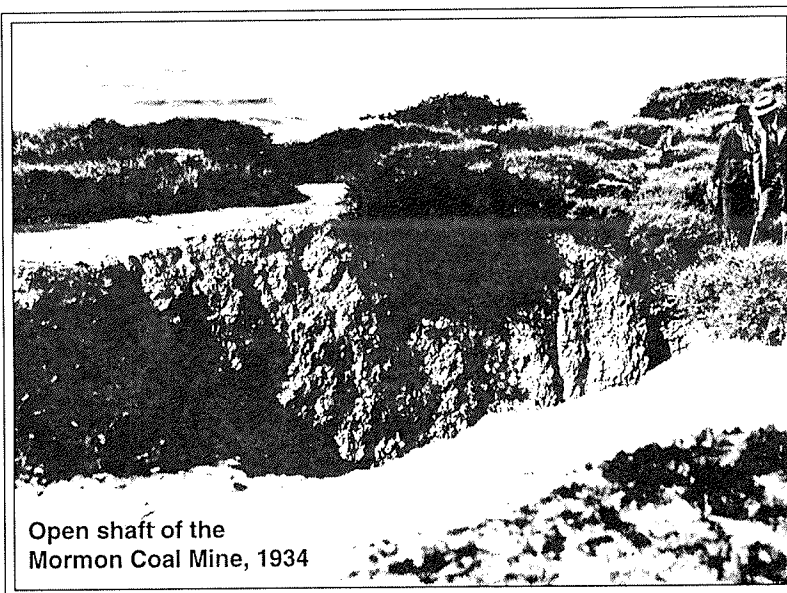
On January 29, 1847, a battalion of 500 Mormon volunteer soldiers marched into San Diego to assist in the war against Mexico. But they were too late: the war in California had ended three weeks earlier.

With time on their hands, then, the soldiers directed their energy toward improvements in the dusty community. They began by cleaning yards and streets, carting off and burning mounds of

was admitted to the Union. That same year, San Diego was incorporated as a city. Three weeks later, on September 28, Congress named San Diego as a prime location for a lighthouse. Point Loma was selected as the site and construction began in April 1854. On November 15, 1855, the Point Loma light cast its beam for the first time.

At about that time in the autumn of

1855, four of San Diego's Mormon residents announced that one of them had experienced a divine revelation that coal was present beneath the earth of Point Loma. They set out to explore the peninsula and within a few days were exhibiting coal samples to excited citizens. On November 22, 1855, the San Diego Board of Supervisors granted a 15-year lease on 40 acres of Point Loma land to H. C. Ladd, Ephraim Green, and G. M. Serrin to "open and work a



Open shaft of the
Mormon Coal Mine, 1934

accumulated trash; they dug new wells and cleaned and repaired old ones; they whitewashed buildings and repaired crumbling roofs—all free of charge. The citizens of San Diego were astonished and highly appreciative of this generous outpouring; understandably, they beseeched the Mormons to stay after a peace treaty (the Treaty of Guadalupe Hidalgo) was signed in Mexico in February 1848. Although most of the soldiers returned back to their eastern homes, a few chose to stay and settle down in San Diego.

On September 9, 1850, California

Coal Mine."

This was cause for celebration! With a coal mine in San Diego, the city would prosper as a hub for the production and shipping of this much-needed energy-producing fuel. Two days after the lease was signed, the *San Diego Herald* announced:

Messrs. Ladd, Tanner, and Serrin have made the discovery that a coal bed exists on the shores of the Pacific about two miles north of Point Loma. The coal has been tested by some of our citizens, and found to

In the autumn of 1855, four of San Diego's Mormon residents announced that one of them had experienced a divine revelation that coal was present beneath the earth of Point Loma.

burn with a clear, bright flame, apparently without odor, and giving out intense heat. On being tested at a blacksmith's forge, it is found applicable to welding and other processes where great heat is required. There is no doubt as to the quality of the coal and should the vein prove abundant it will become a source of great wealth.

By March 1856, the San Diego Coal Company had bored into the earth at the high-water mark to determine the thickness of the deposit. Several small veins were located and a shaft was sunk to work the different layers of coal. The layers varied in thickness from 6 inches to the primary deposit of 4 1/2 feet at a depth of 82 feet below the surface. Unfortunately, work was soon stalled as water had entered the shaft. But this was only the beginning of their troubles.

The miners ordered pumps and a steam engine from a company in San Francisco. The nearest spot for delivery of this heavy equipment happened to be the pier at La Playa, the beach community located on the bay side of Point Loma. No horse and wagon could deliver the boiler to the other side of the peninsula, so it was dragged by block and tackle over the 400-foot-high hill. A few months after the boiler was set in place, reporters from the *Herald* visited the coal mine again and on February 21, 1857, wrote disgustedly:

We must be allowed to say that a greater swindle was never perpetrated on a set of white men than is manifest on examining that engine and force pump. We deem it a duty to the stockholders of the company to claim damages of the contractors for sending such a lot of worthless trash that has delayed [the mining] operations for three months at least.

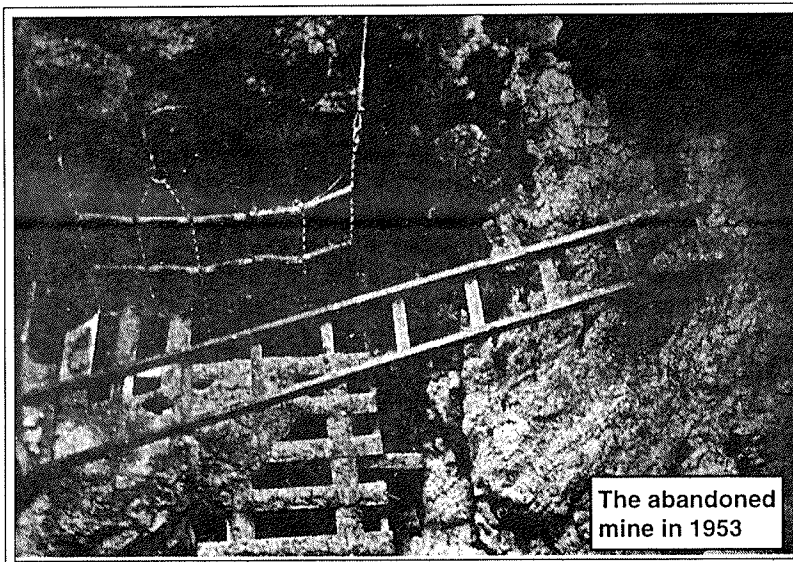
and of a much better quality than we could get from Pennsylvania.

But strangely, it appears that just when operations had finally taken a successful turn, the Mormons abruptly left San Diego. Apparently Brigham Young had called all Mormons back to Salt Lake City to form an army for war against the U. S. government. The anticipated clash never happened, but the Mormon miners did not return to San Diego, leaving their coal mine unworked; by then it was located on military property.

The mine shaft has since been filled in and is now covered over by a parking lot. But what about the coal? Could it have been "a great source of wealth" for San Diego? In 1963, Ross Holland, then historian at Cabrillo National Monument, had a quarter-pound sample of the coal tested for its chemical composition. After a

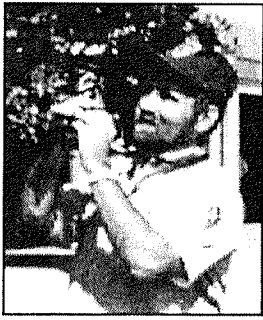
thorough analysis, it was determined that the "Point Loma coal was a surprisingly rich coking coal and would have been extremely useful in steam boilers used for the production of steam for locomotives and steamboats."

It appears that one of Point Loma's most mysterious secrets is also one of its greatest *natural* resources.



Work at the mine was suspended for the next few months as the miners struggled with the working operations of their steam engine and pumps. It appears that work had commenced by August 1857 as the *Herald* reported:

A large party of men with two additional engines arrived here from San Francisco to work at the San Diego Coal Company. It will be but a short time before we shall be able to furnish all the coal needed on the Pacific Coast



The monthly bird walks at Cabrillo National Monument

by CNM Volunteer Claude G. Edwards

Claude Edwards has the distinction of being the longest-serving volunteer at Cabrillo. He is one of the most popular field ornithologists in the San Diego area, and his free monthly bird walks have long been popular with our visitors. His articles about specific birds and his drawings have appeared in many previous issues of *The Explorer*.



Since the early 1980s, I have been leading entertaining and educational interpretive bird and natural history walks for the public at Cabrillo National Monument on behalf of the National Park Service. Bird walk participants come to the walks in response to notices placed by park staff in local area papers. Visitors who are already in the park also frequently attend the walks. They are given once each month from January to November, usually on the third Saturday. They are scheduled to last for 90 minutes, beginning at 9:30 in the morning and ending at 11:00.

Over the years I have been out to Point Loma and to Cabrillo National Monument many times, observing and documenting birds that I've personally encountered, as well as confirming some of the observations reported by others. During the past year or two, the time that I have been in the field on the Point has diminished as work obligations and other projects have taken my attention away from coming out for a pleasurable birding experience.

As a result, I particularly enjoy the fact that I commit myself to leading the public bird walks once per month at Cabrillo. I usually don't linger long after the scheduled walk time is over, but I savor the opportunity to share with those who attend and participate in them. I even have a fairly regular number of San Diego-area people (whom I refer to as my "groupies") who come to the walks just to

accompany me! This group includes a special lady named Klara, who speaks English with a German accent, and who proudly displays a t-shirt I gave her emblazoned with a photo of us standing in front of the Old Lighthouse.

The bird walks given during the first months of 1998 have been typical of previous walks in most ways, and yet each one has been a little different and unique. I have learned to tell "stories" about the different habitats present at Cabrillo National Monument, and the important and interesting plants associated with them.

I tell them about native and non-native plants, point out blossoms and seed pods, and discuss distinctive growth habits and adaptations of various plants we may encounter along the way. I even get them to smell the difference between sages, sagebrush, and laurel sumac. Should other wildlife, such as a lizard or a butterfly appear, everyone gets a chance to see it and appreciate its distinguishing features. When it comes down to my real motivation during any bird walk, it's as much for me to see and enjoy what is there as it is for the pleasure of sharing it with others.

I hope to see you on one of my upcoming bird walks. If you do join us, please let me know that you read this account. It is my desire to share the magic and excitement that I have found and enjoyed while leading these walks for the public at Cabrillo National Monument.



American Goldfinch
drawing by Claude Edwards

In the next issue of *The Explorer* Claude will discuss the annual Christmas bird count.



Another volunteer who has given many years of service to Cabrillo is **Helen Long**. This summer she could be found in the Old Point Loma Lighthouse, dressed in period costume, talking with visitors about life in the lighthouse in the 1870s.

Helen has turned to poetry to tell us of her experiences there.

In the Kitchen

I have a volunteer job: I open a door
and sit in a chair
suddenly the room that was bare
comes alive;
My being there takes visitors by surprise.

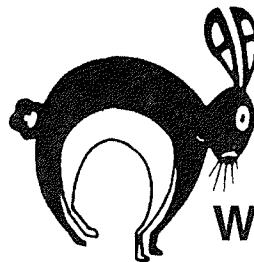
When they catch their breath from their
windy walk, they stop — and we talk.
"Where are you from? Isn't it a nice day?"
is what I usually say.

They come from every state
and many nations too
to marvel at our awesome view.

After peering into each of the rooms
they leave, thinking about years ago.
It really is quite a show.

Now exuberant schoolchildren burst in.
"Shhh," says the teacher above the din.
Do they listen? Do they care?
We'll never know until it's time to share.

Sitting here is what I chose;
and as another day comes to a close,
I hope my presence has made a difference.
The door is shut, they key is turned;
and once again there's reverence.



Wild Times

Do you know what a Wildlife Observation Report (WOR) is? It's a little white card (available in a white box in the back room above the mail boxes, or from me) wherein folks can record wildlife they've seen at Cabrillo NM (or the Point Loma Ecological Reserve). To quote the Yosemite WOR, "We are interested in observations of any mammal, bird, reptile, amphibian, fish, and invertebrate. We are, however, especially interested in rare and sensitive species, including reptiles, bats, birds of prey, cetaceans. Observations of non-native species, including feral cats, are also important. Please get help if you cannot identify the animal, and if it's a rare species, **please take additional lines to explain your basis for identification and the behavior of the animal.**" Drawings are always good.

That done, here's the deal:

For those of us who are stuck indoors, or are far away, how about a list of the wildlife those more fortunate outdoorsy folks have seen here lately? Beginning with the next issue, we will share the most recent reports in this Wild Times corner so everyone can learn what's

been running, crawling, flying or swimming at Cabrillo. To encourage participation, we will give credit where credit is due (unless you indicate otherwise) and your name will be emblazoned on the hearts of sympaticos adventurers.

These cards are an important record of sightings, and although they are not scientific, the information can give presence/absence data, and even point to trends. So, please remember that little white box, tuck a card in your backpack or pocket so you have one handy. It only takes a few seconds to fill out and is truly a good deed.

Some of the more unusual sightings of the past: sea otter (10-18-89); tarantula (with photo, 8-26-97); night snake (also with photo, 10-3-97); golden eagle (1-4-97); blue whale (3-23-97); and a pygmy sperm whale (recorded 3-27-98). Not bad for 144 acres, eh? Which reminds me, I need to fill one out for a Cooper's hawk I saw yesterday. Oops.

Thanks for your help. Gotta go.

Samantha Weber
Chief, Natural Resource Science

Yet another volunteer who has served Cabrillo for well over a decade is **Bill Armstrong**, our good friend and loyal mail courier. He has been an especially valuable asset to *the Explorer* staff, bravely venturing into the byzantine world of the post office's bulk mailing division four times a year so that those of you outside the park can receive the publica-

tion.

Bill no longer lives on Point Loma, having sold his home and moved to the Wesley Palms retirement community in Pacific Beach. All members of the Cabrillo staff join in wishing you all the best, Bill. Come back to visit us whenever you can.

Youth Conservation Corps: an experience in “real life”

by Emily Troxell

For the past several years, about 30 teenagers have ventured into the park each summer and entered into a work experience. The requirements for this experience are simple: Applicants must be between 15 and 18 years of age, and they must fill out and submit an application. Employees are then chosen by random selection. For many of these young people, it is their first “job.” The expectations of the employee and the employer have to be meshed; not all of the candidates make the transition into the working world successfully.

The 40-hour work week is a completely new experience for most of this group. Up to this point, school and home have been the scope of their life experiences. Schooling has been structured, and carefully directed by highly trained adults. Now the work experience takes the place of school; responsibility for personal behavior is shifted to the worker. This poses problems for some individuals.

These almost-adults, just finishing their formal schooling and at the *top* of their social ladder, now find themselves at the *bottom* of the work force. They have to follow directions: If they are instructed to wear safety glasses, they must. If they are to wear a uniform and keep it tidy, they must. If they are told to write a paper, they must. The boss is the boss, even if the workers do not like what he tells them they must do; these requirements are just part of the job. Assigned work can be hard, uncomfortable, and boring, but it can also bring all sorts of new skills and experiences.

These realities bring into focus the fact that these young people need a time of transition from the life of a child to that of an adult. The YCC program is crafted to play an important role in this transition.



The first priority of the program is the development of a work ethic that requires the corps members to do an assigned job to the best of their ability, and to realize that because they have accomplished a useful project, it will effect a positive change.

A second priority is that the work be done in a safe and timely manner. In other words, standards for performance are being met. Such standards will be part of the work experience for the rest of their lives. “Work” will be in different forms. While brute labor is a large part of the experience, it is also necessary for them to be able to communicate in writing as well as orally. To this end, the YCC workers are required to submit weekly computer-generated reports. The formal educational program includes a chance for these people to earn high school credit by completing a set of exercises and receiving an acceptable recommendation from the program supervisor.

Field trips expose the group to various facilities that provide similar services. This summer’s group visited Tijuana Estuary, Torrey Pines State Reserve, Poway Lake, and several other areas. They were asked to determine how these facilities met their mission statements, and were encouraged to look at them as

possible places of employment. Understanding that these young people are in a transitional phase of their lives, liberal incentives other than a paycheck—shirts, special activities and an end-of-employment party and review, for example—were part of the program.

Most of them finished their employment with a new view of how a productive life can be conducted, and we wish them all success as they enter the world of the adult. We hope that they will remember us—both as a staff and as individuals—as worthy teachers during their early experience in the country’s work force.

The Youth Conservation Corps is truly an investment in our future as a nation. Besides, the Point Loma Ecological Reserve benefited greatly by the removal of many exotic plants such as carobrotus (ice plant), Russian thistle, and acacia. The work is not done, but there will be another year and another group of almost-adults that are eager to embark on their work-life.

And we will be ready for them.

Vanishing herps get a helping hand

Canon Comes to Cabrillo and Says "Cheese"

by Samantha Weber



Have you ever met someone who has seen the world, lived through innumerable adventures from the Arctic to the equator, and still appears to be itching to hop on the plane to the next adventure? This is what happened to me at dinner with two Canon, U.S.A. representatives, at a restaurant on Shelter Island, August 3, 1998.

This dinner was scheduled in anticipation of the "getting to know you" session and check ceremony the following day at Cabrillo NM. In that ceremony, a Canon U.S.A. representative would hand a big \$50,000 check to the Superintendent of Cabrillo NM, and smile for the camera. This grant is allowing the park and researchers at San Diego State University to expand the reptile and amphibian study, in hopes of learning why over one third of the historical reptile diversity on Point Loma has disappeared in the last 70 years.

Anyhow, the night before the "press event," some of us had dinner together: the Superintendent of CNM, the Project Manager (yours truly), Dr. Robert Fisher (San Diego State University), and two Canon reps, Ken Defrens and Keith Paglan. "Expedition into the Parks" is a program run by both the National Park Foundation and Canon U.S.A. to fund quality conservation projects the national parks need, but do not have the money to do. Toward that end, Ken and Keith fly around the world visiting these projects, from saving Alaskan bears, to the Channel Island fox. Then they return to their respective jobs to report what is

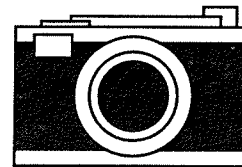
happening in the field, and basically "sell" this program as best they can: one to the world press at large, the other to Canon.

Considering that these two work out of fancy offices in New York City, I expected two sophisticated, polite but slightly stuffy corporate executives. Well, they were from New York; they were also polite and presumably sophisticated (how would I know?). Stuffy they were not—more like kids going to camp. Ken and Keith were so filled with enthusiasm for the projects and places they've seen that their eyes would light up when recounting their adventures. Great story tellers: surrounded by grizzlies, pummeled by huge tropical storms, clouds of Alaskan mosquitoes, etc. All in all it was a surprising and highly entertaining evening.



So the big day arrives. Another Canon executive arrives from the southern California region, Mr. Agari, along with the National Park Foundation representative, Bob Chandler. After retiring from the NPS where he had worked at an amazing list of big parks, Mr. Chandler decided to work for the NPF to continue his work to preserve our national heritage. Helen Long, park VIP and continual wonder, served up wonderful little snacks for everyone while we took turns splicing about our respective organizations and roles therein.

Duly acquainted and refreshed, we walked out to the statue for the photo opportunity. The plan was to gather at the statue and pose in front of the lighthouse with vivid blue sky backing us up. However, it was practically a white-out: fog.



"Expedition into the Parks" is a program run by both the National Park Foundation and Canon U.S.A. to fund quality conservation projects the national parks need, but do not have the money to do.

Ah, well. Still, everyone bravely gripped and grinned. Next we traipsed up the sidewalk to show everyone (including press) the herp-trapping arrays and a few lizards. Some got to hold a lizard or two and appreciate what gentle, beautiful creatures they really are. More pictures. Finally, everyone exchanged business cards, said their good byes, and it's off to another site for the Canon folks, and back to our desks for the rest of us.

So the low-key event was a success. Everyone got to know each other and learn a lot about each other's programs, while getting some publicity for a great project. I walked away imagining what adventure these people would be flying off to next. I stopped and looked around me. The sky was blue now, the ocean was sparkling, and the lighthouse was as picturesque as we'd hoped it would be earlier that day. When you really stop and think about it, Canon or Cabrillo NM, "it's nice work, if you can get it."

Looking back

by Raymond G. Starr
Chair, Board of Directors
Cabrillo National Monument Foundation



When you come to the end of something, there is a natural tendency to look back to see where you have been. Doing that with regards to my soon-to-be-finished two years as chair of the Board of Directors of the Cabrillo National Monument Foundation has brought a certain sense of satisfaction. During those two years, I think we (the Board, the staff, and the National Monument staff) have put the organization on a sound footing, and have begun changes which will greatly enhance its future contributions to Cabrillo National Monument. All the while, we continued to provide funding to the Monument for many things.

We have put CNMF on a firm footing, insofar as personnel and operations are concerned. The Board has appointed former bookstore manager Karen Eccles as Executive Director of the Foundation, in which capacity she will oversee our business operations, provide much planning, direction and coordination to our work, and represent us on the national stage. She, in turn, has increased and refined the responsibilities of her staff, giving CNMF an experienced, solid, and responsible staff so they can carry us into expanded operations in the future. The Board has approved a new Employee Handbook outlining personnel policies and guaranteeing that our employees will always be treated professionally.

In addition to building a good structure in which to place our Foundation, we also have continued routinely to fund many projects for the Monument. That includes research such as the herpetology and tidepool studies, funding to provide identifying labels for plants on the Monument grounds, and financing of the

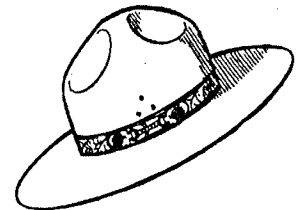
annual summer dramatic presentation about Cabrillo's voyage. The Foundation helps the Monument buy books and subscriptions for the library, gives money for required photography, provides many kinds of supplies, and funds exhibits (those changing displays in the Visitor Center, for instance). We help fund the Volunteers in Parks program, contribute heavily to the Cabrillo Festival, support living history presentations, fund *the Explorer* and the Monument's semiannual newspaper, conduct and pay for lecture series. I'm sure any ranger at the Monument will tell you that CNMF makes a difference in his or her ability to serve the visitors.



In addition, the Foundation provides help for larger projects: It has played a role in the renewal of the Exploration exhibit and the creation of the soon-to-be-opened military museum. We continue to publish books and brochures for the Monument, including a new translation of the earliest account of Cabrillo's voyage, which should be out this fall. We next will be funding preliminary work on a new videotape on the tidepools.

To enable the Foundation to play an even larger role in the future development and operation of Cabrillo National Monument, we have spent much time in the last two years talking about moving into fund raising and related activities. After many months of discussion, CNMF has committed to two immediate steps in that direction—expanded membership and planned giving—as well as planning for future possible capital campaign drives.

We will soon launch an expanded membership program, with several levels of support. It will include new benefits and programs which will enhance the



I'm sure any ranger at the Monument will tell you that CNMF makes a difference in his or her ability to serve the visitors.

connection between the community and the Monument. Look for announcements of the new program within the next few months.

The Foundation has also created procedures whereby it will be able to receive your gifts in many ways. For instance, we will present an opportunity to contribute to a permanent endowment; we will be able to accept gifts designated for specific purposes or bequests for the future. We are also setting up a Living Income program, whereby someone can donate assets, receive income as long as they live, and bequeath the fund to the Foundation. Again, keep an eye out in the near future for information on these things.

When one summarizes it all, it seems like the Board and staff have accomplished quite a lot in the last two years. I want to thank all who made it possible, and I hope that our new chair, Dr Charles MacVean will receive the level of cooperation I was blessed with over the last two years. If he does, the Cabrillo National Monument Foundation's contributions to the Cabrillo National Monument will grow apace.

Cabrillo National Monument Foundation's contributions to natural resource projects

by Karen Eccles, Executive Director

Cabrillo National Monument Foundation's primary purpose is to promote the historical, educational, interpretive, and scientific activities of the National Park Service. Additionally we cooperate with the park service in stimulating interest in educational activities and encourage historical and scientific investigation relating to Cabrillo National Monument. Cabrillo National Monument Foundation has been a proud partner for 42 years doing just that.

For the past eight years, the foundation has funded the Tidepool Monitoring Project at the monument. This project analyzes conditions in the tidepool area by first identifying "indicator" species, then determining sampling techniques and selecting the visitor-use areas to be monitored. Project workers established 27 transects, 45 photo plots,

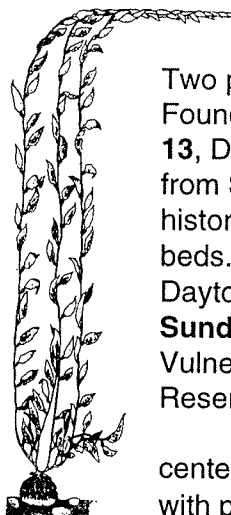
and developed a handbook defining the monitoring protocols. The conditions in each of the plots is documented twice a year during low tides so that the impact of visitors in the intertidal region can be accurately measured.

This fiscal year, the Board of Directors of Cabrillo National Monument Foundation voted to contribute \$4,000 to Cabrillo National Monument to insure the continuation of the monument's herpetology study. This study inventories reptile and amphibian species year round at Point Loma in order to determine what species live here, how many there are, and whether they are declining or thriving. Once this information is known, work can begin to preserve them and their sensitive habitats. Cabrillo National Monument received \$50,000 in August from Canon U.S.A. to continue the research for another two years [see Samantha Weber's article about the grant

in this issue].

The foundation also provided funding for new wayside exhibits around the park to identify plants, as well as historic sites and buildings, thereby further enhancing visitors' understanding of the many resources preserved and protected at Cabrillo National Monument.

The bookstore in the monument Visitor Center, operated by the Cabrillo National Monument Foundation, generates funds which are donated to Cabrillo National Monument. All sales items in the bookstore relate to the themes of the park and offer the visitor more information about areas of interest they might have, whether they are a child or an adult. We believe we have "something for everyone" so that a reminder of your visit can go home with you.



Two presentations remain in Cabrillo National Monument Foundation's public lecture series. On **Sunday, September 13**, Dr. Mia Tegner, a well-known research marine biologist from Scripps Institution of Oceanography, will speak on the history, ecology, and resource values of the Point Loma kelp beds. The final lecture in the series will be given by Dr. Paul Dayton, Professor of Oceanography, also from Scripps, on **Sunday, October 11**. His topic will be "Point Loma Habitat Vulnerability to Human Impact: the Case for Marine Reserves."

Both lectures will take place at 3:00 PM in the visitor center auditorium at the Monument and are free of charge with park admission.

*The
Explorer*



Cabrillo
National Monument
Foundation
1800 Cabrillo Memorial Drive
San Diego, CA 92106

NON-PROFIT ORG.
U.S. POSTAGE
PAID
PERMIT 2381
SAN DIEGO, CA