

The Explorer

*Newsletter of Cabrillo National Monument
and the
Cabrillo Historical Association*

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Cabrillo as Classroom

***A special issue devoted to the broad spectrum of
educational activities at Cabrillo National Monument***

The idea of educating the public has at times appeared to be a daunting challenge — a challenge arising from the realization that at times those whom we attempt to educate are educated far beyond our staff's individual educational accomplishments. But challenges are part of what makes working in the national parks as educators/interpreters so exciting. Helping park visitors of all ages to make connections between classrooms and outdoors provides tremendous satisfaction. Even the simple task of responding to someone's inquiry, regardless of its simplicity or difficulty, reaffirms confidence in the knowledge that all educator/interpreters possess. Individuals who have attempted to inspire interest

and appreciation for our natural and cultural heritage in the footsteps of such worthy leaders as Freeman Tilden and John Muir have struggled, and perhaps will continue to struggle, with the perceived differences between education and interpretation into the distant future. But whether we educate or interpret, there will remain few areas, in San Diego anyway, that are better equipped to provide opportunities for learning/experiencing facets of our heritage than Cabrillo National Monument.

The articles in this issue of *The Explorer* will discuss some of the real learning opportunities that have been offered and are available here. Some educational opportunities were those for which the recipients received compensation; they were, however, no less educational. We often associate

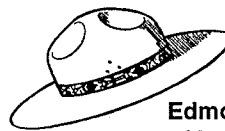
education programs with experiences related to classrooms, internships, environmental education, etc. We sometimes seem to forget that pay does not preclude learning. How much difference is there in the educational experience acquired through a non-paying internship and that of a seasonal employee who "lucks out" by finding a mentor who starts him or her on the right track. There are many who received their paid educational experience right here, and I will just name a couple of them: Ellis Richard, currently Chief of Interpretation at Grand Canyon NP, and Rich Rambur, Superintendent, Lowell National Historic Park, were both former seasonal rangers at Cabrillo NM. A well-known non-paid example is Terry DiMattio, current superintendent here at Cabrillo National Monu-

ment, a former volunteer at this park. All of these men worked and learned under the mentor/tutorship of an elite team: Tom Tucker and Kay Leahy.

There are others who interned at Cabrillo NM and have gone on to other pursuits armed with knowledge gained through opportunities offered here. Students from San Diego State University majoring in Park and Recreation Management, Physical Therapy, Geography,

and History have benefited. One who comes to mind is Tracey Smith, who overcame her fear of public speaking while a seasonal interpreter. Following completion of her graduate studies she became an instructor at local colleges and is currently a board member of Cabrillo Historical Association. And even junior college students at Southwestern College who got opportunities to test their skills in the performing arts before

diverse audiences at Cabrillo National Monument have gone on to acting careers. Yes, there are innumerable educational opportunities at this small national park site on Point Loma, some perhaps not yet even discovered. We hope that as you read through the following articles you will recognize ones to which you can relate.



Edmond Roberts, Chief of Interpretation

Terry DiMattio



From the Superintendent

I recently had the pleasure of reading *The Lorax*, by Dr. Seuss, to a class of first and second grade students at Juarez Elementary School. Almost as soon as I entered the classroom they told me they had just visited Cabrillo National Monument the previous week. They excitedly told me they had seen the tidepool program, "Steps to the Sea," and our new film, "In Search of Cabrillo," and had visited the Old Point Loma Lighthouse and climbed the winding stairs to the bedrooms on the second floor. They had even walked a

short way down the Bayside Trail. We talked a little about what they had seen and done, and I could tell from their voices and the smiles on their faces that they had enjoyed their visit. As you can imagine, as the superintendent I was thrilled to hear that these young visitors had had such a wonderful time while participating in one of the most important things we do: educating the next generation about their legacy.

The theme of this edition of *The Explorer* is "Cabrillo as Classroom," and is dedicated to education. Each year about 14,000 students participate in our formal education program. Here they have the opportunity to learn about Juan Rodríguez Cabrillo and his voyage of exploration, the Old Point Loma Lighthouse, the tidepools, and the coastal sage/maritime succulent scrub habitat along the Bayside Trail. A majority of these students have a ranger-guided activity along with seeing the film about Cabrillo, or the tidepool slide program, or the film on gray whales. For others, their teachers guide them through programs the rangers created on Cabrillo and the Old Point Loma Lighthouse. Other classes simply see a film and then explore the park on their own. Whatever program they participate in, they have come to this outdoor classroom to learn first-hand from the resources themselves about their cultural and natural heritage.

For a small park, Cabrillo NM is blessed with an abundance of resources which can help curious students—young

and not so young—learn about their cultural heritage and the natural world around them. The variety of historic and natural resources, together with our location within the city limits of the sixth largest city in the USA, helps make this park an accessible classroom that opens up new worlds to those who wish to learn.

The link between these important resources and those who want to learn about them, is the staff, the rangers and Volunteers-In-Parks who daily share their knowledge and love of the park with inquisitive people from around the world. Through the medium of exhibits, guided walks, talks, demonstrations, and introductions to the audiovisual programs, they interpret the story of Cabrillo's life and voyage, the role of the lighthouse in guiding mariners safely along the coast and into San Diego Bay, the ecology and migration of the gray whale, and the fragile life of tidepool invertebrates in language that provokes our visitors to want to learn more.

Over the past several years, the park has become a classroom in a different sense—a living laboratory for the study of the marine and terrestrial resources that are found here and in the Point Loma Ecological Reserve. We have recently issued permits to students from San Diego State University and Scripps Institution of Oceanography to study conspicuous chitons, blind gobies, wooly sculpins, opal eye and other fishes. A UC San Diego doctoral candidate is completing his three-year study of reptiles on Point



Loma this summer. A UC Berkeley graduate student is conducting a study of the Electra buckmoth, little blue and Mormon metal mark moth within the monument and Ecological Reserve. It seems that Point Loma may contain the longest isolated parcel of coastal sage scrub habitat in Southern California. This is of particular interest to scientists and may affect how species interact and evolve, and what we and our neighbors do to preserve this sensitive habitat.

We are pleased and excited that scientists have "discovered" Cabrillo National Monument and the Ecological Reserve and want to do research here. The data they gather and analyze will help our rangers understand the condition of our natural resources and what should be done to preserve them. They will also be able to use this information in our interpretive talks, exhibits and school programs. In this way, students of all ages will come to know, understand and appreciate what we have here, and how important it is that we work together to preserve it for the next generation of curious minds.

I hope that the next time you visit Cabrillo National Monument, you will see it in a new light, a classroom where each of us can learn throughout our lives.



Emily Troxell



Cabrillo National Monument's school programs



Each year we play a part in the education of about 14,000 children and 2,500 adults and teachers who take part in our educational program.

What are they doing here? Well, read on and you will see.

Several types of programs are offered; all are based on California requirements for history and social science, science, or math. This is very important, because teachers need to know that their students will be using their time wisely when they are participating in one of our educational programs.

Ranger-led programs last an hour and cover selected content. Teacher-led programs are prepared by park staff and materials are provided. Auditorium programs, off-site, and parent-directed activities make up the rest of the education program.

The Programs

• **Growing Up in the Old Point Loma Lighthouse:** We offer this program for second graders. Students explore what it was like to live in 1880 without electricity. People coped well even without a reliable source of water. Just imagine what happened to the water that was used to wash hands. Did it go out the window? Did it go on the garden? How were baths

taken and what took the place of the present day toilet? The children learn that they could live a comfortable life, but that different ways of doing things were necessary. People spent their free time differently, wore different clothing, used slightly different vocabulary, and performed different tasks.

Three programs are provided for the third through fifth graders:

• **Juan Rodríguez Cabrillo, Voyage of Exploration:** This popular program deals with Cabrillo's exploration. While the teachers introduce their students to the facts of the voyage, the park's education program deals with material supporting the exploration. Students discuss the foods available in the 16th Century and methods of cooking it. Looking at the model of the ship, students speculate how life was conducted. During a discussion of the duties of the crew, the tools of navigation and war are demonstrated. One of the important responsibilities of the voyage was mapping the coastline. To develop mapping skills, the children participate in a compass activity requiring them to take a compass bearing and record it as a map. If time allows, they can then reverse the process and follow the map.

• **The Chaparral Supermarket—Native American Plant Use:** The Bayside Trail is the site of the study of plants that provided food, shelter and medicine to the Kumeyaay people. They touch, feel, smell and maybe for some venturesome student, even taste black sage, sagebrush, lemonadeberry, California buckwheat and yucca. Plant adaptations are discussed with the idea that students need to learn that a habitat works well within itself, and, used carefully, can maintain a healthy balance.

• **Life in the Intertidal Zone:** The least-used ranger-led program is about the rocky intertidal zone of the seacoast. Students are taken to this area only when the tide is low enough to allow study in a safe environment. The program includes general instruction on the ways that intertidal inhabitants adapt to their environment. Students then move into the intertidal area and conduct two observations of

continued on next page

common inhabitants in a selected area. The study area is set up similar to our tidepool monitoring system, however care is taken to be sure that the class does not impact one location adversely. The activity is designed to give the students experience in identification of various species, as well as development of observation skills. All told, the students experience a very busy hour in this area of our park.

Two teacher-led programs are available. Teachers must take an eight-hour course in order to present the programs.

- **Connections 1542** deals with the Cabrillo story. It includes information about the Kumeyaay people that Cabrillo met when he landed in San Diego. The other program,

- **Connections 1880**, deals with life in San Diego in 1880s. It covers the operation of the Old Point Loma Lighthouse, as well as cultural practices of the day. There are other components of the program. For example, since it is necessary for the lighthouse keeper to know when to have the light burning, weather forecasting is discussed. Many consumable goods were purchased through mail order catalogues. The students do an activity in which they experience what it would be like to purchase family needs from an old catalogue. This provides practice with some basic math skills, as well as a great consumer education. This broad-range program covers not only requirements within the history framework, but also math and consumerism.

Both of these programs were written as story-driven scripted material. This allows the teachers greater freedom to deal with their children while giving them the necessary information for an informative educational experience.

- **Auditorium Programs:** The usual auditorium programs are offered on a daily basis.

The tidepool program provides students a chance to learn about this area if actual tidepool access is not available, or it forms an introduction for students who will be taking the ranger-led intertidal program. The Cabrillo movie provides support for the Cabrillo ranger-led and teacher-led programs, as well as being a good stand-alone presentation. Each program is introduced by a ranger, and usu-

ally the introduction is tailored to the needs of the children so that they become a part of the program.

- **Connections: Sept 28th (1542)** is a less well-known program designed to be used in the classroom during the week of September 28th. It deals with the interaction of the crew of the *San Salvador* and the Kumeyaay people.

- **Cabrillo Festival Education Program.**

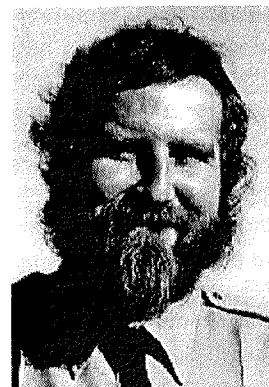
A special set of activities has been devised to be presented during the weekend of Cabrillo Festival. Young children can make rubbings of tidepool creatures. A copy of the banners displayed in the breezeway is suitable for second and third grade students. Students in the fifth and sixth grades can complete the Cabrillo Festival Junior Ranger Program. These activities greatly enhance the experience of the children attending the Cabrillo Festival.

The ranger-led programs are presented October through mid June. The teacher-led program may be scheduled at any time by all trained teachers; it is a great summer activity! While no reservations for anything other than the teacher-led programs are taken during the summer, teachers wishing to bring their students to the monument can view any of the regular auditorium programs that fit into their schedules.

The present program has grown from a nucleus of just a few experiences about 14 years ago. While we feel the programs are strong and fit well with the needs of the students of San Diego County, we realize that continual reevaluation and updating are necessary to keep the programs vibrant and alive. It is our desire to continue serving the children of our area with the most professional programs possible.



John Golda



Cabrillo's education programs: the issue of accessibility

It is hard to imagine Cabrillo, or most other parks for that matter, not full of kids on a school day. They run down the breezeway laughing while teachers and parents try to keep them in line. As park rangers, most of us take that sight for granted. Yet there are many children who might never get the chance to visit their national parks and get those same experiences. One of the aspects of the National Park Service that I am most proud of is its desire to reach out to those students who might easily be forgotten or left out. With a lot of help we are able to reach some of these students.

Parks can often be a very middle-class American experience. The psychologist Abraham Maslow stated that there is a "hierarchy of needs" in which the basic components of life and security must be met before one can have the freedom to develop an interest in the luxuries and the "finer" things in life. Unfortunately, history, nature, and parks usually seem to fall into the category of "finer" things. After all, how can someone take an interest in something that happened five hun-

dred years ago or in an endangered habitat when there are bills screaming to be paid and there never seems to be enough time in the day? Maslow's theory seems to be borne out in the attendance at our school programs. Many schools in poorer districts do not attend our educational activities, even though they are free of cost. And yet, these students are the ones who can benefit the most from what this and other parks can offer.

There are many reasons for this poor attendance. Many schools do not have the money for transporting their students to places away from the classroom; field trips are a luxury they can't afford, even if the result is a program that can add to the students' appreciation of their studies. But just as important, the parks are not a fixture in the daily lives of many low-income families and schools. My experience has shown that among many low-income families the parks which offer barbecue pits and a chance for weekend recreation are more visited than those parks which provide a sense of history and perspective. Once a low-income family has had the opportunity to improve its financial status, it acquires the freedom to develop a better appreciation for the great diversity of parks.

We are able to reach out to some schools, though. We could not hope to reach these students without the Cabrillo Historical Association. The Association has traditionally set aside money for a significant number of bus trips every year. Teachers are responsible for making the reservations for transportation of their classes, the Association provides the funding for the transportation, and the park service provides the educational program. Students from Chula Vista, El Cajon, and San Diego schools which might have otherwise thought the park was out of reach have had the opportunity to visit Cabrillo. There is still more that could be done. In these days of shrinking budgets, the possibility of grants and corporate sponsors holds out a gleaming hope for helping more students from poorer districts to visit Cabrillo National Monument.

Even when these students get to the park there can be difficulties in reaching them. Many of them get very little opportunity to leave their classroom environ-

ment or even their own neighborhoods. When they get to the park they are possessed by an incredible level of energy. Unlike adults, though, they don't seem to tire or lose any of their momentum. The trick is in channeling this energy. Every ranger has found a personal method of trying to do just that. In giving a good program, it is necessary to find a sense of common ground or understanding. This produces a rapport which helps to better explain an idea in terms the students can see and appreciate in their own lives. Early in my career, one of the hardest things for me to do was to keep children out of the trees or being otherwise distracted while I was trying to share some of the mysteries of the universe. I couldn't quite understand the attraction of the trees. I had practically grown up climbing trees;

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didn't everybody? I gained a better appreciation for the trees' lure when I had the opportunity to visit the communities where the students lived. Trees were a rare enough occurrence there amid all the asphalt and concrete, but trees large enough to climb were nearly nonexistent. Things I saw as universal and almost mundane were unique and magic to them. Perspective is an amazing thing.

The rewards for introducing disadvantaged students to park programs are immense, despite the obstacles. As with other students, the park and its programs

with the rangers are a real-world illustration of the their classroom studies. They are introduced to new ideas and new views of the larger world around them. But these programs also offer students a new view of themselves and how they are a part of that world. They have the chance to learn about the parks and what they can offer. Henry David Thoreau said, "In wilderness is the salvation of man." We can help many students take their first steps toward that salvation, even if Cabrillo National Monument is not the most wild of places. They can be given that sense of inclusion into what so many of us take for granted. For the park service it is also important as a means of building a constituency of supporters and advocates for the protection of the concepts and places that are important in defining who we are as a nation and a people—the parks are snapshots of who we are and where we have been. These students are a part of that picture and each will make his or her own contribution. These students are also future voters and taxpayers: Why would they want to support something whose benefits and relevance they have never been given the chance to see in their own lives?

Cabrillo National Monument offers an incredible variety of educational experiences. The programs we are able to offer to students who might not otherwise be able to explore the park are among the most important. Like every educational experience, these open up new doors, and leave us with a better sense of who we are and what is important in our lives. These programs would not be possible were it not for the assistance of Cabrillo Historical Association.



Samantha Weber



**With mud on
your shoes
and a smile
on your face:
outdoor
educational
opportunities
at CNM**



o demonstrate how science and research at Cabrillo National Monument can serve as a powerful educational tool for many folks in

and associated with the park (including me, the ever-greedy learner), I have fashioned a quiz which, if you have participated in all the scientific sampling at the park, will be eminently do-able. If not, you can consider yourself happily normal, but by reading the answers, I hope that you — like participating volunteers and staff — will learn more about Cabrillo National Monument's surprisingly important, unique and fascinating wildlife, and the research being done to understand and preserve it.

Quiz

1. How do you tell a girl western fence lizard (*Sceloporus occidentalis*) from a boy western fence lizard? Is it the pitch of her voice?
2. How do you find a blind goby (*Typhlogobius californiensis*)? Wade into the tidepools and shout "Marco!" and wait for their tiny, burbled "Polo!" reply? And what do they have to do with the evolution of amphibians?
3. How do you find male Electra buckmoths (*Hemileuca electra electra*), a spectacular but shy species that spends most of its time hanging out under bushes? Which bushes are they, and how does that make this animal important to conservation biology research?
4. How do you distinguish individual snakes (of the same species, of course)? There are no ears or limbs to tag, no hair to clip; uhhh....politely ask its name?
5. Match tools needed for handling the listed organisms while sampling in the field (there may be more than one tool per animal):

a. gloves	scorpions
b. mask	owl limpets
c. calipers	rattlesnakes
d. nothing special	alligator lizards
e. forceps	orange-throated whiptail mice
6. How do you distinguish small (10-20 mm) owl limpets (*Lottia gigantea*) from their compatriot limpet species, e.g. shield limpet (*Collisella pelta*), finger limpet (*C. digitalis*), rough limpet (*C. scabra*) of the same size? Why does this matter?
7. If you need to estimate the abundance of nocturnal carnivores that hide from humans and don't necessarily make noise, you are not allowed to trap or even touch them, and you cannot work at night, what do you do?
8. Which county has the most threatened and endangered species in the continental United States?
9. Which bird species sounds like an automatic sprinkler?
10. What proportion of the world population of the endangered Orcutt's spineflower (*Chorizanthe orcuttiana*) lies on the Point Loma peninsula?
11. How many scientific research projects are now underway or under consideration to study this unique and valuable natural resource? Who is involved?



One of my favorite things about the work I do as Acting Chief, Natural Resource Science, is interacting with people who love what they do. The graduate students and Ph.D. scientists who conduct research at the Monument are invariably so enthusiastic about what they study, so enthralled by the unique beauty or behavior of these organisms, that I become excited by this new perspective and information and start telling anyone who comes near me all about it—clearly a victim of the contagion of enthusiasm.

Not blinded by the focal animal/plant of their study, these visiting ecologists, entomologists, botanists, herpetologists, mammologists, etc., are so commonly impressed with and surprised and charmed by the overall quality, diversity, and distinctiveness of our particular patch of coastal sage scrub or the stretch of tidepools, that each time I venture out with one of them, I come away with a renewed sense of just how special this place and its denizens are.

Many volunteers who help with field work also become happily infected by this bug of enthusiasm. Symptoms include an itchy pox (of curiosity), extreme thirst (for knowledge), disorientation (dizzying sense of wonder), restlessness (for outdoor experiences), and altered states of consciousness (boosted confidence from mastering new skills). Some unwitting victims become so heavily hit by this edifying epidemic, they (in a deluded state) start conducting library research themselves (!), and end up teaching everyone else. It's pretty heady stuff.

The cure? We don't know, and we don't want to know. But we do know that we are lucky to have a) this beautiful place to enjoy and share, and b) such great scientists, staff, volunteers, friends, and visitors to share it with.



Answers to Quiz

1. Below the "vent" (line between their hind legs, belly-side up, demarking the nether regions) there are either all small scales running across their tail (girl) or there are two larger scales in the center (boy). (Drs. Case and Fisher, UC San Diego, "Coastal Sage Scrub Amphibian and Reptile Autecology and Reserve Design Study").

2. Look under rocks for their little sandy burrows, where they live commensally with Beach ghost shrimp (*Callinasa affinis*). According to my 1968 Webster's, a commensal is "an animal or plant that lives on, in, or with another, sharing its food but neither parasitic on it, nor injured by it." The blind goby's high tolerance for very low concentrations of oxygen in water is relevant to the evolution of air breathing (I guess you're motivated to breath air if your water has almost no oxygen). Air breathing was an important step in the evolution of amphibians. (Nancy Aguilar, Scripps Institution of Oceanography graduate student, "Comparative Physiology of Gobies")

3. Carry around a few Electra buckmoth females, or a bit of synthetic mimic of their pheromones and *voilà!* — where once you had none, suddenly three bright red flashing males with big red-and-cream striped tummies are fluttering around your head. These males come out in the fall, and spend most of their time under Buckwheat bushes (*Eriogonum fasciculatum*), the "host" plant for this species' larvae. The Electra buckmoth is entirely dependent upon this one species of plant, so is considered a coastal sage scrub-dependent species.

One question the investigator has is whether the steps land-use planners are taking to preserve coastal sage scrub and its vertebrate species, a very visible and closely scrutinized effort, will also effectively preserve coastal sage scrub-dependent invertebrate species, including butterflies and moths. (Dan Rubinoff, UC Berkeley, "The Effects of Habitat Fragmentation on the Genetic Diveristy of Lepidoptera")

4. Clip the outside edge of sub caudal scales (the scales below, or

tailward, of the vent), in a specific numbered pattern so no two snakes are trimmed alike. The outside edges of these scales aren't directly connected to the snake, like a finger nail, so cutting doesn't hurt the animals—a quick manicure and they're off!

5. Scorpions: e. Use forceps to lift the little stingers out of pit-fall traps (buckets in the ground), nice and far from your digits, and out of harm's way.

Owl limpets: c. Calipers are used during intertidal sampling to measure the length of each owl limpet found within a one-meter radius of the plot's marker.

Rattlesnake: d. Nothing special. Believe it or not, we use no special equipment to "sample" rattlesnakes: WE DON'T HANDLE THEM AT ALL. Peek into the trap to identify the species, have an experienced person open the trap so the snake'll slide out (I actually like doing this), and as it crawls away, eyeball its length.

Alligator lizards: a. (optional) or **d.** Alligator lizards love to bite and, although non-poisonous, if you've ever looked closely at their massive jaw muscles, you may want to don gloves just in case. I do.

Orange-throated whip tail: d. Gentle, sweet, and beautiful lizards with a long, graceful tail. Never bite. You can hold them in your hot little hand, which on a cool winter morning they seem to love, and peer closely at their spectacularly intricate and vibrant orange scales.

Mice: a, b. Gloves and mask. These little rascals LOOK innocent, even more so than other species mentioned above, but can pose a greater risk than most for two reasons. First, many will bite you in a flash if they can (they are little and scared). Second, you must wear a mask to protect yourself from possible exposure to the Hantavirus. No infected mice have been found here (we were tested a while back), but the risk is always there, and with a deadly virus, better safe than sorry!

6. Owl limpets are pretty flat limpets and have a markedly pebbled texture to their shells, especially when young, but are clear of ridges. Rough and

finger limpets have ridges on their shells running from their apex to the shell's margin. The easiest species to mistake for *Lottia* is the shield limpet. As you might guess from the name, the shield limpet's shell is fairly smooth and flat and can get pretty big. However, the apex is near the center of the animal, whereas the owl limpet's apex is near one end. Additionally, the shield limpet does not have that distinctive pebbled texture. Making these distinctions is critical for accurately tracking changes in owl limpet numbers at permanent plots for our intertidal monitoring program. You must be certain you are counting and measuring the right species—otherwise numbers at a plot can change from 5 to 45 in 6 months. That is either a sign of amazing recruitment (lots of owl limpets birthing babies) or mis-identification and time for a recount. (Gary Davis, Senior Scientist, National Park Service, Channel Islands Field Station, and Dr. Jack Engle, Marine Ecologist, UC Santa Barbara)

7. Collect scat. Kevin Crooks, a Ph.D. candidate from UC Santa Cruz, is conducting a carnivore study here and around San Diego canyons. He sets up a one-kilometer transect (basically a route he follows each time), and a few times a year walks along the trail, collects all the scat he finds (scat is a nice, science-y word for doo-doo), then returns each day to collect any subsequent droppings. In general, more scat means more animals, so the "index" gives you a feel for their relative abundance, vs. their exact numbers. The species of the "donor" can often be determined from the scat size and shape. DNA analysis of the shed epithelial cells remaining in the scat can then confirm species identification. So that's the poop on carnivore surveys! Now you know.

8. San Diego county. This is something few people realize. Those scrubby-looking canyons speckling our landscape, the seemingly bleak stretches of parched desert, the "undeveloped" land all around us is actually teeming with unique and vulner-

able life. San Diego County is physically large, and has a wide range of climates: desert temperature extremes and severe droughts, snow covered winters in the Laguna Mountains, fresh water lakes, rivers, vernal pool-spotted mesas, and the Pacific Ocean with its coastal cliffs and specially adapted residents (e.g. cliff spurge, cliff swallows) — so many different ecological conditions leading to a rich array of unique life systems. That combined with the persistent habitat fragmentation and destruction associated with development, has placed more species on the Threatened and Endangered lists here than is the case for any other county on the mainland.

9. The spotted towhee (*Pepilio erythrophthalmus*), formerly known as the rufous-sided towhee. You know the sound one of those automatic lawn sprinklers makes during its slow sweep (*chi-chi-chi-chi*) and the other noise it makes when it quickly trills its way back to starting position? The towhee sounds like that return sweep to me. But, hey, it could just be me.

10. 84%! This recent discovery (this spring) has raised the known world population of this tiny plant from 70 individuals (up in Encinitas) to about 450. Pretty amazing, eh? The 1993 edition of the *Jepson Manual of Higher Plants of California* lists it as "ENDANGERED CA, PRESUMED EXTINCT. Coastal scrub ... (Del Mar to Point Loma...). Last known habitat has been developed." (p.858) So, NOW are you impressed with the importance of the Point Loma Ecological Reserve? In our very own back yard.

11. Ten. Nine projects are approved, 7 of those already underway, one is going through California permit hoops before it can pass through ours. Six universities (U.C. Berkeley, U.C. San Diego, including Scripps Institute of Oceanography which I count separately, U.C. Riverside, U.C. Santa Cruz, San Diego State University) and two federal agencies are involved. All that fuss for a little ol' 144-acre hunk of land. My, my.

If you could answer more than one of these correctly, you are doing VERY well. More than three, you're a pro, and all of the above! I'll enlist you to conduct seminars for us. In any case, I hope YOU learned from THIS article about the truly fascinating and scientifically and educationally invaluable nature of our wonderful little promontory of land jutting proudly out into the sea.



Cabrillo Historical Association

Our partner in education



As a National Park Service cooperating association, Cabrillo Historical Association's purpose is to

support the interpretive, educational, and scientific research efforts of the National Park Service, specifically, Cabrillo National Monument. CHA has done this for over forty years in a variety of ways. The most visible way is the sale and publication of educational and interpretive materials which are made available to the public in the visitor center and by mail order. These sales items reflect the themes that the park interprets to visitors as well as the overall mission of the National Park Service, which is, in part, to "conserve unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations." Other less visible ways of support include providing funds for the tidepool monitoring project, plans for the exhibit room, signage on the Bayside trail and tidepool area, new audiovisual equipment for the auditorium, the gray whale model at the whale overlook, materials for school programs, Cabrillo Festival, Whale Watch Weekend, and *The Explorer* to name a few.

With limits on the amount of federal funding available and the continuing importance of public education, Cabrillo Historical Association is proud to be a partner with Cabrillo National Monument in their educational endeavors.



Mary Beth Vygrala



Volunteers at Cabrillo

The annual volunteer recognition dinner was held at the park on April 26, 1997. Nearly 75 volunteers and staff enjoyed a barbecue chicken dinner. The theme this year was "Tidepools," honoring the group of volunteers who have been doing such a great job as tidepool

monitors.

Three new people have joined the volunteer ranks this summer: **Ray Resler**, a retired geology professor from Grossmont College, will assist at the visitor center desk and present geology walks in the tidepools. **Chris Ferree** has just arrived from Ohio with an Associate Degree in Ranger Services. He will be volunteering at the visitor desk and doing roving interpretation. **Gail Herrera** hails from Monument Valley. She will be an instructor for the YCC in environmental education and help in the visitor center. There will also be three new interns from San Diego State University this summer: **Doug Barrera** is majoring in history. Another history major, **Gene Adams**, will do research on our military history. **David Garcia** is a social science major.

New this summer are VIPs in the Old Point Loma Lighthouse. Several of our tidepool monitors will be doing costumed interpretation in the kitchen of the lighthouse. "Home Arts of the 1880s" is the theme of the living history presentation, and the women will be demonstrating crafts of that era. **Ulla Kordel** will show off her needlepoint, **Sarah Wagner** will try her luck at china plate painting, and

Nancy Taino will do *scherenschnitte* or paper cutting.

It looks like another great summer at Cabrillo—thanks to the help of all our VIPs!



Sarah Wagner demonstrates 19th-century crafts at the Old Point Loma Lighthouse.



Again this summer we will have a full house of teenagers—thirty 15-18-year-olds enrolled in the YCC program [see Carol Knipper's story on page 10 for further details]. **Greg Bell, Todd Partridge, and Victoria Smith** have been chosen as the site supervisors and will be responsible for directing the work completed here at Cabrillo and in the Point Loma Ecological Reserve. Duties of the crews will include replacing exotic plants with native vegetation and implementing methods of erosion control in the coastal areas.

Victoria has just completed her sec-

ond year at UC Davis; this will be her fifth summer at Cabrillo. Todd has been a faithful volunteer here, and we have found him to be a great help on the resource management team. Greg, a substitute teacher in grades 7-12, is new to our staff this year, but not new to NPS, having worked at Glacier NP.

Our new crew leaders are past YCC crew members. They have proved themselves dependable, and will be working with each of the three teams supporting the supervisors. They are **Arin VanLaanen-Gregory, Garrick McDowell, and Shah Doft**. We welcome all these people to our staff this

summer. We hope that each of you has a rewarding experience!

Congratulations to CNM Administrative Officer **Anna Nizinski** who was married on June 7, 1997, to Ray Stits, an engineer at Qualcomm in San Diego. After honeymooning on an Alaskan cruise, they will reside in San Carlos.

Two former Cabrillo people are continuing to advance in their careers: Former Superintendent **Gary Cummins**, who has been Deputy Superintendent of Grand Canyon NP, will become Manager of the National Park Service's Harper's Ferry Interpretive Design Center in West Virginia. **Costa Dillon**, who has been Superintendent of Homestead National Monument of America in Nebraska, has moved to Long Island, New York, where he is now Superintendent of Fire Island National Seashore.

Carol Knipper



The Youth Conservation Corps at Cabrillo

...and she went on.

"Would you tell me, please, which way I ought to go from here?"

"That depends a good deal on where you want to get to," said the Cat.

"I don't much care where—" said Alice

"Then it doesn't matter which way you go" said the Cat

"—so long as I get somewhere," Alice added.

Lewis Carroll
Alice in Wonderland



ummer is a time for embarking and becoming, especially as a young adult. Summer is not confined to the tired routines of school and family but seems to lie in that chance of new destinies and of stepping forward *somewhere*. Each summer in my early career of summer jobs, after the new friendships, new experiences and challenges, I found that I had moved irreversibly forward in my life as if on some slow-moving track that did not permit me to move back. These summers—like signposts on the horizon—guided the choices I wanted to make about my lifestyle and experiences. I have had to recall these summers countless times to affirm what I have done and give me a

glimpse of what I am capable of accomplishing. Now I have the challenge of providing an event-filled summer for young adults in the Youth Conservation Corps Program (YCC). Through this program we hope to give these enrollees their chance to work hard and earn a paycheck; to learn about the natural environment and to work with others to accomplish something lasting.

The Youth Conservation Corps program was established in 1971 in the historical context of America's growing awareness of our natural environment, public lands in desperate need of extra hands, and the need to provide employment for youth. Congress established this work program for 15-18-year-olds, regardless of race or family income, for conservation projects during the summer months. The nation's largest land management agencies, the Departments of Agriculture and Interior, were assigned to implement this program on their lands. During the pilot program in the summers of 1971 and 1972, nearly 5,600 young persons employed by the project cleared and built trails and campsites, planted trees, and prevented or repaired streambed erosion on federal lands. The program was a success and after the 3-year pilot program, Congress provided a permanent \$60 million annual authorization for the Youth Conservation Corps. The supporters argued that the YCC was needed because of high unemployment among teenagers and the backlog of conservation work on public lands. This new authorization would now accommodate 60,000 enrollees each summer.

That was the heyday of the YCC program. In 1981 President Reagan sought to eliminate the YCC although it remained funded at a minimal level by Congress through 1982. Nor did other conservation/work programs survive, the president claiming in Reaganomic terms, "I believe that America's unemployed youth would be better served by reducing federal spending so that more resources are available to our economy to fuel a continuation of the current economic expansion." But the YCC still lives on—now funded by agencies within the Departments of Agriculture or Interior and not by Congress. The National Park Service allots only \$1 million each year

to cover the program nationwide to provide jobs to fewer than 1,000 youths.

The program still survives through fiscal hardships over the past 15 years and I believe that one of the strongest reasons for its survival is that the program is not just a labor or employment program; it is more of a program where we hope that we are doing something right—providing young adults with work *experience* and *environmental* education. This is a dividend we hope will pay off when, as adults, they learn how to be better co-workers, know the discipline required to work successfully, and—more importantly—keep with them an understanding about the natural environment and some of the complex issues involved in its maintenance.

When Cabrillo NM's YCC program jumped from four to 12 to 30 members, with our partnership with and contribution from the Navy, the education component also escalated. We looked around for help. The YCC program is not the only conservation work/learn program in San Diego County, although ours is the only one that deals with 15-18 year olds. There are other well established programs such as the California Conservation Corps, National Civilian Conservation Corps (NCCC), Urban Corps of San Diego and San Diego City School's PECE Program (Practical Education for Citizenship and Employment). We sifted through these programs, willingly copying material they had gathered and tested to flesh out our new program. After all, we were bringing together a large group of people (half male and half female) from all over San Diego County. Some of these kids knew each other, some had been in trouble with the law or were gang members and others had children, but for most this was their first job and experience that didn't involve school or family.

The NCCC has a wonderful program. It involves lots of group discussions and team building. And for us supervisors, this was all new as well. The NCCC and PECE handbooks provide a tremendous amount of information and inspiration on how individuals and teams should function in a work setting. We emulated the NCCC philosophy of work-learning that promotes learning awareness. This program states that "One of the goals of the

corps is to help its members become more active in their own learning. . . one goal is to help the teams set individual and team goals and helping corps members figure out what they need to learn to become the kinds of adults they want to be and to do the kind of work they want to do."

There are many ways to approach goal-setting and evaluation, and certainly the eight weeks with the YCC will not be enough time to see any major results. Our hope is to give these youths the knowledge that setting goals is important in their personal lives as well as in making academic and career plans. They held group sessions and personal critiques where they discussed the steps they had taken to accomplish these goals. They learned that they should stop, reflect, question and search for answers. The crews even wrote their own charter defining what acts they would not tolerate amongst themselves. Besides discussions, role playing, and games, to help maintain a productive corps each crew member had a writing assignment every week. These assignments were called RADs or Reflective Added Dimension. The purpose of the RADs is to solidify individual experiences. The opportunity to catch a feeling or thought instead of having it just whiz by arises when it is acknowledged and caught in the seine of a writing assignment. For most, this assignment was a chore (or so they would complain) but it was revealing all the same. Here is a brief look at some responses:

"What did you really like about this week?"

"I liked that everyone worked as a group and we all did more work."

"What did you learn that was most amazing to you?"

"That when you accomplish a hard task you feel very good inside."

"What changes are you willing to make to help the team work well next week?"

"Smile more, laugh more."

"What did you share with your team?"

"My hard work and good attitude."

"What did you learn about the environment?"

"I learned that we have to keep native plants alive."

"What are some of the challenges of working together."



**Do you see
yourself as part
of or separate
from nature?
How does your
lifestyle affect
the overall
environment?
Why should we
worry if an insect, plant,
or animal goes extinct?**

"Learning to deal with differences."

Those enrollees who are able to discover what makes work better between co-workers and what's good for the job will move forward towards their eventual careers or livelihoods with more ease and confidence. Many will improve their communication skills in the "rap sessions" they really seemed to enjoy, but this program is based on accomplishing conservation work and expanding their knowledge of the natural environment. If we are to be truly successful in making this conservation work experience memorable and meaningful we must forge a new understanding from their experiences to make the natural world relevant and alive. For many of these youths, being at Cabrillo will be their first time in a national park service site and working in the natural environment. We will be introducing them to the values of preservation, beauty, and quiet recreation and will ask them to consider such questions as "Do you see yourself as part of or separate from nature?" "How does your lifestyle affect the overall environment?" "Why should we worry if an insect, plant, or animal goes extinct?" We want to make them feel that the natural environment is theirs to protect, enjoy and share.

Through our environmental education curriculum, we hope to give the enrollees an in-depth look at the variety and beauty of San Diego County and to pave the way for their environmental awareness and decision-making skills. The environmental program will begin by learning some of the basics: identification of common

native plants and animals, learning such new terminology as *ecosystem* and biodiversity, and then we will take on issues. We will have them apply their new knowledge and feelings about the environment to create a park of their own. But we want them to be aware that this is not an easy task—that there must be conflict and tradeoff in accomplishing their goals in their parkland. Their first field trip will be to an undeveloped open area called Big Sky Ranch. We will begin by posing such questions as how to deal with development in the area, whether to permit mountain bike or equestrian use, the effects on endangered species, and the considerations we need to make when putting in public access and facilities. These questions and others will be threaded through their time in the YCC program until, at the end of the summer we have a blueprint of how their park might look, how they will serve their visitors, and how they will protect the natural environment. Our field trips will be fun while giving the enrollees some of the tools they'll need to tackle their park issues. They will have field trips to Mission Trails to learn about their conservation projects, Torrey Pines State Park, Chula Vista Nature Center, Tijuana Slough, and Borders State Park. They will work at the cultural site at the Presidio and tour the Museum of Man. By the end, they will have experienced the variety of San Diego, questioned professionals about how best to manage public land and natural resources. They will begin to understand and respond to such issues throughout the remainder of their schooling and as adults.

Ghandi wrote "We must be the change we wish to see in the world" the YCC program hopes to be the catalyst for at least some change in their world. Their experience here will move them forward along their path *somewhere*. We hope that this summer will help to define their future paths with a knowledge and amazement of the natural world, the satisfaction of hard work and pay, and of friendship and lasting memories. We're ready. And unlike the Cheshire Cat, we won't disappear!

Dr. Raymond Starr



Cabrillo University: Internships on the Point

I am sure that all readers of *The Explorer* know that Cabrillo National Monument offers more than a great view and some sites to enrich the spirit and the mind. Many probably know that the Monument also serves a number of educational functions—educating the general visitor about aspects of nature or history, and also offering educational programs for school-age children. But did you know that CNN also serves as an off-campus site for college and university students? Well, it does!—primarily through internship programs whereby college students work at the Monument in conjunction with their degree programs at a college or university.

Hosting college-level interns has been a part of Cabrillo for a long time, and over the years the Monument has mentored many interns from a variety of schools (with the largest number coming from San Diego State University). Most are recreation majors, but some come from other fields, especially history, geography, and the sciences. Interns usually

work (without pay beyond credit from their internship course) from a minimum of 180 hours a semester to up to 500 hours, depending upon the requirements of their particular program. Ranger John Golda, Assistant Chief of Interpretation, who supervises interns, says that currently Cabrillo finds that three per semester is about all the staff can deal with effectively. These internships have been—and are—an invaluable part of the student's training, and have benefited the Monument as well.

For the students, the benefits are many. An internship gives them a chance to see the knowledge, theories, and classroom activities from the university campus as they are applied in a "real world" setting. Although it might be assumed that this would diminish the importance of the academic subject matter—often the opposite happens, as the intern sees in the "real world" setting the need for depth in background in certain subject matter, methods, or techniques. For instance, an intern doing guided tours of military sites at Cabrillo will quickly realize that the audience will ask questions demanding depth in the history of World War II in general, in San Diego history, as well as knowledge of military history, equipment, and procedures.

An internship experience also gives students insight into work in the "real world." This can include the need to work in teams, to take and give instructions, and to interact with the public—things which do not occur in a classroom setting. As one intern has noted, even the experience of answering the phone helped him get over a fear of public speaking.

The work of interns at the Monument can also give a student insight into workings of a particular profession and a park type of institution. As Professor Larry Beck of San Diego State University's Department of Recreation put it: "Students gain an introduction to park service operations including interpretation, law enforcement, fee collection, resource management, park maintenance, natural resource management, and administration." They can also get insights into ways a "pure" academic field, such as biology, can offer careers which couple scholarship with public service. These experiences can help a student firm up

career options.

The intern experience can also actually start an intern on a career path. Hence, former intern Martin Lane has earned a long-term appointment at the Monument, and been given considerable advanced training and a variety of experiences which have enhanced his qualifications for a permanent appointment in the National Park Service.

Another major benefit of an internship for students is that it gives them a chance to be evaluated on such matters as promptness, dependability, ability to cooperate, ability to work with people, and many other characteristics not necessarily measured in a classroom. Often these items are of more interest to a potential employer than classroom performance, and thus letters of recommendation from an internship usually carry more weight than those from a classroom teacher.

While the Monument helps local college and university students add an extra dimension to their academic program,

**College-age interns
often bring youthful
enthusiasm and energy,
which can revitalize a
staff.**

the Monument also gets a lot from the students. For one thing, students will most likely bring to the institution the very latest research and knowledge in their particular field. As fast as knowledge changes in many areas, that can be of great value to the host institution. Thus a marine biology intern may bring research which extends the knowledge of the park service ranger whose degree in biology is ten years old. Internships are an important way for an institution to "keep current."

College-age interns often bring youthful enthusiasm and energy, which can revitalize a staff. As Ranger Golda has noted, they also bring different outlooks to their work, which can be quite refreshing. He also says that most are highly

motivated, committed to service, and need little supervision.

Interns can also perform a variety of duties (either as specific projects or as routine duties) which can make possible things that the Monument's budget and staff limitations might not allow. For example, last semester Ramon Pons used his technological expertise to lay the groundwork for development of the Monument's Web site, and this semester Penny Dietsch is working on the revised tidepool program. Other projects could include or have included in-depth research for an interpretative program, mounting special exhibits, doing research on wildlife on the Monument, clearing non-native plants and replanting hillsides, preparing a site bulletin for the tidepools, and doing research for a possible future greenhouse project. They also do ranger walks and talks, and introduce the interpretative programs in the theatre. This work extends the work of the staff, helping preserve the resources of Cabrillo National Monument, and also enhancing the visitor's experience.

It is a truism in the academic world that not all internships work out as expected. Over the years, however, Cabrillo National Monument has had few problems; quite the contrary, both faculty and students are unanimous in their praise of the Monument's internship. As Professor Beck put it, "Cabrillo is an excellent agency, with excellent personnel, and offering excellent learning opportunities."

Thus, when thinking about Cabrillo National Monument, and what it means to the region, be sure to think of its role as an extension of local colleges and universities. The resulting internships bring some bright young people into the Monument family, and they play a significant part in the operation of the Monument—to the benefit of the student, the Monument staff, and the visitor!

Dr. Starr is Professor of History at San Diego State University and current Chair of Cabrillo Historical Association's Board of Directors.

On becoming A tidepool monitor

by Volunteer Diana Wightman Canby



thick ceiling of steel gray clouds hung over the tidepools. They clearly had no intention of leaving that afternoon, but neither did I.

I twisted my hair into a ponytail and shoved it up under my new cap, tightened the strap on the pack that held my guidebooks, and made my way down the path to the tidepools.

I peered down at the rocks below. Nobody was there!

Perhaps everyone had been scared away by the ominous-looking day. Didn't they know that vibrant orange bat stars, crimson sea urchins and meandering octopuses would be putting on a remarkable show no matter how dreary the weather? Didn't they know that I was eager to teach them everything I had learned about this fascinating ecosystem?

I crouched down on a rock and searched for movement and splashes of color, when I was relieved to hear voices off in the distance. Before I knew it, a small hand grabbed my wrist.

"Quick, come here! I need your help!" said a boy who was probably about seven years old. "You've got to see this!"

He pulled me up and over the slippery rocks, never seeming to notice the gusts of wind and thick, cool handfuls of rain that periodically slapped our faces. He and his brothers were just thrilled to be there and eager to explore.

My new friend screeched to a halt and pointed to something near a rock. "That's him!" he said.

I was sure I knew what it was. "It's a black sea hare," I proudly informed him, as I caught a glimpse of the creature's picture in my guidebook.

"Let me use it," the boy said, as he took the book from my hands.

He examined several pages and then stuck his wet, sticky finger on a photograph I had missed on the previous page.



"Nope, tha's a *California* sea hare," he proudly declared. He was right.

I realized I had a lot to learn.

The boys and I spent about an hour exploring every nook and cranny we could find, when the sound of their mother's whistle summoned them to leave. I was a little sad to be standing there all alone again.

As I turned my head toward Zone Two of the tidepools, I heard footsteps again. It was the same little boy.

"What's your name?" he asked.

"Diana," I replied.

"Well, I'm Robert, and I'll be coming back here," he said with a devilish smile.

He ran back to his family and I, too, felt a wide smile spread across my face. It seemed to keep me warm the rest of that day.

My next day "on duty" was almost dizzying in contrast. The sun was blinding. People were everywhere. The waves joyously crashed against the rocks, but even their thunder had to compete with the sounds of children laughing and yelling. My feet hadn't even touched the rocks when I was bombarded with questions.

"Do mussels have, you know, . . . muscles?" said one child, with a smirk. The other children laughed.

"I want to know how hermit crabs breathe under the water," said another youngster.

My mouth hung open for a brief moment and my mind went blank. There was no forgiveness and no patience in the inquisitive faces tilted up at me.

"Ask the Ranger, honey," said one woman to a child fidgeting by her side.

"Well, actually, I'm a volunteer," I said, as my senses started to come back to me and I reached for my guidebook. "But



I'll bet I can . . ."

My composure was ripped away from me with the shriek of a small boy running behind me. All eyes were suddenly on him. He whizzed by clutching something. I could see the edge of a large shell sticking out of his hand.

"Please, put that down," I yelled, as I attempted to reach the boy.

In horror, I watched him do just as I had asked. His fingers straightened and the creature slid from his hand and landed with a loud thud. A crowd circled the creature, which was now upside down.

They were suddenly quiet and still, except for one child who said "yuck" when the yellowish underside twitched.

I didn't need my book. This creature I remembered from the short course I had taken in order to become a tidepool monitor. It was a giant keyhole limpet.

"Is it dead?" said a child with a worried look on her face.

"Maybe not," I answered. I gently picked up the limpet. "Okay, can you show me exactly where you found him?" I asked the boy.

He led us to a partially submerged rock and I let the boy put the limpet back into place.

I told the onlookers the soft underside they saw was actually a foot and I explained how this rather primitive snail attached itself to the rock and could slowly glide around and eat algae.

"If you rip him off of his rock you might damage his foot and he might not be able to move around and eat," I said.

The crowd dispersed but I later noticed some of them were moving about much more slowly and carefully. I think they were beginning to understand that the Cabrillo tidepools are quite a special place to visit.



Debbie Stetz



Educating the ranger



San Diego has a lot to offer a visitor, and when manning the desk in the park's Visitor Center, questions are often asked of the rangers about San Diego's many other attractions. For this purpose we keep our shelves well stocked with brochures of information about many of these attractions, and with a smile we could easily pass these along to the visitor with directions to their next destination. But it adds an extra special touch when the Ranger can give a first-hand account of what's in store for the visitor when visiting other parts of the city. So throughout the year, the rangers of Cabrillo National Monument will get together for field trips to educational sites or places of special interest to enhance our knowledge about local attractions, allowing us to provide accurate information to the visitor.

The major theme of Cabrillo National Monument is Juan Rodríguez Cabrillo's 16th-century exploration of the west coast. When presenting talks to the public, an added bonus to the ranger's interpretation of this theme is having first-hand knowledge of shipboard life and being able to relate a hands-on experience aboard a tall masted ship. To help bolster our knowledge of these ships,

lately our field trips have centered around different types of vessels visiting San Diego that are open for public tours. Recently, an excellent opportunity came about for several rangers to board the *Californian* for a day-long cruise to the Coronados Islands. This ship is a replica of the 1849 Revenue Cutter *Lawrence* and serves as the state's "Official Tall Ship Ambassador." It provides three- to five-day educational field trips for schools in cities from Eureka to San Diego. And every so often, a day cruise is offered to generate support for these programs.

Our excursion offered us a chance to raise and lower the sails, steer the ship, and listen to entertaining and informative talks by the crew about different aspects of sailing and shipboard life. By mid-day we were sailing close by the Coronados for an excellent view of the terrain and wildlife on these rugged islands. Although one island is now occupied by an outpost of Mexican soldiers, the other three probably have not changed much since Cabrillo sailed by in 1542. On our way back, there was enough wind to sail without the engine, providing an excellent opportunity to feel the sway and swell of the ocean. Many of the other

**As Freeman Tilden
has taught us, the chief
aim of interpretation is
not instruction, but
provocation**

"sailors" opted for dramamine instead! But all in all, we returned to solid ground with a much better understanding of and respect for those who have spent their lives sailing the world's oceans.

From our vantage point in the park we can easily watch the giant gray ships of the U.S. Navy entering and leaving the harbor, which is a favorite pastime for the visitors. Questions are often asked of the rangers about these ships, so whenever the opportunity arises, we try to take advantage of the ship tours offered to the public. This way we can be familiar with the tours and pass accurate information

about the ships along to the visitor. The modern weapons systems of these ships are very impressive, but their command centers are really the highlight of the tour with their long rows of computer screens lit up with radar maps showing the movement of nearby vessels. Being able to view these special areas of a ship can offer valuable insight into the ranger's knowledge of navigational aids, especially when comparing them to the astrolabes, cross-staffs and quadrants used during Cabrillo's days of exploration.

Other specialized ships easily seen from the Visitor Center are the submarines docked at the piers north of the park. These ships can inspire intrigue and mystery reminiscent of Jules Verne's *20,000 Leagues Under the Sea*, and arouse lots of comments and questions from the visitors. So again to have first-hand knowledge of these leviathans, many of us toured one of the fast-attack submarines last summer. We toured nearly every part of the ship from top to bottom except for the engine rooms. It was fascinating to learn about the functions of these machines and how the crewmen co-exist on the smaller, 360-foot *Los Angeles*-class vessels. Since space and bunks are limited, the day is shortened to eighteen hours and divided into three shifts of six hours each. As one sailor explained, it's "six hours on, six hours off, and six hours of sleep." Some day we hope to visit the grand-daddy of submarines, the 560-foot *Ohio*-class subs equipped with 24 Trident missiles.

San Diego has its own legendary ship, the beautiful *Star of India*. Built in 1863, this ship has a wonderful rags-to-riches heritage very similar to our own Old Point Loma Lighthouse. Both have survived and prospered through years of neglect and then careful preservation. The Maritime Museum takes lovingly good care of the *Star* and their other two ships, the passenger ferry *Berkeley*, and the beautiful yacht *Medea*. The *Star of India* is the oldest iron vessel still sailing and all three ships are open daily for tours. The Maritime Museum has also

hosted other ships visiting San Diego; one memorable visit was by the SS *Lane*, a World War II liberty ship. Over 2000 "liberty ships" were built during WWII to help bring in supplies to the allies. The *Lane* was salvaged and restored by a dedicated group of volunteers who brought her to San Diego for a special public tour. Our memorable moment came down in the hot-as-hell engine room where one of the "snipes," barefoot and greasy, gave us a 20-minute personal account of operating the ship's boilers. Whew!! It gave us a whole new perspective on the running of a ship.

Another memorable sailing ship that recently visited San Diego was the beautiful *Juan Sebastián de Elcano* from Spain. This four-masted tall ship is used as a training vessel by third-year cadets attending Spain's naval academy. This

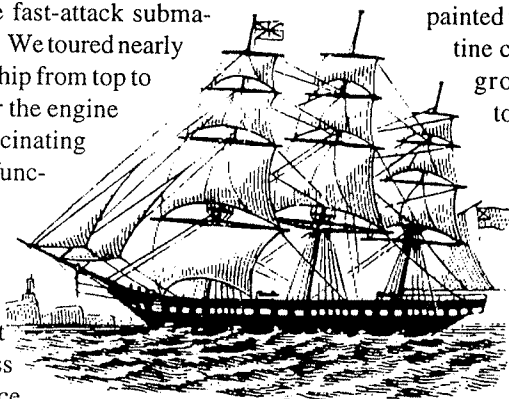
ship, built around 1930, is painted white and is in pristine condition. A small

group of rangers toured the ship one evening, allowing for a slow-paced and detailed tour. Our Spanish-speaking guide took us through several parts of the ship, including the galley

where off-duty cadets were relaxing in red upholstered chairs around teakwood tables with their glasses of wine and cigars. The scene was reminiscent of an exclusive gentlemen's club of olden days. We were then ushered up to the captain's quarters, a small and cozy room equipped with the latest in high-tech navigational equipment. Although the captain was not there that evening, our guide explained how the captain runs the ship from that room. Our tour ended up on the open-air bridge with a spectacular bird's-eye view of the ship. As we were escorted back to the gangplank, we walked away with a sense of camaraderie for our Spanish friends, and in a long stretch of the imagination, a feeling of having visited a 16th-century Spanish galleon.

Although the story of Juan Rodríguez Cabrillo is limited in scope to the 16th century, being able to relate to shipboard

life in general will help the ranger's interpretation of Cabrillo's voyage. Each of these field trips was different and each offered unique insight into the operation of a ship. Educating the ranger with first-hand experiences such as these is a valuable tool for interpretation. As Freeman Tilden has taught us, the chief aim of interpretation is not instruction, but provocation, and for a ranger to be a successful interpreter, he/she must be motivated about the subject. First-hand experiences not only educate the ranger, but also excite and motivate a quest for knowledge. And as summer approaches, you can bet on the ranger's being excited about the next crop of (educational) field trips coming up!



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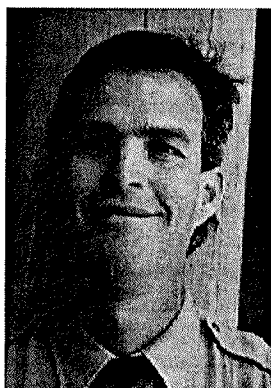
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George Herring



An argument for teaching with technology in educational outreach programs.

Moore's Law says that the processing power of technology is doubling every 16.7 months, and costs 35% less each time it doubles (Moore is one of the Co-founders of Intel). Think about that.

In 1986 a shiny, new, incredibly powerful 286SX, 15mhz computer with a whopping 40 megabytes of memory and 1 megabyte of RAM cost \$2700.00. Seems almost naive now, doesn't it? And \$2700.00! It didn't even come with any sort of CD Drive or modem.

Take a stroll into a computer store today and compare. A Pentium, 200mhz computer with 4 gigabytes—GIGABYTES!—of memory and 32 megabytes of RAM will cost you about \$1700.00. Of course that will come with at least a 12X CD-Drive, at least a 28.8 modem, and by the end of next year will come with a 100 megabyte floppy drive.

If this trend in computer technology

continues—and it will—by 2005 computers will be at least six times faster, six times more capable, and cost you about \$700.00!

That's the computer, what about the software?

Remember WordPerfect 5.1 for DOS? Things have changed; these days Microsoft Word for Windows 95 is pretty slick in comparison. Around 2001 software will be available that will allow you to dictate up to 40,000 vocabulary words to your computer so you can "write" at about 200 words/minute. By 2007 you'll be able to dictate into a hand-held computer and it will translate simple sentences into Portuguese, Japanese, German, Hindi, whatever—out loud. And it will do it in the sound of your voice.

The "Computer-Information Revolution," is picking up steam fast and we will be going along for the ride regardless of our wishes. For children the ride won't seem as swift as it does to us adults, since they are growing up with it as a normal part of their lives. A basic example is computer-keyboarding skills. Most of you reading this probably learned to use a keyboard on a typewriter in High School. Today computer-keyboard skills are commonly taught in second and third grades.

We have, however, an opportunity not just to provide kids with basic technology skills, we can get them "thinking" like the technology.

What do I mean?

Imagine a child in a hunting-and-gathering society, brought up to know where to find game and the wild plants. Then she must suddenly learn all the ins and outs of dry-farming wheat to make a living. Learning these new skills would be difficult and somewhat alien to her upbringing. Now imagine that child twenty or thirty years ago learning to use a typewriter keyboard in school, then being told

to use a confusing concatenation of "pull down" menus and "CTR-this's" and "ALT-that's" to get her first job right out of school. She'll learn, but it won't be easy and it may seem very strange for a long time. For today's kids "CTR-this's" and "ALT-that's" won't seem as strange, but will they be prepared for the technology and job market of tomorrow?

But, what if they are learning their core curriculum using technology like the Internet and CD-ROM interactive technologies? The learning itself will be more interesting and involving, and they will develop an intuitive understanding of technology and its possibilities. They will "think" in a technological paradigm that keeps pace with the rapid changes in technology because that is the world they will be growing up in.

America is in a position to become the world leader in technological innovation and manufacturing jobs. Not because our laborers will be cheaper, or even faster, but because they will "think" technologically. We are, to some extent, raising our children to be computer literate not only in our schools. But, a technological paradigm will define the world economies and cultures of the future no matter what we do. If we give our kids a stronger learning environment with access to technology, they will grow up with a clear edge over other cultures in technological innovation and understanding. The American mind of the future, along with its dynamic multi-cultural attributes, will possess an intuitive understanding of technology that other cultures of the world will lack— if we will give our kids the opportunity.

We, the taxpayers, are beginning to see the advantage of putting computers—as many as possible—in the classroom. The children are getting good at using them—better than we adults. This, along with smaller class size so teachers can have the time to give each student individual attention.

This isn't happening (so far) in Germany, or even Japan. In those places the model is still an adult standing in front of thirty or so kids and spouting his or her knowledge. While those cultures, in different ways, instill in their children strong work ethic tendencies, they are not teaching their kids to "think" technologically

**An invasion of armies
can be resisted, but not
an idea whose time has
come.**

Victor Hugo

CNM's education program is now preparing to reach out to schools in San Diego and across the world with educational technology.

the way we are in a position to do.

Bear in mind that "thinking" technology does not just mean inventing a better, faster, computer chip. It means "thinking" technology so that a new worker can intuitively grasp and use a new, production-minded software system in a widget factory; or use new, incredibly powerful database/visual arts software in a movie studio; or program the clock on a new internet/laser disk computer-video projection system..

So why does this matter to you and me? The way I figure it, teaching kids to use and "think" technology today is security for my retirement check. If American kids grow up with a secure edge in the high tech industries of tomorrow, then the economy will be strong, and my retirement check—my "Golden Years"—will be secure, too. Not to mention that I will have tried to give them at least as good a shot at prosperity as I've had, in addition to preserving the heritage of this country for them, and their children's children.

Cabrillo National Monument, Outreach, and Educational Technology.

by George Herring

Cabrillo National Monument is now a partner in an educational initiative to combine learning with technology—educational technology. Educational technology uses the internet, or "old fashioned" CD-ROM games, to reach into the classroom from far away.

Using educational technology has advantages for teachers, National Parks,

and kids. A young generation is growing up expecting technology to increase and be a bigger part of their lives, including their play time. Teachers increasingly are using educational technology to teach multiple curricula in a fun way that prepares their students for the high-tech world of the future. The parks are realizing that educational technology increases child understanding of park resources and the mission of the National Park Service—in the class room. Kids know that learning with technology, especially interactive games, is fun.

CNM's education program is now preparing to reach out to schools in San Diego and across the world with educational technology. In large part this is because we are now a Triton Project partner.

The Triton Project is a multi-partner educational effort funded in part by a U.S. Department of Education Challenge Grant. Its purpose is to blend ocean-themed curriculum in the school system with modern technologies. It's goal is to use the capabilities and unique appeal of modern technology to capture student interest in core curricula, provide a highly productive education program, and produce improved student achievement. Currently the project is being piloted in several San Diego School System schools, and by the year 2000 more than 130,000 children in San Diego will participate.

Cabrillo National Monument, a relatively new Triton Project partner, is joining a number of notable private and public partners in the community, including

Stephen Birch Aquarium-Museum, Sea World, The Mayor's Office, Pacific Bell, and The Naval Command Control and Ocean Surveillance Center (NOSC), and the San Diego City School System.

Much of the actual research and development of education technology going out to the schools is done by the professors and students of San Diego State University's Educational Technology (EdTech) Department, within the School of Education.

Our involvement with the Triton Project and the EdTech Department began almost accidentally. Last summer two EdTech students, Evan Jessen and Bill Edwards, contacted me and expressed interest in helping to expand CNM's Web site. They were very responsive to the park's needs and soon were providing invaluable creativity and skills in the development of the site. Part way through the development process, Evan and Bill introduced me to Professor Bernie Dodge—SDSU's Triton Project Coordinator.

Professor Dodge has since directed the efforts of other students in two Triton Project/ CNM educational technology projects. EdTech students Nancy Pickett, Lance Larson, and Maria Rodríguez have created a fourth-grade curriculum interactive game that takes place in the Old Point Loma Lighthouse. It is currently playable from a computer hard drive and, by the end of this fall, some of Prof. Dodge's students will have the game playable from CNM's Web site!

The other Triton Project nearly completed is a fifth-grade curriculum-based interactive classroom science project studying Cabrillo's tidepools. It is taught on the internet, using the same techniques and actual photo plots used in the CNM tidepool study. Currently it exists in a prototype form and is being tested with real kids for user-friendliness. This project is largely the work of EdTech people Janice Thiel and Nancy Pickett, (with additional thanks to Cabrillo NM's Samantha Weber for contributing her time and biological expertise to the project).



This fall we will be beginning our most ambitious project yet: an interactive game for CD-ROM, based on the Cabrillo Expedition of 1542-43. Ever since I was a little kid I have wanted to invent a game. Well, now I am doing it—under the guidance of Prof. Bob Hoffman and a whole class of EdTech students who will be supplying the skills and talent. Tentatively titled “Cabrillo’s Voyage of Discovery,” this CD-ROM educational game is being designed to support CNM’s Juan Rodríguez Cabrillo theme and a variety of California fourth-grade curriculum frameworks. While it is being developed as a CD-ROM game, it is being designed for later publication on the Web, in anticipation of the fast data-moving Web systems of the future (two or three years from now).

Superficially the game will resemble the Oregon Trail CD-ROM game, which some of you with children may be familiar with. The players will provision a ship, trade for supplies, navigate, create a map of California, encounter native people, keep a journal recording the people, places and events along the way, and more.

As student-role players explore the coast with their shipmates they will directly or intuitively learn history-social science, science, mathematics, English language arts, arts and humanities, and nutrition curriculum lessons. Each player will learn to cooperate and make decisions with other crew members in order to successfully complete the mission (win the game). In the process the student-player will learn the history and psychology of 16th-century maritime exploration.

The specific objectives and nature of the game’s play will be developed by the end of June. Research about trade goods, native peoples, etc. will be done in conjunction with research being carried out for a new edition of *Cabrillo’s Log*. By August, when classes start at SDSU, we will begin the actual development of the game. By December, a first draft will be completed. The finished product (fingers crossed) will be available to schools by late next spring.

This is where things stand now with the educational technology aspect of CNM’s outreach-education program.

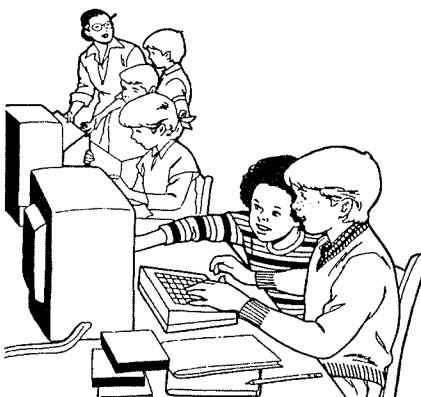
This summer I look forward to accomplishing the development of a CNM education Web page, among other Web site additions, to house and market these creations. The site will also be home to park-related printable materials for teachers and parents to use in the classroom or at home.

As you can imagine, there’s a heck of a lot of potential to position ourselves for even more exciting opportunities in the future. For instance, if the plan to develop a military history museum here goes forward, Prof. Dodge has already indicated an interest in developing a high-school Triton Project Web site to support it. Also, Prof. Hoffman is intrigued by the prospect of creating computer information/gaming centers at the site to support the story of Coastal Artillery and San Diego in the Second World War. His students created the CD-ROM interactive computers at the Mission Trails Visitor Center: they have the skills.

The future is exciting because only the technology and our imagination limit us! Imagine what the kids can look forward to once they have been exposed to the possibilities of their future, and the depth of their past, through educational technology.

If you surf the Web and want to learn more, check out:

- Cabrillo National Monument:
<http://nps.gov/cabr/>
- The San Diego School System and the TritonProject:
<http://edtech.sdcs.k12.ca.us/triton/>
- SDSU’s EdTech Dept. and the Triton Project: <http://edweb.sdsu.edu/triton/>
- Cabrillo National Monument’s Tidepool Education site: <http://edweb.sdsu.edu/triton/tidepoolunit/tidepool.html>



David Smith



Law enforcement as an educational strategy

Working as a ranger with the National Park Service, it is my business to know the rules at Cabrillo. But even before I was a ranger, I discovered quickly that I needed to know the regulations within the different Park Service units.

Having spent countless nights camping in parks from Mt. Rainier to the Smokies and back, failure to know all of the rules usually meant getting a ticket. Being a camper and having a dog, I realized that each park unit has its own rules pertaining to my interests. Where it might be permissible to walk my dog on a leash up in Acadia National Park, Fossil Butte National Monument would not even let him get out of the car.

While camping at Dinosaur National Monument in Utah, I made it a point to learn the rules relating to pets. I found an area where I could walk him leashed and we were off. Having driven a long time, I knew that the dog needed a good run or I was never going to get any sleep that night, so, contrary to park rules, I allowed him off the leash. He took good advantage of his new freedom and went off for a quick romp in the sage. After a few

minutes, I met a father and his daughters hiking the same trail. As I turned to speak to them, I was startled by the distant sound of hooves striking the earth. Within seconds, two does and a fawn came crashing through the sage, headed for the river, missing us by a few feet.

A few seconds later, my dog came panting from the brush headed for the deer. It was obvious that he had been chasing them and had herded them our way. With a lunge, I caught him and, to his great disappointment, leashed him. I watched in the distance as the deer entered the Green River and swam to the other side. The adults made it across effortlessly, but the fawn struggled and was quickly swept down stream in the spring runoff. About a mile down stream, she was eventually caught up in an eddy and managed to pull herself out. Tired, stressed, and shaking, she made her way back to her mother.

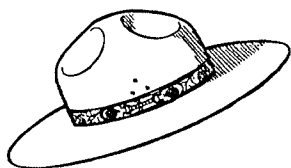
Up to that point, I had believed that the main reason to avoid breaking the law in parks was to avoid getting a ticket. No rangers ever contacted me regarding this particular transgression, but frankly, they did not have to. The look of horror on the girls' faces as the fawn struggled for life and the contempt for me in the father's eyes for allowing my dog to chase them was more punishment than a fine could have been.

As I patrol Cabrillo, I keep this lesson in the back of my mind. The vast majority of our visitors have no idea what a vulnerable treasure exists at Cabrillo. For many, this is the first national park they have seen. Walking off the trail or harvesting mussels may be a totally acceptable activity back home, but Cabrillo is one of the last pristine chunks of coastal sage scrub along the California coast. It is also home to one of the healthiest tidepools on the eastern Pacific rim. The protection of these resources is the impetus behind the regulations covering Cabrillo.

When I meet families returning from the tidepools laden with pails full of crabs and mussels, I remind myself of some of my own actions while in National Parks. Legally, it is the responsibility of every park visitor to know the rules of the park. Realistically, it is my responsibility

to communicate the park's rules. Whether you are a maintenance worker, a law enforcement ranger, or an administrator in the Park Service, your main purpose is to educate. And in the end, education can be anything from handing out a pamphlet to taking someone to court.

Daily, rangers contact families collecting crustaceans in the tidepools. This is the last and often the best time to educate park visitors about the monument. The other day, a ranger contacted a park visitor who had pried dozens of limpets off of the rocks in the tidepool area. The man, who had been to the tidepools many times before, saw an opportunity to make a meal off of the Monument's bounty. In this situation, a mandatory appearance before the federal magistrate was the best way of educating the visitor about the Monument's regulations. The area is well marked with signs and literature explaining the fragile nature of the tidepools, yet this means of educating proved futile.



In less egregious situations, maybe a talk will remedy a problem. When I find a small child bringing a seastar back to the car, I usually ask her if she will show it to me. After commenting on its beauty, I might tell her that just a few years ago we had lots of seastars in the tidepools, but now, because so many people have removed them, they have become very rare visitors. Usually, at this point, the child suggests returning the animal to the water. We hope that this lesson will stay with her and her family for the rest of their lives. Sometimes it is easier to give a stern warning or give a ticket to the parents, but that can often have the wrong lasting effect. Often, when you receive a speeding ticket, there is never a realization that traffic laws exist to save lives. In a park, the visitor must understand that his actions have threatened the resource—his resource.

I do not know of any ranger who enjoys giving out a citation or making an arrest. But sometimes this is the only avenue left to help protect the resource and educate the visitor. The Organic Act of the National Park Service explains that we must "provide for the enjoyment of

these resources ... in such a way as will leave them unimpaired for future generations." It is a tough mandate but one which is the driving force for the maintenance of our nation's treasures. In looking at law enforcement as just another way of educating our park visitors, we insure that on his next visit he will return with a renewed appreciation for the park's treasures. And maybe, when he sees someone ripping a mussel off the rocks, he will take the time to explain why we leave animals in place at Cabrillo.



Drama: "Voyage of Cabrillo"

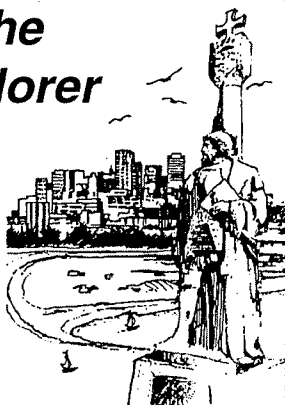
It is with great excitement that we are again presenting the Drama, "Voyage of Cabrillo." The first performance will be on Sunday, July 13 at 12:00 and 1:30 p.m. and each Sunday thereafter through September. Again, Abel Silva will play the part of the host of the talk show "Running Grunion!" This presentation is devoted to uncovering the facts about Juan Rodríguez Cabrillo's 1542 voyage, and in particular the encounter between the members of Cabrillo's crew and the Native Americans.

As the show unfolds, Running Grunion, better known as RG, calls back from the past a sailor and the priest that traveled with Cabrillo. They present their differing views of the general conditions of the trip, and Running Grunion compares these views to present-day perceptions of life. Then RG calls Naya, a Kumeyaay woman who was part of the group that met the Cabrillo expedition. This is an important part of the interaction, disclosing misconceptions that can occur during an encounter due to the lack of a common language.

After the actors leave the stage, it is hoped that the audience will have a better conception of what the voyage of Cabrillo was all about, and that they will realize that this story is only the "tip of the iceberg." Maybe they will be stimulated to explore on their own—to understand the importance of this encounter in the lives of so many people.

Emily Troxell

***The
Explorer***



**Cabrillo Historical
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