

THE VIP VOICE

NOVEMBER-DECEMBER 2000

THE NEWSLETTER OF
CABRILLO VOLUNTEERS

Dear Volunteers:

Seems like the last couple of months we at Cabrillo have been a little busier, a little chillier, a little more excited with new VIPs coming on board and, all and all, it's a much happier place to be. All the folks at Cabrillo wish to extend a welcome to our new volunteers with a promise that if you need a hand or an explanation, we will be there to help. We still request help all the time, so if we don't know, maybe we will have learned where to go.

The very best news that I can share in this November-December edition is that Mike Nelson, computer whiz, formatter and artist, editor par excellence and mover and shaker has agreed to become Co-Editor for the **VIP VOICE**. The powers-that-be have given us permission to have this edition (and hopefully future editions as well) professionally printed. Mike and I are particularly thrilled because we believe that it will show off all the work so many of you put in the newsletter in a much better light. We also think you will enjoy actually being able to see the pictures so let us know what you think. Please take a minute to thank Ranger Mary Beth Vygrala and her bosses for being so generous.

Here is the tough part. How do you properly thank all the other busy people that take time out of their lives to put in research time and put together an article for us to learn from and enjoy? Ranger Mary Beth Vygrala makes lots of phone calls and tracks people down to get them to write in the first place and then to get it in on time. She also takes time to write her article letting all volunteers know what is happening and spurring us on. We see the results here.

In this Voice, Ranger Samantha Weber, the Chief of Natural Resource Science, gave us the primary part of an article on the Wildlife Observation Report that all of us must fill out. Ranger Bonnie Becker, prime mover, Marine Biologist and full-time PhD student, gives us an article in each issue on some of the more interesting things that are happening in the tidepools and with her research.

Of course, we have the wonderful work of the volunteers themselves. This issue we also have articles from J. Pierce Harris, Mike Moser, Mike Nelson, Lynn Moss and Ramona Lester. By the way, I'm truly sorry to announce that Ramona and her family have moved northward, and we

won't be receiving her fine articles anymore. The folks in her new area are lucky, indeed, to get such a dedicated volunteer and we have lost a great one. One thing was all Ramona's and that was a puzzle in each issue. If any of you are good at making up puzzles or anagrams, let me know and we can all enjoy your efforts.

To the tidepool volunteers, I want to urge you to answer Bonnie's request in her article regarding field trips and training sessions. They're invaluable opportunities to see and learn what we otherwise might not. Let her know with a note in her box in the lunchroom, e-mail her at bonnie_becker@nps.gov or call me at (619) 222-6171. As for me, I send a resounding "Yes!" I'd like to take a walk with Bonnie and our other specialists through tidepool areas in Ocean Beach and La Jolla, among other things.

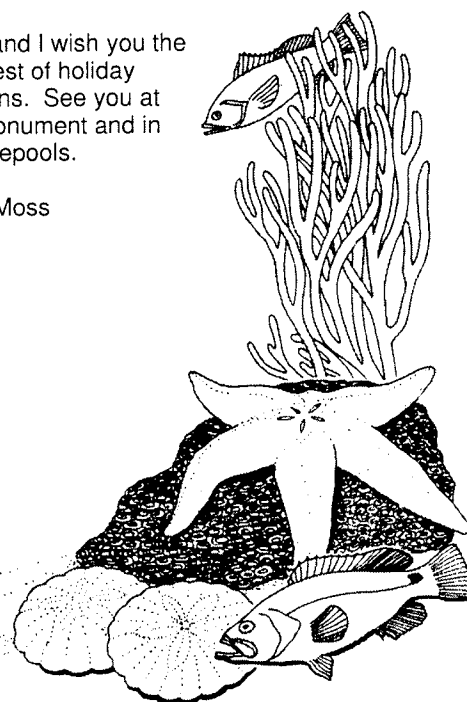
Once again, thanks to the several who have jumped into the breach to help with the newsletter, and we hope the rest of you will see fit to give us the advantage of sharing your research and knowledge. For example, Mike Moser has promised to write an article about the strange, huge, white structure with long legs on the right side of the road as we come to the park. I don't know what it is but I never drive by without wondering. I have decided that it is NOT an invertebrate creature. If you have a funny or enlightening story about things that happened to you in the park or are related to what we do, let us know.

Mike and I wish you the happiest of holiday seasons. See you at the Monument and in the tidepools.

Lynn Moss

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What non-profit organization has been established to assist the Cabrillo National Monument in San Diego, and, since 1956, has donated over \$1 million to the park? The answer, of course, is the Cabrillo National Monument Foundation (CNMF), one of many cooperating associations supporting the National Park Service. I learned of our foundation's existence when Ranger George Herring told me "the foundation" was responsible for printing the **VIP VOICE**. In asking other VIPs if they knew what "the foundation" was, I found that many simply didn't know anything about this organization. It was at this point that I decided to talk to the Executive Director of the Foundation, Karen Eccles.

Karen told me that cooperating associations had their genesis in Yosemite National Park. There, in 1923, park naturalists and historians, working with private citizens, established the first state chartered cooperating association to assist the park and help visitors. Following that model, others emerged. Ours, in San Diego, began in 1956. Nationally, in 1998, these foundations numbered 64 and donated \$22 million to our national parks. That income helps the Service support programs (in our case, the VIP Program, replacement of native plants and projects like the research done in the tidepools, among other things) with funds not available through the federal government. There is a Director's Order for Cooperative Associations that states that, "They support the **educational, scientific, historical, and interpretive** activities of the Service."

Cabrillo's Foundation's donations vary from fiscal year to year (October 1 to September 30). In 1999, they gave our park \$37,000 and, four to five years ago, they funded the remodel of the beautiful Visitor's Center which cost between \$80,000 and \$90,000. The Foundation has an eleven member Board of Trustees which meets every other month. This dedicated group of people hires and reviews the performance of the Executive Director (currently, Karen Eccles) and makes decisions on how funds should be spent. The key for

their tremendous success has been cooperation and communication between the Service and the Foundation.

THE CABRILLO NATIONAL MONUMENT FOUNDATION

-Lynn Moss



Our Foundation publishes **The Explorer** and the **Cabrillo Journal** and prints the **VIP Voice**. They also fund interpretative (historical and scientific) programs such as school programs, educational videos and educational materials, stock the library, support the Natural Resources program, paid for the exhibit room planning (Museum), the Military History Museum plan, the Cabrillo Festival (approximately \$8,000 annually), are supporting the development of the new tidepool film, paying honoraria for programs and putting on the drama about the voyage of Juan Rodríguez Cabrillo on Sundays in the summer, among other things.

The most noticeable activity of the Foundation is their operation of the bookstore, the vending machines and telescopes—all of which provide income. The Visitor Center Bookstore is staffed by five part-time employees, including the Bookstore Supervisor, Bobbi Hill. Karen Tisdale is the part-time bookkeeper.

The Foundation is a membership organization comprised of people with a commitment to history, the natural environment and the future. Choosing and paying for a membership to the Foundation offers a host of benefits to each member as well as providing revenue to the Foundation. Some VIPs already belong and more should consider memberships, if only for the programs and speakers. You'll also feel good about helping support your park.

Of special note, the Foundation published An Account of the Voyage of Juan Rodríguez Cabrillo written and researched by Cabrillo National Monument Interpretive Ranger and one of our VIPs, Dr. Jim Nauman in 1999 — 2000. It won the Award of Excellence in the Interpretive Excellence Competition of the National Park Service Cooperative Associations. That is a sterling accomplishment when you consider the size of our park in comparison to others. More importantly, it underlines the support and dedication to excellence of the foundation and Dr. Nauman.

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Just a reminder to all volunteers:

The volunteer uniform is provided to wear while volunteering at the park. If you wear any part of the uniform while off duty, remember you are being identified as representing the Cabrillo National Monument and the National Park Service.

The volunteer jackets in the VIP lockers are for day use only. Please return them to the jacket lockers when your shift is over. Other VIPs need to use them when they're working in the park.

If possible, we would like all tidepool volunteers to arrive at the Park at least 15 minutes early so that you can gear up and be in the tidepool area at the start of your shift. This helps to make sure that we have coverage in the area at all times without having any volunteers having to stay at the tidepools beyond their shift. Thanks for your help.

This season brings a whole new group of enthusiastic volunteers.

Tidepool Volunteers

The tidepools will have the protection and preservation efforts of the following group of new recruits: Dave and Vickie Coats, Susan Dagwell, Ben and Peggie Forte, Aliza Freedman, Adrienne Huber, Victoria Kirtay, Keith May, Andy Read, Mary Margaret Todd, Jennifer Wilson and Genevieve Wolfe.

Other Multitalented Volunteers

Bill Capps is helping in Resource Management and with lighthouse preservation projects. Charlie and Susie Copp will be helping with various lighthouse projects since they are our official, new lighthouse aficionados. Kim Fahlen is part of the lighthouse craft demonstration and is now our official lighthouse lens cleaner. Patrice Geiger is assisting in the library and Shauna Byers is doing data entry for Interpretation. Both these ladies will be cleaning the lighthouse rooms. Ginger Rebstock is one of our new bird counters, and Janet Croft and Sara Heintzelman will be doing lab work for Natural Resource Science Division. Finally, and equally important to Cabrillo, Ryan Barr is our fall intern from Point Loma Nazarene University.

MUSINGS FROM MARY BETH

--Mary Beth Vygrala

Do you know what a Wildlife Observation Report (WOR) is? It's a little white card (reproduced on this page) that is available in a white box in the back room above the

mailboxes or from me. It is a way for VIPs and others to record wildlife they've seen at Cabrillo National Monument (or the Point Loma Ecological Reserve). To quote the Yosemite WOR, "We are interested in observations of any mammal, bird, reptile, amphibian, fish and invertebrate. We are, however, especially interested in rare and sensitive species, including reptiles, bats, birds of prey and cetaceans. Observations of non-native species, including feral cats, are also important. Please get help if you cannot identify the animal, and if it's a rare species, **please take additional lines to explain your basis for identification and the behavior of the animal.**" Drawings are always good.

That done, here's the deal:

For those of us who are stuck indoors, or are far away, how about a list of the wildlife those more fortunate outdoorsy folks have seen here lately? We will

share the most recent and exciting reports with you in up-coming "Voice" newsletters so everyone can learn what's been running, crawling, flying or swimming at Cabrillo. To encourage participation, we will give credit

where credit is due (unless you indicate otherwise) and your name will be emblazoned on the hearts of simpatico adventurers.

These cards are an important record of sightings, and although they are not scientific, the information can give

presence/absence data, and even point to trends. So, please remember that little white box and tuck a card in your backpack or pocket so you will have one handy. It only takes a few seconds to fill out and is truly a good deed.

Some of the more unusual sightings of the past: sea otter, tarantula, night snake, golden eagle, blue whale and a pygmy sperm whale. Not bad for 144 acres, eh? Bonnie and I fill them out as well.

Thanks for your help. Gotta go.

THE WILDLIFE OBSERVATION REPORT

-Samantha Weber
Chief, Natural Resource Science

WILDLIFE OBSERVATION REPORT		
Species	Observed By:	
Date (Month, Day, Year)	Time (a.m., p.m.)	Weather
Location (As specific as possible)		
Observation (Behavior, Number, Sketch, Map, etc.)		

The native plants were full of endless uses for the Kumeyaay people. They were used for food, medicine, spiritual rituals, clothing, and other items such as, shoes (although rarely worn, only in rocky areas with cactus), nets (that held more than 100 pounds), snares and animal traps, baby cradle boards, baby hammocks, dyes, baskets for cactus gathering and storage, belts, skirts, blankets, mats, mattresses, hats, head rings, paintbrushes (for painting pottery, rock art and face painting), hairbrushes, dusting and pot scrubbing brushes, brooms, tattoo needles and ink, firewood, hair dye, necklaces, leg and arm bands, masks, toys, gifts, trading items, rough cloth, weapons such as bow strings, sewing needles, awls (from cactus needle or agave thorn). Sap mixed with earth made a head and hair-pack that killed lice. Pulp placed on wounds and bruises helped heal. The prickly pear and agave demonstrate a few of these uses.

Coastal Prickly Pear

Opuntia Littorales (Cactus family)

Humans and animals alike ate the fruit (las tunas) and the pads of nopales, a pickle-like vegetable from the cactus family. The Kumeyaay and rabbits preferred the young, tender pads. Tunas can be eaten fresh or made into a jam. The seeds were removed and ground into flour and made into mash for cakes or bread.

Prickly pear cactus can also be steamed or stir-fried. It has also been said that the Kumeyaay people would crush and boil large pads until the sticky juice was extracted and then they would add it to flour used as mortar. This substance was used in white wash to make it stick securely to adobe walls.

Our Lord's Candle

Yucca whipplei (Agave family)

The coastal Indians used all types of yucca plants including the Mojave, shadier, and others. The Kumeyaay ground the roots and used it as soap. Occasionally, the leaves were used for soap when roots were not available. The Indians made a varnish from the fruit juice.

They made decorations for trade and ceremonies, including such things as necklaces, leg and armbands, and masks. Toys were also made from seedpods in which they added small sticks for arms, legs and eyes. Interestingly, women of several tribes used the charcoal from the agave to make blue-black ink along with a cactus thorn attached to a stick with sap or tar to tattoo their bodies.

Fiber is the magic word! Two or more strands of fiber were rolled on the top of their thighs with saliva or water to bind the fibers together. From the fiber came thread, string, cord, and rope. To make the fiber, leaves were cut, soaked, pounded on a flat rock, rinsed repeatedly until fibers were clean, and then sun-dried. Then they were buried to bleach the fibers white.

Leaves and stalks were also pounded into cakes, sun-dried, stored in pots sealed with tar or sap resin, and placed in cool, dry caves. The jars stayed fresh for many, many years. The agave blossoms, after being parboiled and sun-dried were stored in jars. Often after baking the stock, they were dried, ground, and mixed with water or sap to be made into cakes. Occasionally young leaves, blossoms and flowers (before they opened) were eaten raw since the unopened flowers were thought to be sweeter, and when roasted, they tasted like baked apples. The opened, older flowers become quite bitter.

The coastal Indians gathered flowers and flowering stems of several types of yucca and cooked them in a stone-lined earthen pit oven. They were cooled, some were eaten, and the remainder stored. The only way to use these flowers was to parboil and drain them several times, and then dry them in the sun. This process made them edible. The native people ground the seeds into flour. They ate this dry or they made it into a mash with water, broth, or sap.

PLANTS USED BY THE KUMEYAAY

--Ramona Lester

Book Sources:

- American Indian Food and Lore 150 Authentic Recipes, by Carolyn Niethammer, (Cabrillo Library No. 581.6).
- Plants of the Southern California Kumeyaay (Coloring Book), by Rowland Noel, (Cabrillo library No. (581.6).
- Flowering Plants of the Santa Monicas, by Nancy Dale, (Book No. 582.13).
- Temalpakh, Cahuilla Indians, Knowledge and Use of Plants, by Lowell John Bean, (No. 581.6).
- Early Uses of California Plants, by Ed Balls (No. 581.6)
- The California Chapparal, An Elfin Forest, by W.S. Head (No. 581.9794).

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In 1994, Linda Masys read in the newspaper that there was a volunteer clerical position working with the Cabrillo Historical Association. She and her family had just returned to San Diego from Maryland and she and her husband decided that she should retire from her professional duties in nursing to pursue volunteer activities that encompassed her many interests. So Linda called regarding the position and found that it was almost full time. She indicated that it was more time than she wanted to spend; however, the gentleman she talked with wanted her organizational talents so much he continued to call regarding that position. When it became clear that she wasn't interested in volunteering full time, he called her and asked if she would be willing to help with the photo collection archives as a NPS volunteer, a position in which she would be able to set her own hours. Linda jumped at the opportunity.

Thus it was in 1995 that Linda began working with Ranger George Herring as a "keeper of the slide, photo and negative collection," and it was the beginning of her love affair with our beautiful park, its incredible views and all the people involved (rangers, staff, VIPs, etc.) that feels like family. She is able to do much of the work at home, and she managed to involve her husband writing the computer program for the slides and other park work she was doing. He is one of those unsung "volunteered" folks or "unofficial volunteers" who make things go smoothly and well. Linda and her husband plan to eventually revamp their computer program so that it will work with the National Park Service's program and our resources will be on-line for everyone to enjoy. About one and a half years ago, Linda started to volunteer in the lighthouse and loves every minute. In the last "Voice," she wrote an article on the "Lighthouse Ladies" for us.

Linda was born in a small country town in Ohio, the oldest of seven children (5 brothers and 1 sister), all of whom were born in the course of eight years. It goes without saying that her busy and

energetic mom was a nurturer, and Linda learned the lessons of caring, helping and believing in a greater good at home. Clearly, she is a born nurturer as well, and as you talk with her, you see that her energy is boundless.

After high school, Linda went to Ohio State University and graduated in nursing. As a student nurse, she met her husband who was a medical student. When he graduated from medical school, they married and moved to San Diego where he did his internship at UCSD. Subsequently, he served with the Navy at Balboa Naval Hospital. When their

son, Chris, was born, Linda gave up her nursing career to be a full-time mom and professional volunteer. She is the kind of person without whom organizations cannot flourish -- helping in the classroom with young readers studying English, Spanish and spelling, and being membership chairman of the PTA. I'll bet there aren't many who can claim 100% membership in their PTA, but Linda can. She said, "I think they joined just so I would go away." Now Chris is 22 years old and a student at Cal Poly, San Luis Obispo

studying an engineering and business major.

I asked Linda how she became interested in lighthouses, and she said that in 1991 (the last 3 years of their 10 years spent in the Eastern U. S.), they lived on Kent Island in the Chesapeake Bay, Maryland in a California-style home with a porthole window in the kitchen. In deciding how to decorate it, she chose to use lighthouses and that was the beginning of an obsession. She and her husband spend one week each year in Cape Cod at Woods Hole where he spends a week as the Director and teacher of a course, and Linda chooses to drive 1,000 miles to explore and research lighthouses. She has visited lighthouses in southern Maine, Rhode Island, New Hampshire, Martha's Vineyard, Nantucket, Massachusetts and 1 lighthouse so far in Connecticut. She also plans to tackle

(continued on page 7.)



**SPECIAL VIP FOR
NOVEMBER-DECEMBER --
LINDA MASYS**

--Lynn Moss

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Hello VIPs!

It's now November, which means that tidepool season is back in full swing again. Since I last wrote, we've had a number of fun events and announcements that relate to the tidepools.

- We've had our volunteer orientation weekend, which was very interesting (great job Ranger Chris!). We had a variety of speakers, including two Scripps graduate students who told us about local geology and marine plants. We have been considering keeping the momentum going throughout the year by having occasional speakers on relevant topics. Some ideas I've had include talks on how to be a naturalist, an update on the state of the Point Loma Kelp Forest, and a field trip to Torrey Pines State Reserve to learn about geology. If you have any ideas of preferences, please pass them on to Chris Anderson or myself. We want these to be well attended, and the best way to do that is to make sure that you guys are interested and available!

- We have completed our fall tidepool monitoring in record time! With the help of our fabulous veteran volunteers and a ton of new people (some of which came from a public

service group at Scripps), we were able to do a thorough but speedy job this year. Thanks to all who helped out! For those who are interested in participating, we will be

sampling again in March 2001. Drop me a line if you want to be added to my calling list.

- Some of you might have noticed some new citizens in our tidepools—the baby octopuses have arrived! We seem to have received a large recruitment of juveniles over the summer, and hopefully most of the little guys will make it to adulthood (we need more friendly octopuses to keep Anita on her toes—ask her about her close encounter). As I'm sure you've noticed, kids are great at finding things like this, so they will likely come up to you with a baby in their hands. Let's try to give them a break, and try to avoid letting people keep them in their hands for long periods of

time. I don't know how susceptible they are, but I'm sure that getting picked up three times a day by children can't be a good thing. If you get a chance, try to keep a tally of how many you see in a day and let me know.



"All right. No one move and we can all make it through this alive!"



The classroom was okay but "hands on" learning is more fun!



One of the survey teams for the fall monitoring of the tidepools.

BONNIE'S TIDBITS

--Bonnie Becker volunteers and a ton of new people (some of which came from a public

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- You might also have noticed some old friends that are missing—our bumper crop of sea hares seems to have crashed. I'm not surprised given the die-off we saw last year, and I think that the dramatic changes in sea hare numbers are normal for an animal with this kind of life history (annuals that grow and reproduce a lot in their short lives). We should keep observing them, however, since the changes are so dramatic.
- Over the next few months I will be starting a number of new studies. This means that occasionally I will install a piece of equipment (scrub brushes, bags of mussels, temperature loggers) on to the rocks. The last set of scrub pads were very obvious, and they needed to be (they were for a study on the effects of trampling so they needed to be where a lot of people walk). That study is done (for now), so the rest of the gear will be somewhat less conspicuous. It is important that you know what they are for (to tell the public) and that you help us keep them from being torn out. This month the following things might be found:
 - Scrub brushes: these are used to catch juvenile invertebrates. I will be using these to catch California mussel juveniles that I will be using for my thesis work.
 - Bags of mussels: these should be fairly well hidden. We will be conducting a study of the water quality in the park. We will be

putting bags of mussels that were cultured in Cardiff (and start with exactly the same conditions) and leaving them exposed to local water for a few months to a year. We will then take the mussels and have them analyzed for different pollutants (mostly heavy metals). This will help us to see if the mussels closer to the bay are exposed to more pollution than the northern ones.

- Temperature loggers: these are housed in little PVC pipes and attached to the rocks. They take a temperature reading every 10 minutes and store the data until I go and download them. Our temperature data will be added to a dataset being compiled by Dr. John Largier and Dr. Lisa Levin at Scripps in order to characterize the currents in this area from the jetty to Mission Bay.

With all of these new projects, I will need additional help this year from volunteers. If you are interested in learning about volunteer opportunities, please contact me at 619-557-7308 or at bonnie_becker@nps.gov. We will need help in the field, in the lab (microscope work), in the office, and especially doing bird counts.

I hope all is well with you. Have a great holiday season!

Cheers,
Bonnie

all the lighthouses on the west coast, and has already seen several.

In San Diego, Linda is in charge of the flower committee at her church. She loves to research any topic on the Internet -- a fact that has not been overlooked by some park officials. In short, she gives generously of her time and many talents. When asked what she would say to a prospective volunteer at Cabrillo, she said, "Sign up in your area of interest and join the family. The park is so beautiful, and you'll never feel more appreciated."

**SPECIAL VIP FOR
NOVEMBER-DECEMBER—
LINDA MASYS**

--Lynn Moss

Linda Masys is someone who truly loves and cares -- about family, about lighthouses, about being near the water and about life in general. She loves the romance, freedom and beauty of nature, and has been willing to risk and take chances all her life. I have no doubt that she will develop even more "passions" in the future, just as I'm sure I haven't touched on many of them in her past. You just can't harness all that energy and curiosity. Linda Masys is a terrific person, and Cabrillo is lucky, indeed, to have her sharing herself with us.

Someone once wrote, "Time and tide wait for no man." For centuries, seamen have scheduled their port departures and arrivals based upon the tide. They would ride the tide into or out of port to avoid being stuck in port or running aground.

Scheduling around the tides is also true here at Cabrillo National Monument (CNM). One of the most common questions that we hear at the visitor information desk is, "What time is low tide?" Of course, this doesn't have to do with arrival or departure of ships. Instead, our guests want to know whether they can get up close and personal with the critters in the intertidal zone.

The "Cabrillo High & Low Tides" booklet comes to the rescue every time.

Here are some facts about predicting tides:

- The moon, although much smaller than the sun, has 2.5 times more effect on tide than the sun because it is so much closer to the earth.
- Another influence on tides is the geographical layout underneath the water. This phenomenon is called oscillation.
- Barometric pressure can affect the height of tides but not the timing.
- Tide predictions are done by harmonic analysis of the earth's rotation relative to the sun, the moon's orbit around the earth and the earth's orbit around the sun as well as observations taken at the site. Today, the analysis is performed by digital computer. However, until 1965, a sophisticated array of cams and ropes provided the analysis. A drawing of such a device is shown at <http://math.math.sunysb.edu/~tony/tides/index.html>.

- It takes 18.6 years of tidal observation and gathering of all significant astronomical modifications of the tides to make the most accurate predictions of future tides.

Interesting facts:

- Most locations around the earth usually have 2 high tides and 2 low tides per day. High tides are about 12 hours and 25 minutes apart because the moon's orbit is not in sync with the earth's rotation. The earth must rotate about 372° in order for the moon to appear in the same location of the sky. Some places like the mouth of the Colorado River usually have only one high and one low tide per day.
- While the tidepools in CNM may have tide extremes of about 8 feet, there are places where the extremes can be more than 50-60 feet. The Bay of Fundy in Canada is an example. A waterfall where the St. John's River flows into the bay actually reverses depending upon whether the tide is rising or falling.

You can get a copy of the current year's tides for San Diego from the Cabrillo National Monument Foundation bookstore or you can download it from the National Oceanic and Atmospheric Administration's (NOAA) website (www.co-ops.nos.noaa.gov).

You can also get your own computer program to produce your own tide charts. It's a **FREE** program for people who use Windows 95, 98, 2000 or NT. It's called WXTide and is based upon calculations from NOAA. It can accurately predict tides through the year 2038. I have it set up on my desktop to show the tide at the quarantine station. It gives sunrise, moonrise, sunset and moonset and the number of days until the next full moon. It also gives a graphical representation of the current tide. Oh, and did I say it is **FREE**?

Those Perfectly Predictable Tides

--Mike Nelson

References:

- "Tidal Waves And Other Ocean Wonders," Q.L. Pearce, P. 11.
- "Seashore Life of Southern California," Sam Hinton, pp 15-21.

Web Resources:

- <http://co-ops.nos.noaa.gov>—excellent site for tide tables.
- <http://websites.noaa.gov/guide/sciences/ocean/tides.html>—links page for tides and sea level on NOAA's website.
- <http://co-ops.nos.noaa.gov/restles1.html>—A 6-chapter explanation of the basic astronomical factors which produce tides and tidal currents.
- <http://math.math.sunysb.edu/~tony/tides/index.html>—excellent resource on the history of tide prediction.
- <http://www.xtide32.com>—in addition to the free program, it offers links to other sites about harmonic analysis of tides.
- <http://www.tidelines.com>—a source for calendars with tide charts.

Free Computer Program:

- WXTide—A freeware program for your Windows 95/98/2000 desktop. Download it from <http://www.wxtide32.com>.

The area immediately above the tidepools has been described as a "wave cut marine terrace." Few words in the geologic lexicon have much meaning to most of us. We hear of Yazoo streams, transverse faults, shoestring sand, and even senility, which would seem to describe the current condition of my mind but geologically is a stage in the cycle of erosion.

Even things like "marine terraces" are confusing, as terrace implies something of human origin. Most terraces are level, but marine terraces usually slope gently seaward. The marine terrace on the West side of the Cabrillo National Monument seems to slope downward toward the sea a bit more than "gently."

There is, however, a geologic term that says what it means in clear, simple terms, and explains the problem with our not so gentle sloping terraces. The term is "*slope wash*" and it means just what it implies, "*Soil and rock material moved down a slope by the action of gravity assisted by running water that is not confined to channels...*" In the Point Loma area, the definition often includes streets and houses.

If we were to remove the overburden of loose soil from the area above the tidepool parking lot, we would find the sediments below are remarkably level. What has happened is that over the millennia, the action of gravity, wind, water, and sometimes the works of humans have caused the rock and soil to move down hill and cover our terraces so they appear as slopes. This would seem to answer the question of "where is the terrace?" What of fossils then? We are told that many of the sediments of Cabrillo are rich in fossils, but

sediments, slope wash, senility and
nice winter walks

--J. Pierce Harris

aside from trace fossils around
the tidepool area we do not often
see any. The answer,

however, is the same. Except for the tidepool area where the sea washes the sediments daily, they are covered by *slope wash* or the fossils are embedded in the sediments beyond our view. This is the reason geologists are often seen parked at roadsides looking up at road cuts. In the case of our park, the road cuts necessary to make the roads from the park entrance to the tidepool area have removed the *slope wash* and exposed a cross section of the geology. Road cuts anywhere, however, are a necessary evil as they scar the land and interfere with the natural activities of the organisms that live there. Nevertheless, the coming winter will do naturally what we would rather not do artificially. The wind will blow some sand off the bluff north of the old lighthouse exposing the two million year old Linda Vista sandstone. The rain will loosen soil, so that some will move down hill exposing ancient sediments here and there. The Winter Sea will inexorably move great blocks of rock, possibly exposing what may have been hidden beneath for ninety millions of years.

After the next winter storm, go for a walk along the cliffs and hike carefully (unless you wish to become part of the fossil record) down the trail to the sea between parking lots one and two and look around you. The sea may have exposed a treasure for your viewing. It has happened before in that very spot. In any event you will have a very nice winter's walk.

Dictionary of Geological Terms, Bates and Jackson Eds., American Geological Inst., Third Edition, (New York, Doubleday, 1976)

June 1, 2000, marked the 60th anniversary of the organization currently named Space and Naval Warfare Systems Center San Diego (SSC San Diego). The Center's early history is actually that of two separate organizations -- the U.S. Navy Radio and Sound Laboratory (NRSL) and the Naval Ordnance Test Station (NOTS) were, respectively, the first and second West Coast Navy laboratories, established in 1940 and 1943.

NRSL/NOTS

NRSL's initial charges were improvement of shipboard high-frequency (HF) communications and investigation of possible Navy uses of two emerging technologies--sonar and radar. The lab's location on top of Point Loma was perfect for the required research in radio propagation. NRSL also had pier facilities at the current bayside complex where buildings housed the lab's partner in its work, the University of California Division of War Research.

Another lab was established at Inyokern/China Lake in the Mojave Desert with an "annex" at Pasadena. Professors from the California Institute of Technology who had left their classrooms to support the war effort staffed the annex. The group was tasked with improving performance of the Navy's airdropped Mark 13 torpedo. The result of their efforts was a highly reliable torpedo that figured prominently in the 1944 Battle of Leyte Gulf where naval aviators launching Mark 13s accounted for the majority of the 60 Japanese ships sunk.

Subsequently, NOTS and its successors were technical direction agents on all the Navy's lightweight torpedoes -- Mark 32, Mark 43, Mark 44, Mark 46 and Mark 50. Each torpedo ran deeper and farther, and had more sophisticated guidance and control systems to keep step with the increasing speed and sophistication of their potential targets -- Soviet submarines. NOTS also developed the Anti-Submarine Rocket (ASROC) to launch a Mark 46 or a depth charge at a distant submarine target. NOTS played a major role in the Navy's ballistic missile program.

The Navy portion of the nation's strategic deterrence program was a fleet of submarines equipped with long-range ballistic missiles hidden in millions of cubic miles of ocean. The strategy was excellent, but execution seemed

impossible. How could they get a missile to the surface before its ignition engine was fired? NOTS set

up a "pop-up" range at San Clemente Island to determine how to do that. Tests were conducted with redwood logs and steel cylinders filled with concrete to determine the best mechanism to get a missile out of a submarine tube, through a water column, and far enough into the air to allow engine ignition.

Success came with the first live launch of a Polaris conducted by the Center on April 4, 1960, just a few months before the first Polaris submarine was commissioned. NOTS later performed major testing on the Poseidon and Trident missiles. Interested in reported hydrodynamic efficiencies of marine mammals and potential applications to torpedo hydrodynamics, the lab acquired a Pacific white-sided dolphin for study. Subsequent studies of dolphin bio-sonar and deep-diving capabilities lead to establishment of the Navy Marine Mammal Program.

Another spin-off of the weapons work was a device to recover torpedoes following testing. Named the Cable-Controlled Underwater Recovery Vehicle (CURV), it had an operational depth of about 1,000 feet. When an Air Force B-52 bomber and its refueling plane collided over Palomares, Spain in 1966 and an H-bomb dropped into the Mediterranean Sea, CURV was called to support the recovery. In three dives to twice its design depth, CURV attached three lines and the bomb was recovered.

In 1967, the Navy reorganized its laboratory structure, eliminating or merging labs to reduce the number from 15 to nine. NOTS Pasadena was consolidated with the undersea technology component of the Navy Electronics Laboratory to form the Naval Undersea Warfare Center. In the days of anti-Vietnam War sentiment that name hindered recruitment of qualified engineers and it was changed in 1969 to the Naval Undersea Research and Development Center, and in 1972 shortened to Naval Undersea Center.

NEL

In 1945, the Navy Radio and Sound Lab and its wartime partner, the University of California Division of War Research, were formally consolidated into the U.S. Navy Electronics Laboratory (NEL). NEL's charter was "to effectuate the solution of any problem in the field of electronics, in connection with the design, procurement, testing, installation, and maintenance of electronic equipment for the U.S. Navy." Its radio communications and sonar work were augmented with basic

60 YEARS OF EXCELLENCE

--Mike Moser

research in the propagation of electromagnetic energy in the atmosphere and of sound in the ocean.

To support those efforts NEL began building its Shipboard Antenna Model Range. It also began conversion of a World War II mortar emplacement, Battery Whistler, into the Arctic Submarine Laboratory. Scientific exploration of the Arctic Basin, and particularly providing the capability to operate attack submarines in the Arctic under the ice canopy, would become a key NEL mission.

World headlines came early in this program from several events -- the submerged voyage of USS Nautilus from the Pacific to the Atlantic via the North Pole in 1958, and the surfacing at the pole of USS Skate the following year, both with NEL's Dr. Waldo Lyon aboard as chief scientist and ice pilot. NEL also plunged into the undersea environment acquiring the Bathyscaph Trieste and directing its 1960 dive to the absolute bottom of the ocean, 35,800 feet down in the Challenger Deep of the Marianas Trench near Guam.

Interested in radio physics in general, the lab built a 60-foot-diameter radio telescope on Point Loma, and an astrogeophysical observatory with a similar antenna at La Posta in the Laguna Mountains. They utilized these scientific points for research in propagation and ionospheric forecasting. The latter was used during a number of Apollo space launches to predict solar activity that might hamper communications from the ground to the space capsules.

In the area of communications, NEL developed Verdin, a low-frequency/very-low-frequency (LF/VLF) system to provide information to deeply submerged Polaris missile submarines, and began development of satellite communication capabilities.

Requirements for handling the vast amount of shipboard communications during the intensifying Vietnam War led to tasking for an internal message handling system. In response the lab developed the Message Processing and Distribution System (MPDS), installing it aboard the Seventh Fleet flagship, USS Oklahoma City, a month ahead of schedule. The lab improved substantially on that system later and installed it aboard USS Nimitz class aircraft carriers.

NELC

In 1967, as part of the general Navy laboratory reorganization, NEL became the Naval Command, Control and Communications Laboratory Center. The name was never fully accepted, and in about six months it was changed to Naval Electronics Laboratory Center (NELC).

NELC's increasing efforts in the integration of command, control, communications and intelligence systems were boosted by completion of the C3 Systems Integration Test and Evaluation (C3 SITE) facility, better known as Building 600. Its spacious, secure, and electromagnetically shielded laboratories allowed developmental testing of full-scale C3I systems.

NOSC

In 1977, for a variety of financial and political reasons, NELC and NUC were consolidated to form the Naval Ocean Systems Center (NOSC), charged with responsibility for the combined missions of command and control, communications, ocean surveillance, surface and air-launched undersea weapon systems, and Arctic submarine warfare.

A later version of the vehicle that recovered the hydrogen bomb from the Mediterranean, CURV III, made bigger headlines by playing a key role in recovering two men stranded for three days at the bottom of the Irish Sea in a submersible.

NOSC continued its work with tactical data systems fielding the Tactical Flag Command Center aboard the aircraft carriers and command ships. The Center demonstrated that a blue-green laser system could provide viable two-way communications between an aircraft and a submerged submarine.

NRaD

In 1992, NOSC was part of the major reorganization of the Navy's research, development and acquisition community. The weapons development and Arctic submarine warfare work were transferred to Navy centers on the East Coast in return for acquisition of navigation and air C3 work. NOSC consolidated with several other organizations to form the Naval Command, Control and Ocean Surveillance Center (NCCOSC) (Research, Development, Test and Evaluation Division (NRaD)). Program work became more focused on command, control, communications and intelligence (C3I).

**SSC San Diego
Establishment of NCC**

In 1997, with the d OSC and the establishment of direct oversight by Space and Naval Warfare Systems Command, the Center assumed its current name, Space and Naval Warfare Systems Center San Diego (SSC San Diego). SSC San Diego has as its mission to

be the principal Navy RDT&E Center for command and control, communications and ocean surveillance. The Center's vision statement, and also its challenge, is to be the nation's pre-eminent provider of command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) solutions for warrior information dominance.

Karen Eccles, the Executive Director of our Foundation is a dynamic and charming woman who believes wholeheartedly in the mission of her organization. Maybe even more important is the fact that while loving her job, she works successfully and in concert with the Board of Trustees, members of the Foundation, her staff, and the employees of the Park Service here at Cabrillo. As well, she helps to identify the needs of the park and coordinate and administer the Cabrillo National Foundation.

Talk about multifaceted! She has been with Cabrillo for 10 years, the first six as the Manager of the Bookstore and the last four as the Director of the Foundation. This dynamic and selfless woman has a family to care for as well as putting in many, long hours in her work. Without her and her organization, there would be considerable additional funding needed by the federal government to finance our VIP organization. The VIPs thank you, Karen, for all your time and efforts in our behalf as well as the park's, and we're grateful to the Foundation for all its support.

**THE CABRILLO NATIONAL
MONUMENT FOUNDATION**

-Lynn Moss