Second Class in Intertidal Course Graduates from HMB High School

Recent graduates of the FFMLR-sponsored course in marine biology and intertidal interpretation will be conducting tours as new docents at Moss Beach following a 15-week course at Half Moon Bay High School.

This is only the second graduating class from the high school in intertidal interpretation. The course was originally introduced last year in coordination between the high school, FFMLR, and development of curricula and instruction by Bob Breen, supervising naturalist at the reserve, and Ellen Gartside, instructor of marine biology at Skyline College.

"These kids are very much interested in the marine life at the tidepools," Breen said, "and are looking forward to sharing their newly-acquired knowledge with school children at the tidepools."

Some of the subjects studied include ecology and natural history of invertebrates, participation in intertidal activities, as well as a practical examination in leading a group of school children at the tidepools. The course is made possible by a grant from the Gulf of Farallones National Marine Sanctuary.

Graduating students are: Gorette Amaral, Crystal Botham, Jacques Bourdon, Morgan Carkeek, Adrienne Fazio, Jesse Hodge, Carrie Macker, Sara Mascall, Helena Nishkian, Heather Patterson, Lani Sloan, Katie Walsh and Virignia Wilson.

County Acquisition of Pillar Point Marsh Continues in Negotiations

Patrick Sanchez, director of parks for San Mateo County, announced earlier this month that the county had closed escrow on 17 acres at the Pillar Point Marsh. The county is still negotiating on the remaining 12 acres. Although the acquisition of the property has dragged on for several years, Sanchez feels that agreement on the purchase from the Thelma Dolger estate, and the Fahey and Valencia families, is "imminent," and could be completed in the near future.

Pillar Point marsh has long been a sought after wetland by the county. It is a haven for birds, such as the Wilson Warbler, a tropical bird that nests in the marsh during summer. Other migratory birds, seeking food and rest, have made the marsh and its rich vegetation a stopover in between flights.

When the purchase of Pillar Point marsh - estimated at $350,000 - is finalized, it will eventually come under the jurisdiction of the staff at the Fitzgerald Marine Reserve.

NATALIE COSENTINO, of Humbolt State University, is shown discussing survival strategies of seaweed with FFMLR members and guests on Feb. 1 at the Marine Reserve.
MARINE LIFE EXHIBIT at Farallone View Elementary School in Montara was just one of the many exhibits of "Oceans Weeks" celebration from January 27 - February 7. In the above picture (left) is Helena Nishkian, with third graders. In photo at right, Kelly Huber, docent scheduler at the tidepools and a coordinator of the "Oceans Weeks" program, is shown with Joan Silberman (center) and Trudie O’Dea, who worked with Kelly in the silk screen process of T-shirts.

Farallone School Celebrates "Oceans Weeks"

By Bob Breen

The last week of January and the first week of February is a special time for some coastside students. This is when Farallone View School holds "Oceans Weeks", a two-week long celebration of the marine realm. It involves more than a hundred parents, teachers and guest presenters in a community project that brings the marine environment to the students of the school.

I spoke recently to Kelly Huber and Jan McFarland-Brown, two parents, who have been most responsible for coordinating Oceans Weeks during the past two years.

BB: How did Oceans Weeks get started?
KH: Letha Pretre, second grade teacher at Farallone View got a grant for $2500 from the Tarleton Foundation of San Francisco and that was matched by another $2500. For the first year the Tarleton Foundation coordinated the program; the second year it was the teachers; the third year I handled it, and this fourth year both Jan and I took on the project.

BB: What has been the most difficult thing about coordinating Oceans Weeks?
KH: Stress! Scheduling the presenters, there are dozens, and hoping the schedule jibes with the teacher's curriculum. Finding projects for the younger grades, since many of the presentations are directed to the upper grades.

BB: What was the best thing that happened to you during Oceans Weeks?
KH: Izzy! I really like Izzy (Szczepaniak). He brings in skulls, baleen, and demonstrations that help the kids relate to marine mammals. And the fact that the community is behind it. We have more than 100 parent volunteers. It was the parents who requested "Ocean Planet" type exhibits and then they built the exhibits themselves. The tidepool touch tank was also terrific. Eighteen classes went through it. Diane and Margo Lillie were great!

BB: Tell us about a person whom you have found please turn to page 5. See Breen

JAN MCFARLAND-BROWN, a coordinator of the Oceans Weeks with Kelly Huber, is shown above with some of the second grade students in a "hands-on" exhibit of sea urchins, sea stars and numerous shells.
Ed Erdelyi

Ed Erdelyi, a long time tidepool docent, died December 26 at the Hillsdale Manor Convalescent Hospital where he had been a patient since May 2. He was 84.

Erdelyi was well known by elementary school teachers who came to the tidepools each year with their students. In 1988 he led all docents with 39 tidepool walks. Bob Breen, supervising naturalist, remembers that Erdelyi was someone that could be depended on.

"He would show up at the tidepools even when he wasn’t scheduled for a tour," Breen said. "He was very good with the kids."

Born in Hungary, in 1912, Erdelyi lived with his parents in Budapest until he was 13. He sailed on a German square-rigger sailing ship and on a Scandinavian steamship at an early age.

Shortly before the beginning of WW II he was able to get out of Hungary just before the borders were closed, and signed aboard a Free French merchant ship to Marseilles. Later he sailed in the South Pacific in the U.S. Merchant Marine, and the ship he was on was torpedoed off Diamond Head after Pearl Harbor was bombed. He had to spend all night in the water with other crewmen in life jackets before being picked up the next morning.

He became a boatswain’s mate (Chief Petty Officer) sailing on American merchant ships, and was involved in convoys on the notorious Murmansk run to Russia. He lost another ship in the Okinawa campaign. He was involved in five different landings in the South Pacific. He continued to serve in the U.S. Merchant Marine Service until 1955 when he took a shore job with computer industries and became licensed as an electrical technician.

After his retirement in 1985, and in addition to becoming a docent, he kept busy with a short wave radio hobby. He earned a first class radio license and became a member of MARS (Military Affiliation Radio Service), a band of radio operators who donated their time in helping GI’s overseas talk with friends and relatives in the U.S.

Erdelyi is survived by his wife, Marian, who is a docent at Coyote Point Museum, and two step children, Kathleen O’Connell of Boulder Creek, Calif., and Daniel O’Connell who lives in Denver, Colo., and two grandchildren, Rowan O’Neill and Kevan O’Connell.

Night Tidepool Tour Well Attended

The night tidepool tour which took place at the reserve on December 12 was well attended with 31 people. Sponsored by the Friends of Fitzgerald Marine Life Refuge, the tour was led by Bob Breen, Tim Sullivan, Ellen Gartside and Joe Barnwell. Originally, 50 people had signed up for the night walk.

"Considering the weather, we had one of our best turnouts for this event," said Breen. "We were able to spot a number of different kinds of nudibranchs, kelp crabs and shrimp."

Galapagos Symposium Scheduled At California Academy of Science

A one-day symposium on the "Galapagos: Past, Present and Future" will be presented by the Fellows Science Day at the California Academy of Science on Saturday, May 11. The program will include historical highlights of Galapagos scientific explorations, presented by Dr. Alan Leviton, CAS, and Dr. Robert Bowman, SFSU; Galapagos Geology, Dr. Thomas Sirkin, National Museum of Natural History, Smithsonian Institution; The Current Ecological and Political Issues which are impacting the Galapagos, Dr. Chantal Blanton, Director of the Charles Darwin Research Station, Galapagos; Ichthyological Research in the Galapagos, Dr. John McCosker, CAS, and Mid-water Research in the Galapagos, Dr. Bruce Robison, Monterey Bay Aquarium Research Institute.

The symposium is open to interested individuals and is free of charge. Advance reservations are required for all those wishing to attend Fellows’ Science Day. Please make reservations by Thursday, May 9. Reservations may be made by contacting Pat Dal Porto at 750-7346.

RESEEDING NATIVE PLANTS

The Essex Environmental Company of El Granada has constructed a fenced-in area at the top of the hill above the tidepools for weeding out invasive foliage and replacing them with California native plants. Volunteers to help are welcome, according to Lennete Curthoys, senior associate of the company. Call her at 726-8382.
Exploring California's Submarine Canyons

Dr. Thomas Niesen

One of the benefits of a professor of marine biology for 23 years is that your students often involve you in interesting things. This past summer I was invited to participate in a research project by an old friend and former student, Dr. Eric Vetter, of Scripps Institute of Oceanography. Eric is interested in ecology of submarine canyons. He did the research for his doctoral dissertation in La Jolla Submarine Canyon, off shore of La Jolla, California.

Submarine canyons are common along the coast of southern and central California, and their role in sediment transport is well understood by marine geologists. Sediment is washed off the land in rivers onto the continental shelf. From here it is transported by currents flowing along the shore down these submarine canyons into the deep sea. Eric was interested in the fate of plant material, sea weeds and sea grasses that grow in the shallow water of the continental shelf that are also carried down submarine canyons by these currents.

Samples Reveal Dense Animal Life

For his dissertation Eric investigated the fate of plant materials that accumulated on a flat terrace at about 100 foot depth in La Jolla Canyon using SCUBA (Self Contained Underwater Apparatus). Eric sampled the accumulated plant material with a coring device and then returned the samples to his laboratory to count and identify the organisms found within. To his amazement, he discovered the animal community living in the plant detritus in the canyon contained one of the densest accumulations of small marine animals - mostly crustaceans - ever encountered in any ocean bottom at any depth! The plant material was being eaten and converted to animal tissue at an incredible rate. These small animals were in turn being devoured by fishes that were feeding at the site day and night.

Grant Approved for Research

With his dissertation completed, Eric wished to investigate what happened at deeper depths in La Jolla Canyon. He also wanted to know if other submarine canyons harbored accumulations of plant material and dense animal communities like he had discovered at La Jolla. He received a grant from National Underwater Research Project to continue his research on California's submarine canyons. The grant would supply the use of small submarines that could reach into submarine canyons beyond diver depths. He had a seven day cruise scheduled in July, and asked me to come along. He didn't have to ask twice!

The cruise plan called for us to meet the research vessel, the R.V. Cavalier, at the Scripps Institute ship facility in San Diego Bay and sail northward, visiting submarine canyons between San Diego and Santa Barbara. The Cavalier served as our base of operations and was the mother ship to the Delta, a two-person submarine built and operated by Delta Oceanographic of Ventura, California.

The small, two-person submarine was a remarkable piece of engineering. It was only 14 feet long and was powered by an electric motor. Buoyancy was controlled and adjusted using compressed air from SCUBA tanks. It was rated to a depth of 1200 feet, and could dive all day on an overnight charge of its batteries. Delta was the submarine used by Robert Ballard of National Geographic fame to investigate the wreck of the Lusitania, sunk off Ireland by a German submarine in 1915.

Eric had selected nine submarine canyons for us to investigate. The first was off Carlsbad, California. The others included Redondo Canyon, Santa Monica Canyon, Point Dume Canyon, Point Hueneme Canyon, and Santa Cruz Canyon between the islands of Santa Cruz and Santa Rosa in the California Channel Island chain.

Canyons Vary in Size

Like canyons on land, no two submarine canyons are the same. Some are narrow with very steep rocky walls, while others have very flat bottoms and gently sloping, sandy sides. We found that plant material did accumulate in some of the canyons and not in others. Using a mechanical suction device on the submarine we were able to gather samples from the canyon bottoms for comparison to La Jolla Canyon.

I was able to make seven dives on the cruise. It was a real eye opener for me as I have never dived beyond 150 feet using SCUBA, and here I was in over 900 feet of water. At 900 feet in coastal water there is no light. The submarine was rigged with powerful lights and an excellent video camera that recorded the entire dive. In shallow water we encountered familiar animals that we would normally see SCUBA diving such as sea urchins, sea stars, sea cucumbers, crabs, shrimp and fish. At about 200 feet a new group of sea urchin and sea star

Please turn to page 5. See Niesen
I then asked both Jan McFarland-Brown and Kelly the following questions regarding the project:

**BB:** What insights into people have you gained?

**JMB:** They are so helpful when you call, they’ll do it and follow through. They work with their children and they have a willingness to work in the classroom.

**KH:** Parents and teachers were very happy to know that the follow-through was there. It has changed the perception of school staff to know that there are parents who will follow through. When parents work for the entire school, all the students benefit, not just an individual classroom.

**BB:** What are some of the risks involved in taking on this project:

**JMB:** Delegation of responsibility to parents and hoping they’ll do it, allowing someone else to take over. All have been very cooperative in building the exhibits and coordinating presentations.

**KH:** Asking Tarleton Foundation to come out and show us how they make the clay birds. I didn’t do that this year, although they have come out in past years.

**BB:** How do you think your family and friends feel about what you are doing?

**KH:** Resigned! Waiting for us to get real jobs. This is what we want to do. We love to do this. It’s draining and it’s a balancing act. But I hope we inspire a new group of parents who are coming of age.

**BB:** If you could sum up the most important thing you will take away from this experience, what would it be?

**KH:** The letter I got from my son, thanking me for all those things I’ve done, and he drew a picture of a whale. Knowing the kids and knowing that they know me by name, and that they are so enthusiastic about protecting their world.

**JMB:** Learning how to put together an event like this. And knowing all the kids and meeting other people from the community. The kids talking about the author (Editor Bart Oxley) who came to school and talked about his book. The high school students (from Half Moon Bay High) were here and the kids just loved the high school students. The high school students reliving their experiences when they were students at Farallone View School, and the link between the high school and today’s elementary school students.

**NIESEN** (cont. from page 4.)

species appeared that I have only seen previously from net trawls taken by boat.

At about 500 feet I saw an animal that I have yearned to see in the wild for years. This animal is called a basket star in the echinoderm class Ophiuroidea. I had only seen it previously from deep trawls in the Monterey Bay Canyon. The basket stars were not on the sandy bottom, but on the rocky walls of the canyon. Basket stars have five arms radiating out from a central disk and each arm branches again and again to form a large mesh work of appendages. The basket star raises its basket-like wreath of appendages into the water flowing down the canyon and traps zooplankton. The end of each of the many branched appendages close on their trapped prey like tiny fists, so at the end of a night time of feeding the basket star is all folded up on itself. During the day it slowly and carefully brings each "fist" to its mouth and swallows its prey. Seeing this animal was one of many highlights of the cruise.

(Dr. Thomas H. Niesen is a professor of biology at San Francisco State University. In 1988 he spent time on a research cruise on the Bering Sea working with zooplankton. He is the author of The Marine Biology Coloring Book, Harper & Row, which is on sale at the ranger station at the reserve, $8.95.)
Student Acclaims Natural Beauty, Intertidal Life at Half Moon Bay

By Adrienne Fazio
(HMB High School Student)

Waves crashing down on the beach echo through my room, my own personal lullabies that have sung me to sleep every night. Luckily it takes thirty minutes to reach the big lights, the loud noise and the 24-hour action.

In Half Moon Bay, the beating waves caress the ear drums, the salt air stimulates the nostrils and the fog envelops the skin of the body. Nature surrounds the town. Rolling hills are mounded up high on the side while the other is sharply cut off by the crystal blue waters of the greatest ocean of the planet. A quick walk or ride leads to the great caverns of the giant redwood trees, with narrow streams flowing gently between moss covered rocks and fallen branches. Deep blue water stretches across the incessant horizon, reaching and sinking to unimaginable depths.

What an incredible classroom! Every other Wednesday of the first semester it was finally satisfying to go to school. The marine biology class at the high school was such a wonderful opportunity to really learn and explore the material right out of our backyards. Instead of sitting inside listening to boring lectures, we would listen to Mr. Breen talk and explain details that we knew we could see in actuality. The sketches on the blackboard would blossom into living and moving animals. It was a different kind of education that explored material we had been observing all our lives. It was refreshing to tie up loose ends and learn details of a habitat we thought we knew so well.

The best part of this class (yes, I know it’s hard to beat sunrise walks on the beach) is the second semester docent tours. We recently finished the in-class half of the class requirements and now we have to lead elementary school children on tours around the Fitzgerald Marine Reserve. Fortunately, I’ve already had the chance to lead one tour. It was amazing. It was so different compared to when I had helped in late January at Farallone View Elementary School, which also was fun and the kids were great. But the kids from over the hill where everything was new to their eyes - what a difference. To be able to show some young, impressionable students the magnificence of the ocean, with its tremendous waves crashing with the weight of the moon behind them, to show them the colorful life exploding from each tidepool, and to teach them to look, discover, and question for themselves brings an overwhelming feeling of satisfaction.

With the new work I’ve been doing with the children, I have discovered that maybe I might be looking at a career in education. The look of amazement and wide-eyed "ahhs" that accompany a new discovery, leave me with a confident feeling that I have done my best to bring knowledge to students who will later add to society.

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FFMLR 1996 PROGRAM HOURS

The following is a list of volunteer time spent in the promotion and development of Friends of Fitzgerald Marine Life Refuge programs.

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Two exciting bits of news:

1) The Request for Proposal for the development of a Master Plan for the Fitzgerald Marine Reserve has gone out to interested consultants. The proposals are due back the end of April. These will be reviewed and a firm chosen to do the Master Plan.

2) The Curriculum Guide for the reserve is now for sale. Congratulations to Ellen Gartside for a job well done. Our thanks to the Genentech Ecology Committee for the grant that made this possible. They may be purchased for $8.50 at the office or send a check for the $8.50 plus $1.50 to cover postage to PO Box 451, Moss Beach, 94038.

My Thank You to:

James V. Fitzgerald for his generous donation to the Friends.

To all of you who upgraded your memberships. These make possible more programs at the reserve.

To Rita Caldwell and Maryann Danielson and their helpers for the many hours put into the ongoing bird study.

To Bob Wolfe for the wonderful job he is doing as membership chairman and his many helpful suggestions.

To all the board members for the special jobs they do and their continuing support and enthusiasm.

To the wonderful committee who developed the proposed plan for public education through the year 2004.

To Jean LeMaitre for assembling and mailing the newsletters and any special mailings.

To Bart Oxley for the "Between the Tides" newsletter.

To the staff for all their help and dedication to the Marine Reserve.

Dates for this year’s Junior Ranger Program are June 23-27, and August 4-8. Cost of the program is $15 for FFLMR members, and $25 for non-members. I suggest that interested parties get their reservations in early by calling the ranger station at the reserve, 728-3584. Payment must be made at the time of reservation.

**FFMLR SPECIAL PROGRAMS - 1996**

The programs listed below were sponsored by the Friends of Fitzgerald Marine Life Refuge:

1. Oceans Weeks at Farallone View School.

2. Teacher Workshop.

3. Continued Roving Interpreter and Junior Ranger programs.

4. Started guided tours with Roving Interpreters.

5. Second high school marine biology class.

6. Two summer Junior Ranger programs.


8. Continued work on natural history of Marine Reserve.


11. Expanded bird study.

12. Quarterly newsletter.

**MAJOR PURCHASES**

1. Repair computer.

2. Purchased name tags for all volunteers.

3. Equipment for bird study.

**Teacher’s Workshop Cancelled**

The Teacher’s Workshop was cancelled earlier this month because of too few applications for the one day seminar. The workshop will be rescheduled for next year, Bob Breen said.
TIDEPOLL TALES
By Debbie Rogers

January 31, 1997, a personal record was set! The morning was bright and sunny, the tide was not very low (1.6), and in less than an hour this writer saw 26 mossy chitons without turning a stone. And most of them were a full-grown two-and-a-half inches in size. Incredible! If there's ANYTHING that makes going to Moss Beach FUN, it's the SURPRISES! These gastropods are by day usually on the UNDERSIDES of rocks and they look so much like their surroundings that it takes a keen eye and some effort to locate them, and they seem hardest to find when the group of students you're guiding hopes to see one. On this day they were EVERYWHERE! The question, of course, is WHY?

For two reasons the territory covered on this outing was restricted: the tide was not out very far (the area of cobble rocks where small octopus are often found was underwater), and any investigating on the main reef was out of the question because seven harbor seals had commandeered the inner portion of it, and good sense as well as regulation prevents one from disturbing them. So these chitons were rather close in, a zone much traveled and previously viewed.

These animals are nocturnal, hiding under rocks by day and moving around on the exposed sides of rocks at night to graze for minute algae, diatoms, hydroids, bryozoans, and other low-growing animal organisms. But on this day they seemed to be basking in the sun like lizards. Winter is NOT their time of greatest feeding activity (spring and summer are), but in the winter and early spring their energy needs for gonadal development ARE greatest. The caloric content of live algae is highest in autumn and winter, so perhaps the chitons are simply sated from feeding on the low-lying, caloric-rich seaweed which will prepare them for a strong late summer spawn. Or is this some sort of "reverse hibernation", resting in the sun now to prepare for active night feeding in the spring?

Maybe and "why" for finding so many so easily on this day is not a question at all, because chitons are homing creatures in that they return to their own rock depressions after feeding. Perhaps those 26 chitons have always been in those locations and due to less algae protection or the angle of the sunlight were simply easier to see.

But one "why" which even the scientists have not yet answered is how it came about that chitons are the only molluscs that evolved magnetite in their radulae. All their grazing is accomplished by their little hard teeth which contain magnetite, an oxide of iron. It is a little softer than quartz but harder than some grades of steel, and there is such a percentage of it that the teeth are responsive to a magnet, and this may aid in their homing abilities. The grazing action is likened to our licking an ice cream cone with rows of little teeth on our tongue, and these teeth are continuously replaced as they wear down, just as occurs with sharks. View the frozen-jawed shark at the California Academy of Sciences in Golden Gate Park to get an enlarged picture of teeth replacement.

So the questions and the fun go on! What surprises are next?