

# BETWEEN *the* TIDES



F r i e n d s   o f   F i t z g e r a l d   M a r i n e   R e s e r v e  
M a r c h 2 0 1 2

## **James V. Fitzgerald Pollution Reduction Program, County of San Mateo, Department of Public Works**

*by Julie Casagrande*

*Editors' Note: That our oceans are suffering from an increasing amount of pollution should come as no surprise. They have long been a dumping ground for industrial waste, and oil spills continue to vex. Yet, contrary to popular belief, most ocean pollution comes from non-point sources, of which runoff is the most common, according to the National Oceanic and Atmospheric Association. Originating as herbicides and pesticides spread on residential lawn and farm fields, animal feces, and oil and chemicals dripped from vehicles onto paved areas, these pollutants wash into culverts, streams and rivers, and ultimately reach our oceans, creating harmful consequences. Some of the effects on ocean environments include harmful alga blooms, eutrophication and increased turbidity, contamination of marine food webs with toxic chemicals, and the loss of biodiversity. As stated by the Pew Oceans Commission, "Today non-point sources represent the greatest pollution threat to our oceans and coasts. Every acre of farmland and stretch of road in a watershed is a non-point source. Every treated lawn in America contributes toxics and nutrients to our coasts...the situation requires that we apply new thinking about the connection between the land and the sea, and the role watersheds play in providing habitat and reducing pollution." A local agency is doing just that. —JPSG*



*A finished project near FMR on Juliana St.*

The County of San Mateo is pleased to announce that we have begun working on the James V. Fitzgerald Area of Special Biological Significance Pollution Reduction Program (project). The project is led by the County of San Mateo Department of Public Works (County) in collaboration with the San Mateo County Resource Conservation District (RCD) and the San Francisco Estuary Institute (SFEI). This project is funded in part by a Proposition 84 grant from the State Water Resources Control Board and is scheduled to continue through March 2015. The project involves implementation of targeted stormwater Best Management Practices (BMPs), water quality studies and BMP effectiveness monitoring, and education and outreach. The project's goal is to improve water quality and protect beneficial uses of the James V. Fitzgerald Area of Special Biological Significance (ASBS) and additionally assist in the County's compliance with the ASBS stormwater regulations.

The first phase of the project is a pilot to install and test effectiveness of several types of stormwater BMPs. The County contracted with Go Native and Blue Sky Designs for design and construction of vegetated swales at four pilot BMP sites (7th Street, Juliana Avenue, Cypress Avenue, and Ocean

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*One design involved the use of a native grass sod for biofiltration. The other design (see photo above) involved an under drain system coupled with permeable pavers, rock weirs, and a mixed palette of native plants including grasses and wetland species.*

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*continued on page 3*

## Friends of Fitzgerald Marine Reserve

P.O. Box 669  
Moss Beach, CA 94038  
Phone: 650.728.3584  
www.fitzgeraldreserve.org

### Board of Directors:

Robert Breen  
Joseph Centoni  
Linda Ciotti  
Tom Ciotti, *President*  
Mary DeLong, *Vice President*  
Ellen Gartside  
Kelly Huber, *Secretary*  
Bill Kennedy  
Jenna Kinghorn, *Website Editor*  
Sarah Lenz  
Dr. Tom Niesen  
Hope Suchsland, *Treasurer*

### Our Mission:

To inspire the preservation of our unique intertidal environment through education and the support of research.

### Newsletter Editors:

Janet Pelinka  
Sasha Greenawalt

### Consultant:

Jenna Kinghorn

### Design and Production:

Martie Sautter  
Sautter Graphics and Print

## President's Message

# Man on a Mission

by Tom Ciotti



As your new president, I am a man on a mission. But don't worry, it is the same mission we all have: to continue to protect and preserve FMR and promote education and research at FMR. My temporal segment of this mission really isn't daunting. Why? Because my predecessors, particularly our outgoing president, Ellen Gartside, did such a great job during their segments. I also can count on a lot of help from our Board of

Directors, Volunteer Coordinator (my wife), *Between the Tides* Co-editors, volunteer naturalists, and all of the other Friends of Fitzgerald Marine Reserve. And, then there is all the support FFMR gets from San Mateo County Parks and the coastside community. I thank all of you for your help in carrying on this mission.

We start 2012 with a full training class of new volunteer naturalists. We look forward to having them join our ranks and help us accomplish our mission.

We also look forward to the 2012 tour season and sharing the wonders of the Reserve with another generation of students. If anyone doubts the effect our tours have on children, I will be glad to send you a copy of the recent thank you note our volunteers received from a 4th grade visitor in which she wrote: "I hope tidepool life goes on forever."

Let's make her hope a reality. ♦

**Editors' Note:** Here is the letter Tom received.

*Dear Naturalists,*

*Thank you very much for guiding our field trip! You were right, that was one of the awsomest field trips I've ever been on. The giant green sea anemones were cool, and the red rock crab rocked. The starfish doing yoga was hilarious and the hermit crabs were adorable. I hope tidepool life goes on forever.*

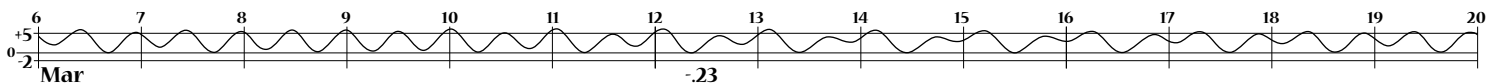
*Love, Abigail*

The lowest tides this period are:

-.23	3/12	8:30 am
-1.18	4/09	7:17 am
-.35	4/23	6:39 am
-1.82	5/7	6:11 am
-.73	5/22	6:19 am
-1.93	6/5	5:58 am
-.78	6/20	6:00 am
-1.58	7/3	4:57 am

The graph displayed across the page bottoms shows tides for 3/6/12 to 7/24/12. Where the date appears is midnight. The reefs are accessible for exploring during low tides—at least 0 or below. See: <http://fitzgeraldreserve.org/resources> and click on "Tides" for a more detailed tide chart.

*Good late winter/spring tides are in the early morning. There are almost equally low tides several days before and several days after the noted low tide dates.*



**Pollution Reduction** *continued from page 1*

Boulevard). Two designs were implemented utilizing native plants. One design involved the use of a native grass sod for biofiltration. The other design involved an under drain system coupled with permeable pavers, rock weirs, and a mixed palette of native plants including grasses and wetland species. The vegetated swales were recently installed in November and December 2011. Stormwater filtration devices (flume filter boxes and filtration cartridges) will be installed at five other pilot BMP sites during 2012. The final pilot BMP will be construction of a green parking lot with multiple stormwater treatment features at the Fitzgerald Marine Reserve. County Parks Division is currently working on preliminary design alternatives for the green parking lot. Throughout the next two rainy seasons, the SFEI will be collecting water quality samples to test the effectiveness of these pilot BMPs at removing pollutants from stormwater.

The first of phase of the project also involves a Storm Drain Inventory and Assessment and Microbial Source Tracking (MST) study. For the MST study, researchers from UC Davis will be collecting samples from Martini, Kanoff, Montara, Dean/Sun-

will be based on the results from the first phase of the project (pilot BMPs, storm drain inventory and assessment, MST). The County will implement between 10 and 20 BMPs within the County storm drain system. The RCD will implement between 10 and 20 stormwater BMPs on private lands.

Lastly, the project involves education and outreach activities to communicate the significance of the natural resources of the ASBS and to provide technical tools and practices to the community for pollution prevention and reduction. Activities will include development of an ASBS website, newsletters, a public survey, and a Low Impact Development (LID) workshop for local residents and builders. These activities are currently in development. ♦



*A finished project near FMR on Juliana St.*

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*Two designs were implemented utilizing native plants. One design involved the use of a native grass sod for biofiltration. The other design involved an under drain system coupled with permeable pavers, rock weirs, and a mixed palette of native plants including grasses and wetland species.*

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shine Valley, and San Vicente Creeks and performing genetic analysis to test for the presence of host specific genetic markers indicating the presence of fecal contamination sources such as human, dog, and bird.

The second phase of the project involves targeted upland BMP implementation. BMP selection

*Julie Casagrande is a Watershed Protection Specialist for the County of San Mateo Department of Public Works. ♦*

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*The County contracted with [local nurseries,] Go Native and Blue Sky Designs for design and construction of vegetated swales at four pilot BMP sites...*

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## Friends of Fitzgerald Marine Reserve

Membership Secretary, P.O. Box 669, Moss Beach, CA 94038, or through our website: [www.fitzgeraldreserve.org](http://www.fitzgeraldreserve.org)

**Contribution Levels:**

- \$25       \$100       \$1000  
 \$50       \$500       Other

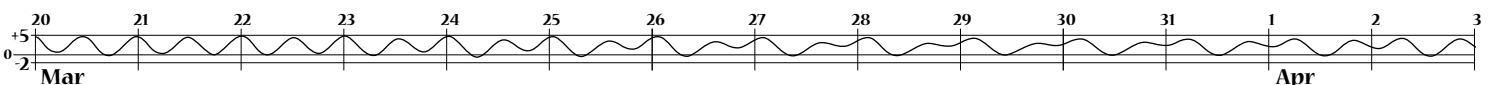
I want to double the value of my gift through my employer's matching gift program (please enclose the matching gift forms).

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Email \_\_\_\_\_



# Adventures at Mussel Rock

Articles and Photos by Julie Walters



Aggregating anemone



Cuthona divae



Hermassenda crassicornis



Mussel Rock tidepools

One of the things that makes tidepooling so fascinating to me is how different the same species can be at different locations; you may see variations in size and color of the same animal. Having visited Pillar Point, Scott Creek, Duxbury Reef and Mussel Rock, I would have to say that Fitzgerald Marine Reserve has the greatest quantity and diversity of species. Below is a summary of one of my recent tidepooling adventures shared with some other Fitzgerald naturalists.

**Location:** Mussel Rock, Pacifica

**Date:** Saturday Nov 26th 3:00-5:00 pm. Low tide of -1.7 was at 5:19 pm

**Docents:** Susan Evans, Dianne Chetwick, Linda Theroff and Julie Walters

**Predominant species found here:**

Aeolid nudibranchs: mostly *Hermisendas*, but also a few three-lined aeolids (*Flabellina trilineata*) and *Cuthona Divae*. Most of these were found fairly close to the shore.

Aggregating anemones with pink tentacles

Very large mussels-Hence the name Mussel Rock!

Giant green anemones

Large chitons

Ochre sea stars on larger rocks

Sand castle worm casings on rocks

**Getting There:** From Highway 1 north, take exit 507 at the north end of Pacifica, left onto Oceana, left on Manor Drive, right on Esplanade. Drive to where Esplanade starts to curve inland near Lands End apartments. Park on the street and look for the public stairs that go down to the beach. Walk north on the beach, over a large rock outcropping, for about 20-30 minutes. Go until you can't walk any further due to the cliffs which project into the ocean. The best tidepools are just south of this area.

**Best time to visit:** Low tide of -1.0 or lower. Also best to go on a day when wave height is minimal.

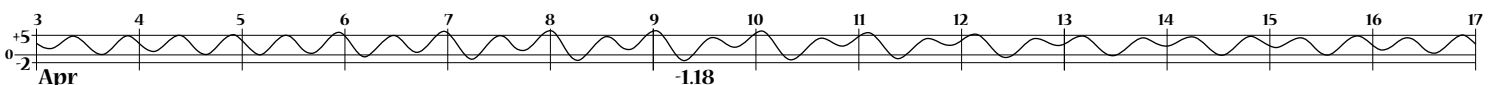
**What you should know:** Waves can be intense here. Always keep your eye on the ocean. There is no reef offshore like Fitzgerald and very large waves break close to shore. Wear the highest boots possible, or better yet waders.

Cliffs here are prone to erosion and landslides can occur on the beach after heavy rains.

This is not a marine protected area so you may see people taking mussels and fishing from the shore. This makes one appreciate the marine protected area that we have at Fitzgerald.

**Geology and History:** This area is just south of where the San Andreas fault runs into the ocean. Fossils from an 11,000 year old Columbian Mammoth were recently discovered in the gorge just south of this area. At that time the coastline was much further west and the area between our present day coast and the Farallon Islands were connected and this area was very different and was probably a bog.

Just like at Fitzgerald, the Ohlone Indians lived here thousands of years ago and took advantage of the many sea animals and fresh water to create a midden where the Mussel Rock transfer station is now. During excavation it was found that 95% of the bones here were from sea otters; the balance were harbor seals and Tule elk. Only the harbor seals live here in present day. ♦



## Letters to the Editor

The following messages were received in the *Between the Tides* mailbox (newsletter@fitzgeraldreserve.org). We are excited to see that the fame of our Reserve reaches not only across our country but across the Pacific.

*Editor, the Newsletter:*

*Re: land-walking octopus.*

*As a longtime fan of *O. Vulgaris* who has kept five or six of them for varying periods of time in my "marine habitat" in Key West (a human swimming pool on the edge of a canal, which has been a circulating marine pond since Hurricane Wilma, 2005) I was fascinated! I have found them to all have different personalities, and it really looked to me as if this one was trying to make contact, even offering its favorite food to onlookers!*

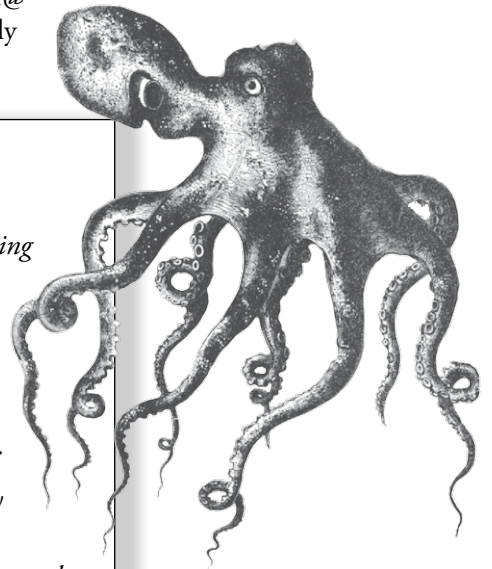
*Some have refused to interact with me but many became tame to the point of taking food from my hand or touching my hand with their tentacles. I would dearly love to be there and be you, who have a chance to continue what this one started!*

*This surprisingly nimble land-walking would certainly explain the eventual disappearance of all of my octopuses, except the one which, sadly, left its beak in the pump intake after a power outage.*

*Enjoy your opportunity to make contact with a willing ambassador.*

*Katha Sheehan (formerly the "Chicken Lady" of KW)*

*Key West, FL*



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*We are excited to see that the fame of our Reserve reaches not only across our country but across the Pacific.*

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*From: Wee Jin Koh*

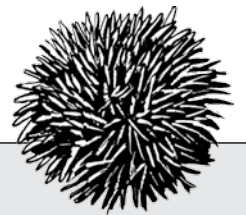
*Subject: FW: Visit*

*Date: January 3, 2012 5:52:55 AM PST*

*I read about the Fitzgerald Reserve in the June issue of National Geography and I am very impressed by the varieties of beautiful creatures that can be found in your tide pools. We are planning for a visit to Santa Cruz between 20 Jan and 22 Jan 2012. I read in your website that the low tide on 21 Jan is around 3pm. We would like to plan for a trip to visit the tide pool to see the wonderful marine life there. There will be just 4 of us in the family and I would like to know if we need to make any reservation? Will there be a big crowd? What should we wear or bring along? Your advice would be greatly appreciated.*

*Best Regards*

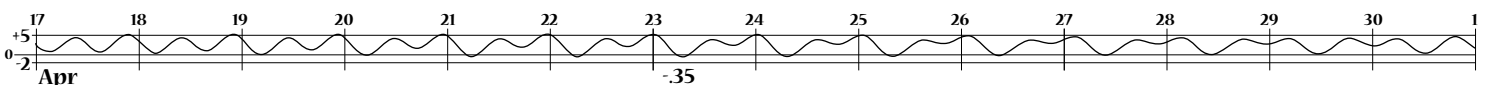
*Wee Jin from Singapore*



## Myrtle Johnson

Long-time member of FFMR Myrtle Johnson recently passed away. She and her husband were actively involved docents during the 70s and 80s, and worked tirelessly to overturn a law passed by the South Bay Legislature that allowed fishermen to take mussels, sea urchins and crab from

the Reserve. Myrtle will be missed by all who remember her cheerfulness, hard work and the indispensable help she gave to the Reserve. She was the mother of Rick Johnson, former president of FFMR.



# FFMR Continues to Support Marine Education

by Joseph Centoni



India Bolding (also an FFMR volunteer naturalist) collecting salinity data.

The marine ecology class at Half Moon Bay High School has a long history with the Friends of Fitzgerald Marine Reserve. The class (originally called Marine Biology) was created by Bob Breen while he was the park ranger at the Reserve. For many years, this class of committed high school juniors and seniors has come to the Reserve for early morning field trips to

dissolved oxygen concentration, and turbidity. They can also be attached to an anemometer to record wind speeds and to a gps sensor to record the exact location where samples are taken. These tools allow students to use equipment and procedures that are similar to those used by field scientists and agencies tasked with assessing the quality of water in rivers, streams, and lakes.

Using the dataloggers and probes students can determine key factors scientists look at when assessing the health of aquatic ecosystems. Computerized equipment also makes data collection more efficient and less time-consuming. For example, using a probe to determine the dissolved oxygen content of water takes only a few seconds. Without a probe, students must use lengthy chemical procedures on site and in the classroom, limiting their time for tidepool observation.

Using these tools students can make comparisons of water conditions in different tidal zones and relate these conditions to adaptations of animals in each of the zones. They can also compare water in different locations along the shore, for example the water at Pillar Pt. Harbor with that of the Marine Reserve. Students can also examine the water entering the ocean from streams like San Vicente creek and consider its potential impact on organisms on the reef. Again, because the data is relatively quick to collect, it can be combined with surveys of the animal or bacterial life from the same time and locations.

In addition to field studies, the equipment will increase the number of laboratory experiments possible in class. Over the next few weeks small groups of students will be designing experiments to see how a change in an environmental condition of their choice (for example the amount of sunlight or the input of pollution from runoff) impacts the rate of photosynthesis by phytoplankton. Without the ability to determine easily how much oxygen is in the water, students wouldn't have been able to tell how much photosynthesis was occurring. Students will also be using pH probes to study how increases in atmospheric carbon dioxide cause the ocean ➤

study the intertidal ecosystem and organisms living there. Students in the class have also learned interpretive techniques and have shared their knowledge with elementary school students by leading tidepool tours. Some students from the class have gone on to volunteer at the Reserve as docents.

In the spirit of continuing their support of this relationship, the Friends recently purchased digital water monitoring equipment for the class to use, enabling students to monitor the quality of water at the Marine Reserve and at several other sites along the coast. The data collected inform student discussions about the ways water quality impacts marine life.

Students also use the equipment to conduct investigations and experiments at the tide pools and in the classroom.

The equipment consists of six sets of dataloggers and digital probes for use in the field and laboratory. The dataloggers are computerized devices that can record and graph information transmitted from the probes. Each datalogger has a set of sensors and probes that measure salinity, pH, temperature,

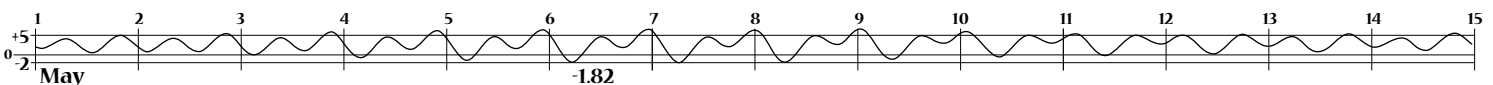


Rhianna Schafer taking a temperature reading.

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*...small groups of students will be designing experiments to see how a change in an environmental condition of their choice, [e.g., sunlight] impacts the rate of photosynthesis by phytoplankton.*

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to become more acidic. Because students have access to the new equipment they will be able to use hands-on experiments to see the connection between CO<sub>2</sub>, acidity, and the shell-building of marine mollusks.

For an ecology class, it is often challenging to collect meaningful data within the confines of a class period and a school year. In past years, most of the information students in the class learned about water quality and its effects on marine life came in the form of lectures. With this donation students can actually explore ways organisms interact with the environment and how changes in water quality occur. It makes data collection more engaging and frees up class time to develop higher order thinking skills involved in analysis and evaluation of results. This improves student understanding of science concepts and

increases their appreciation of the value of data collection done by professional scientists.

These tools and the activities they enable give students a taste of what modern scientific research is all about. Indeed, many students in the class have been inspired to study marine sciences and plan to pursue careers in similar fields. The Friends of Fitzgerald Marine Reserve continues to support marine science education on the Coastside through a scholarship program for HMBHS students going on to study marine science after graduation. ♦



*India Bolding and Jenna Merrilees collect data on dissolved oxygen concentration.*



*Hannah Greenberg and Devon Smith take pH readings.*

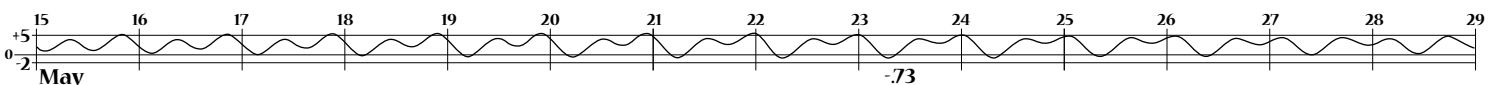


*The class, early in the morning, at Ross' Cove, Fitzgerald Marine Reserve.*

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*The Friends of Fitzgerald Marine Reserve continues to support marine science education on the Coastside through a scholarship program for HMBHS students going on to study marine science after graduation.*

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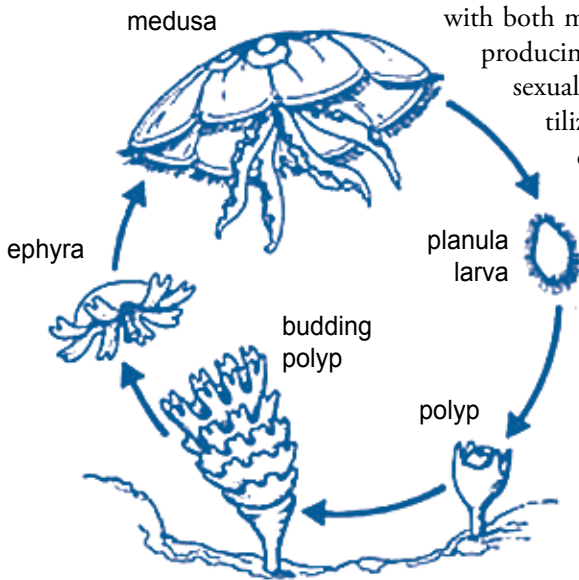
# Jellyfish

by Jessica Donald

Most jellyfish lifecycles consist of alternation of generations. This means that the main body form typically transitions between a bottom dwelling polyp (think of a microscopic-sized anemone) and the more recognized form of a free-floating medusa. This article will focus mainly on the medusa stage, as it is the typical form most people associate with the name jellyfish.

## Life Cycle

**Polyps** reproduce asexually by clonal budding, while the **medusa** stage reproduces sexually with both male and female medusa producing sperm or eggs. With sexual reproduction the fertilized egg is released and develops into a **planula larva**, which then settles into a polyp. The polyp produces **ephyrae** that then develop into medusas and the whole cycle starts again.



<http://www.dnr.sc.gov/marine/pub/seascience/jellyfi.html>

## Body Plan

The body plan of jellyfish is very simple. They are bell-, dish-, or umbrella-shaped. The outer layer of the bell is usually composed of a thick layer filled with a jelly-like substance called **mesoglea**. The mesoglea is what gave this animal group the name jellyfish.

Most jellies lack specialized organs like intestines, lungs or even a brain. So how do they eat, breathe and think? In order to eat, a **manubrium**, a stalk-like structure protruding from the center of the underside of the bell, acts as the mouth. The manubrium, or mouth, opens up into a gastro-vascular cavity, which acts as the stomach. This is where food is digested and nutrients are absorbed into the tissues. To catch food jellyfish have small structures on their tentacles called **nematocysts**, which are like tiny compacted springs with barbs on the end. When a jellyfish tentacle bumps up against a small fish, the spring is set off and, similar to an anemone, it spears the fish. To breathe jellies absorb oxygen directly out of the water into their thin tissue layers, so no lungs are needed! Lastly, instead of a brain jellyfish have a simple nerve net that allows them to react when they are touched or bump into something.

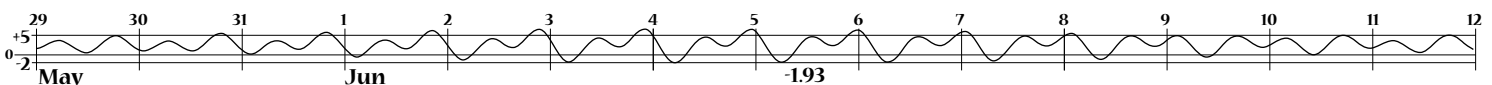
The jellyfish most commonly seen washed ashore at FMR are By-The-Wind Sailors and Moon Jellies.

## If you're stung by a jelly...

If you see a gelatinous blob on the beach, it would be prudent to avoid contact. Even a jelly that's long dead and beaten to bits can still sting since the nematocysts continue to remain active.

If contact with a jelly results in pain, then you've been injected with toxins from hundreds or even thousands of nematocysts. It's important to remove any tentacle pieces as soon as possible since the nematocyst function will continue even when detached. A seawater rinse is best since freshwater will only trigger more nematocyst firing.

Take care not to rub it in as the rubbing may assist the nematocysts to spread further inside the body.





## By-The-Wind Sailors (*Veleva veleva*)

The deep blue by-the-wind sailors are actually the polyp phase of the life cycle. Each individual with its sail is really a colony, with several polyps connected by a canal system that enables them to share whatever food is ingested by each individual with the rest of the group. Each colony is equipped with a stiff blue sail made of a chitinous material that looks a lot like cellophane. The sailors float along the ocean's surface at the mercy of surface currents and seasonal wind patterns. Sometime wind patterns in the spring and early summer wash hundreds of *Veleva* onto the beach.



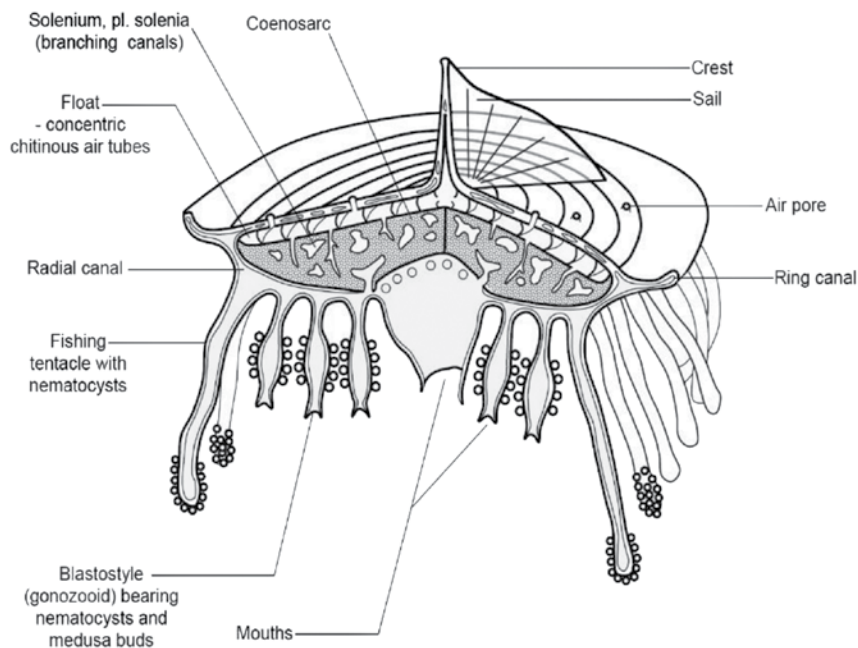
## The Moon Jelly (*Aurelia aurita*)

When people think of the term jellyfish they most often think of the free-floating medusa form of the Moon Jelly (*Aurelia aurita*). This jellyfish has a clear body and is usually 25-40 cm in diameter. It is most easily recognized by the horseshoe shaped gonads found at the top of the bell. After reproducing for several months in the spring and summer *Aurelia* dies naturally, and sometimes jelly-like portions of the *Aurelia's* bell can be found washed up on the beach. Predators of the moon jelly include the ocean sunfish and leatherback sea turtles. ♦



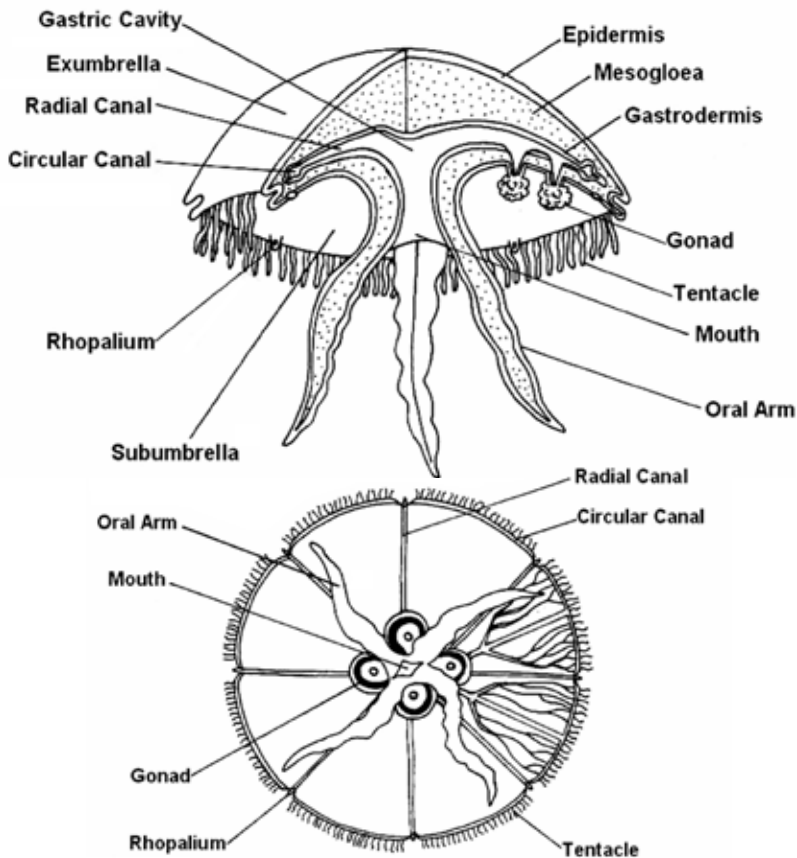
Photo source: Myers, P., R. Espinosa, C. S. Parr, T. Jones, G. S. Hammond, and T. A. Dewey. 2012. *The Animal Diversity Web* (online). Accessed at <http://animaldiversity.org>

## *Veleva veleva* (by-the-wind-sailor)

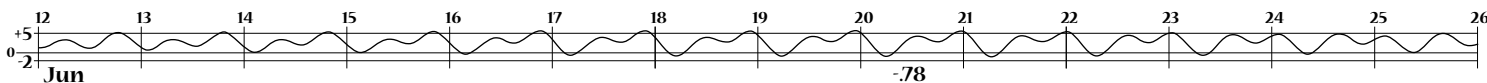


<http://cronodon.com/BioTech/Jellyfish2.html>

## Phylum: Cnidaria *Aurelia* (Moon Jellyfish)



<http://cronodon.com/BioTech/Jellyfish.html>



# The Nudibranch Whisperers

by Tom Ciotti



At the Visitor Center before we set out for the count: Ranger Sarah and Dr. Rebecca Johnson of the California Academy of Sciences and Tom Ciotti of FMR.



Carissa Shipman of the California Academy of Sciences with our nudibranch identification sheet.

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*Nudibranchs, the “butterflies of the tidepools,” are the favorite critters of many FMR volunteer naturalists.*

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Nudibranchs, the “butterflies of the tidepools,” are the favorite critters of many FMR volunteer naturalists. Volunteer Julie Walters is among them. Smitten by nudibranch fever, she met Dr. Terry Gosliner, nudibranch expert from the California Academy of Sciences, through a friend. This led to her inviting Dr. Gosliner to give a lecture on nudibranchs to the volunteer naturalists at FMR in early 2010.

In talking with Dr. Gosliner at that lecture, Ranger Sarah Lenz learned that Dr. Gosliner and his colleagues have been conducting nudibranch surveys at central coast sites both north and south of FMR for many years. Data from those previous surveys have been used to correlate nudibranch abundance with natural phenomena such as the occurrence of El Niño.

Knowing that promoting research at FMR is an important part of the Friends of Fitzgerald Marine Reserve’s mission, Ranger Sarah told Dr. Gosliner that she was sure the Friends would be willing to conduct nudibranch surveys at FMR. And so nudibranch surveys began at FMR in April 2010. The surveys are conducted roughly quarterly: in April, June, October and December/January, on good minus tide days selected by Ranger Sarah. The number of volunteer naturalist observers has varied between 4 and 7 and on two occasions (June 2011 and October 2011) the volunteers were accompanied by several nudibranch experts from the California Academy of Sciences. The observers are “armed” with a survey data sheet listing nudibranch species likely to be found with spaces to record the number of each species observed. Volunteers also carry cameras to photograph any observed

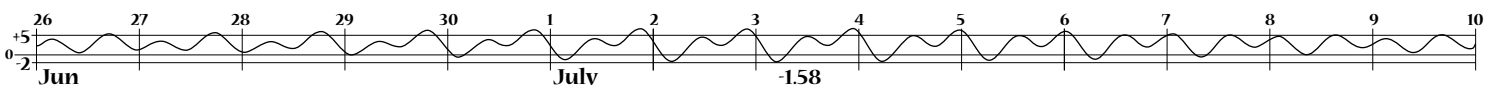
nudibranch whose identity is uncertain. Such photos are sent to Dr. Gosliner or his colleague, Dr. Rebecca Johnson, for identification. Observers record nudibranchs that are readily seen over a two-hour period and do not disturb the tidepools in their search.

Observations have been made mainly in the syncline area and the area between Cypress Point and Seal Cove. Harbor seal haul-outs have limited observations in the area from Nye’s Rocks to Cypress Point. Distillery Point (the rocky area below the Moss Beach Distillery) was searched in the initial survey but not in subsequent surveys, as Dr. Tom Niesen felt the area was not a good nudibranch habitat.

## What have we seen?

With only 8 surveys conducted thus far, it is too early to determine any trends. Over the first year’s four surveys spanning from April 18, 2010 through January 3, 2011, the number of individual nudibranchs observed increased from 26 by 4 observers in the first survey to 96 seen by 7 observers in the fourth survey. This increase might be attributable to observers becoming more experienced and/or the increase in the number of observers. In these four surveys a total of 199 individuals were observed, representing 11 species. Two species, *Diaulula sandiegensis* and *Triopha maculata*, were seen in each of the four surveys. These two species were also the most seen with 63 *Diaululas* and 25 *Triophas* reported. In the June 2010 survey three individuals of the species *Dendronotus albus* were observed. This species is the only one seen in 2010 that was not seen in 2011.

In the second year of surveys spanning the period from April 20, 2011 to December 22, 2011, the total number of individual nudibranchs observed was 472, representing 30 species. Again, *Diaulula sandiegensis* was the most observed species with a total of 98 individuals seen over the period. In second place was the voracious aeolid *Phidiana hiltoni*, with 82 individuals found. This species has been seen only in the syncline area. It feeds primarily on other aeolids and is believed to have contributed to the population decline of other aeolid species within the



Reserve. Most have been spotted by the keen eyes of volunteer Jennifer Brey, who knows the syncline as well as she knows the back of her hand.

Two fairly rare species, not previously reported at FMR, were seen during the second year of surveys. An *Adalaria jannae*, a small yellowish creamy dorid, was spotted by volunteer Sandi Meyer on April 20, 2011. *Hallaxa chani*, a slightly translucent grayish dorid was found by volunteer Julie Walters on December 22, 2011. According to Bob Breen, former ranger at FMR, the *Hallaxa*, commonly called Chan's dorid, is named after Bob's long-time acquaintance, David Chan, a marine biologist from Marin County.

The most individuals seen in a single survey is 160 in April 2011. The most species seen in a single survey is 23 in June 2011. While we have not kept track of which observer has spotted the most individuals in the surveys, I suspect this honor goes to volunteer Susan Evans.

Clearly, we saw many more individuals and species in the 2011 surveys than in the 2010 surveys. Whether this is attributable to the learning curve of the observers or to natural causes remains to be seen. Only time and additional surveys will tell. A couple of things are

for sure, though. First, our survey data sheet lists 52 species of nudibranchs and we have seen only 31 of them. So, there's lots more to see and find. Second, I always thought that "birders" who got their thrills by finding a bird species they hadn't seen before were downright weird. I don't think they are so weird anymore! ♦



Susan Evans of FMR with of California Academy of Science nudibranch hunters Joshua Hallas, Nicholas West, and Carissa Shipman.

### Happy Hunting Nudibranch Whisperers!



*Berthella californica* or the California sidegill (not really a nudibranch)



Sea lemon

## Upcoming Events

We list events held by FFMR and selected happenings sponsored by other organizations. Events are subject to change or cancellation.

### Thursday March 15:

#### Return of the Harbor Porpoises

7:30 pm at the Randall Museum, 199 Museum Way, San Francisco. Bill Keener, cofounder of Golden Gate Cetacean Research, created to study the porpoise, will tell us of their disappearance by the 1940s, the mystery of their unexpected return in recent years, and how you can help by reporting your porpoise sightings. This free lecture is part of the Randall Museum's San Francisco Natural History Lecture Series.

*Harbor porpoises as seen from the Golden Gate Bridge. (Photo: William Keener/ Golden Gate Cetacean Research)*

### Saturday April 14:

#### Monterey Bay National Marine Sanctuary Symposium

MBNMS sponsors this free all-day event in Seaside, CA. Presentations will cover research and conservation efforts in our watersheds, wetlands, kelp forests and the deep sea. View the Program Poster (PDF) for more information and registration details.



### Saturday April 21:

#### Earth Day Beach Cleanup

9-noon. Meet at Mirada Surf. Rain cancels this event.

### Wednesday July 12:

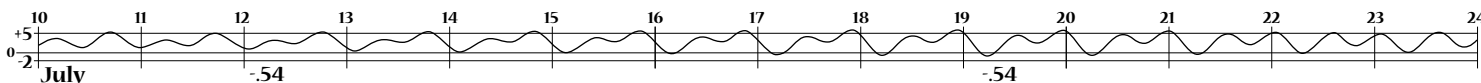
#### Half Moon Bay Fourth of July Parade

Volunteers dress up as their favorite tide-pool creature and march in the annual parade. All are welcome to participate

### Saturday October 13:

#### Pumpkin Festival Parade

All are welcome to participate.



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# Spring Time is Harbor Seal Pupping Time at Fitzgerald

Article and photo by Ranger Sarah Lenz



*Harbor Seal and pup*

This time of year rangers, naturalists and park visitors keep an eye out for newborn harbor seals at Fitzgerald. In past years we have had pups born as early as January, but peak pupping time is late April to early May. In 2011 the total count of observed live pups was 55, with the first pups arriving in March. The total number of observed adults was 220.

Please do your part to keep Fitzgerald a safe place for harbor seals to continue to thrive and to use the protected coves and reefs as nurseries for their young. Keep out of areas where seals are hauled out. Do not disturb resting seals anywhere along the beaches or reefs. Look before you go, size up the area you wish to explore before heading out. Harbor seals blend in well with the rocky reefs and beaches. Educate your fellow park visitors about the importance of observing seals from a distance. Use binoculars so that the seals can be observed closely but not disturbed.

A lone pup may not be abandoned at all; mom may be just off shore foraging to restore some of the resources that she has depleted while birthing and nursing. Lone pups may be reunited with their moms if we do our part to stay out of the area. Clearly abandoned or sick pups can be rescued by our partners at the Marine Mammal Center where they are hopefully rehabilitated and released back into their natural environment. In 2011 at least two of the abandoned pups from Fitzgerald were successfully rehabilitated and released back into the wild. ♦

Please report any disturbance of harbor seals to park rangers. To report sick or abandoned pups please contact:

Park Rangers 650-728-3584

Marine Mammal Center  
415-289-7350

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*A lone pup may not be abandoned at all; mom may be just off shore foraging to restore some of the resources that she has depleted while birthing and nursing. Lone pups may be reunited with their moms if we do our part to stay out of the area.*

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