

# LiMPETS

Long-term Monitoring Program and  
Experiential Training for Students

## Student Scientists on our Sanctuary Shores



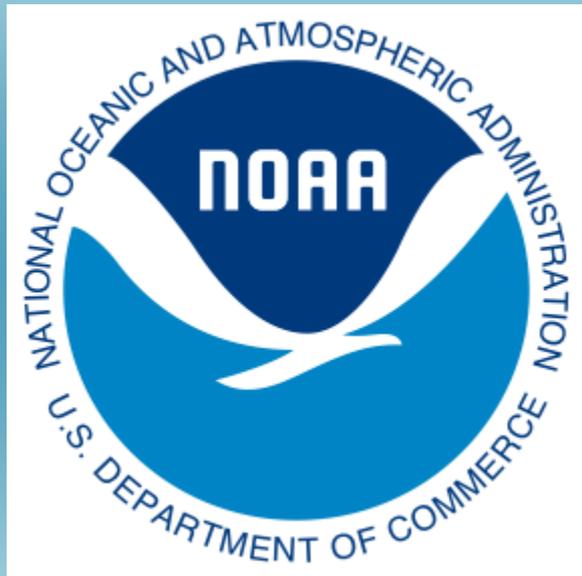
The LiMPETS network is a collaborative effort among California's National Marine Sanctuaries, Farallones Marine Sanctuary Association, Marine Science Institute at UCSB, and the University of California at Santa Cruz.



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### BWET Program Priorities:

- i. Projects utilize NOAA programs or personnel.



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# Mission

To provide authentic, hands-on coastal monitoring experiences that empower teachers, students and the community to conduct real science and become ocean stewards.



# Objectives

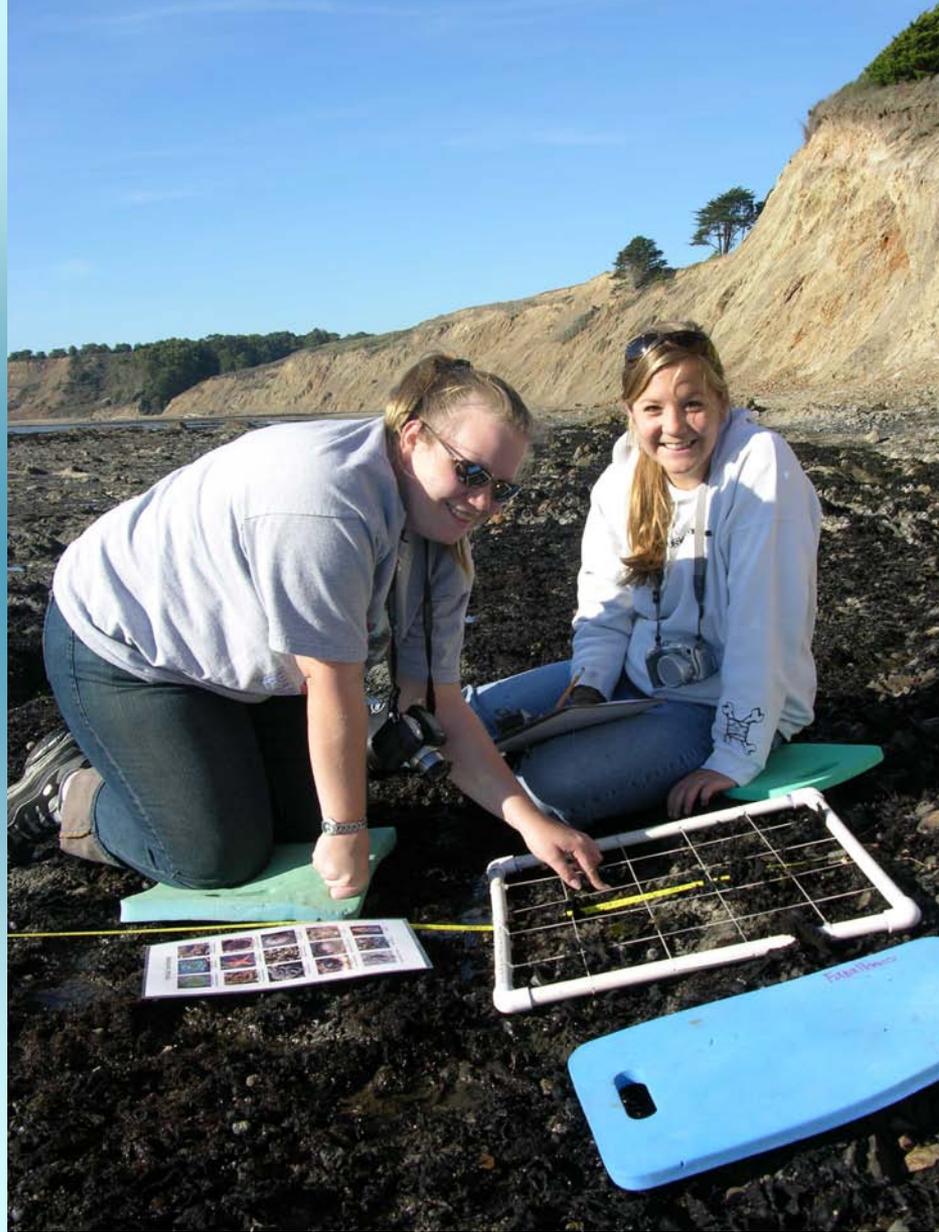
- Inspire a new generation of informed and engaged ocean stewards.
- To develop students' skills and interest in the sciences and motivate some students to pursue a career in the sciences.
- Build a long-term, baseline dataset that can be used by students, scientists, and resource managers to better assess the health of CA's intertidal.



# Who we work with.....







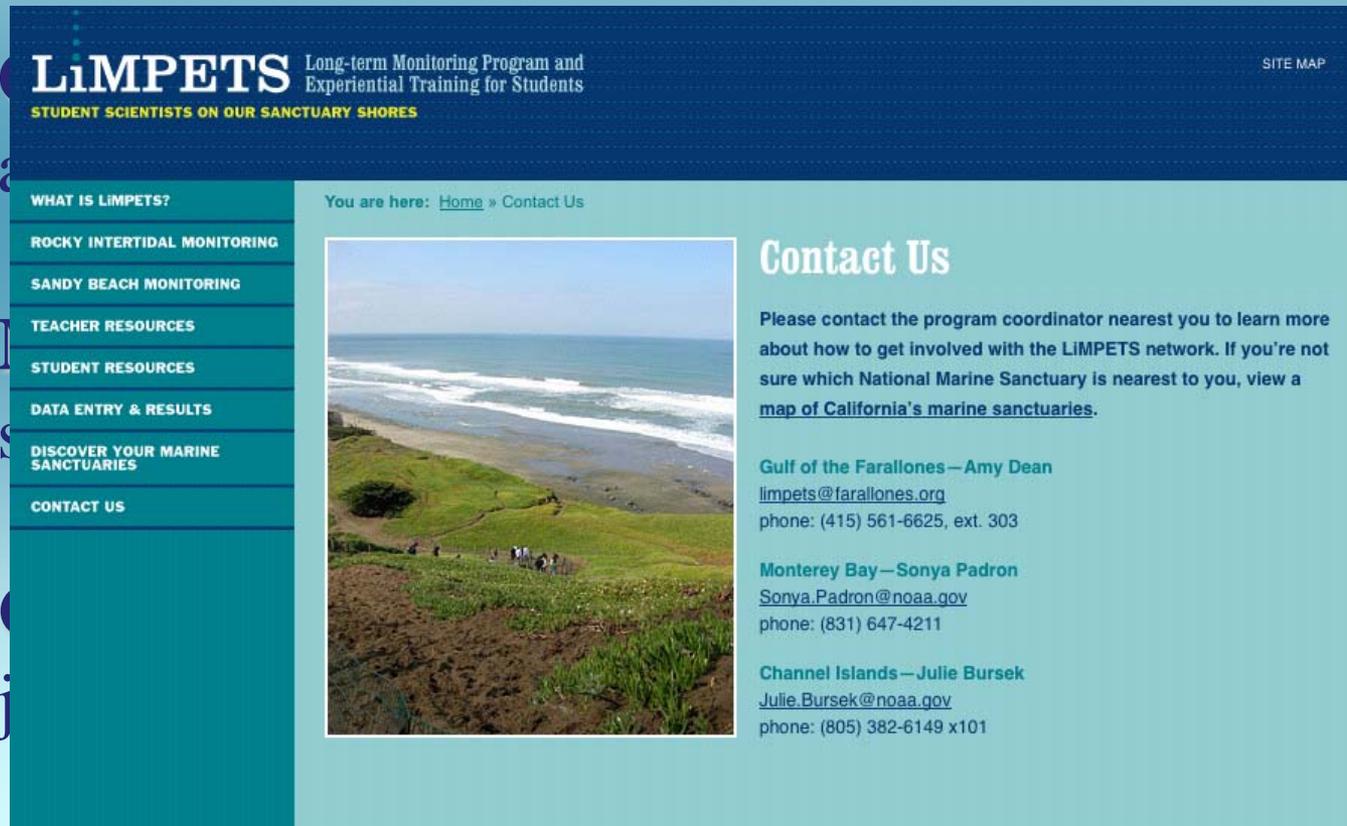
# Program Reach

- In CA: 3,500
- Gulf of the Farallones: 45 schools, 2,000 students
  - Program doubled in size since 2005.



# Get Involved:

1. Go to LiM PETS website ([limpetsmonitoring.org](http://limpetsmonitoring.org)) & call your LiM PETS Coordinator.



**LiM PETS** Long-term Monitoring Program and Experiential Training for Students  
STUDENT SCIENTISTS ON OUR SANCTUARY SHORES

SITE MAP

WHAT IS LIMPETS?  
ROCKY INTERTIDAL MONITORING  
SANDY BEACH MONITORING  
TEACHER RESOURCES  
STUDENT RESOURCES  
DATA ENTRY & RESULTS  
DISCOVER YOUR MARINE SANCTUARIES  
CONTACT US

You are here: [Home](#) » [Contact Us](#)



## Contact Us

Please contact the program coordinator nearest you to learn more about how to get involved with the LiM PETS network. If you're not sure which National Marine Sanctuary is nearest to you, view a [map of California's marine sanctuaries](#).

**Gulf of the Farallones—Amy Dean**  
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**Monterey Bay—Sonya Padron**  
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phone: (831) 647-4211

**Channel Islands—Julie Bursek**  
[Julie.Bursek@noaa.gov](mailto:Julie.Bursek@noaa.gov)  
phone: (805) 382-6149 x101

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101

# Get Involved:

## 2. Come to a LiMPETS Workshop

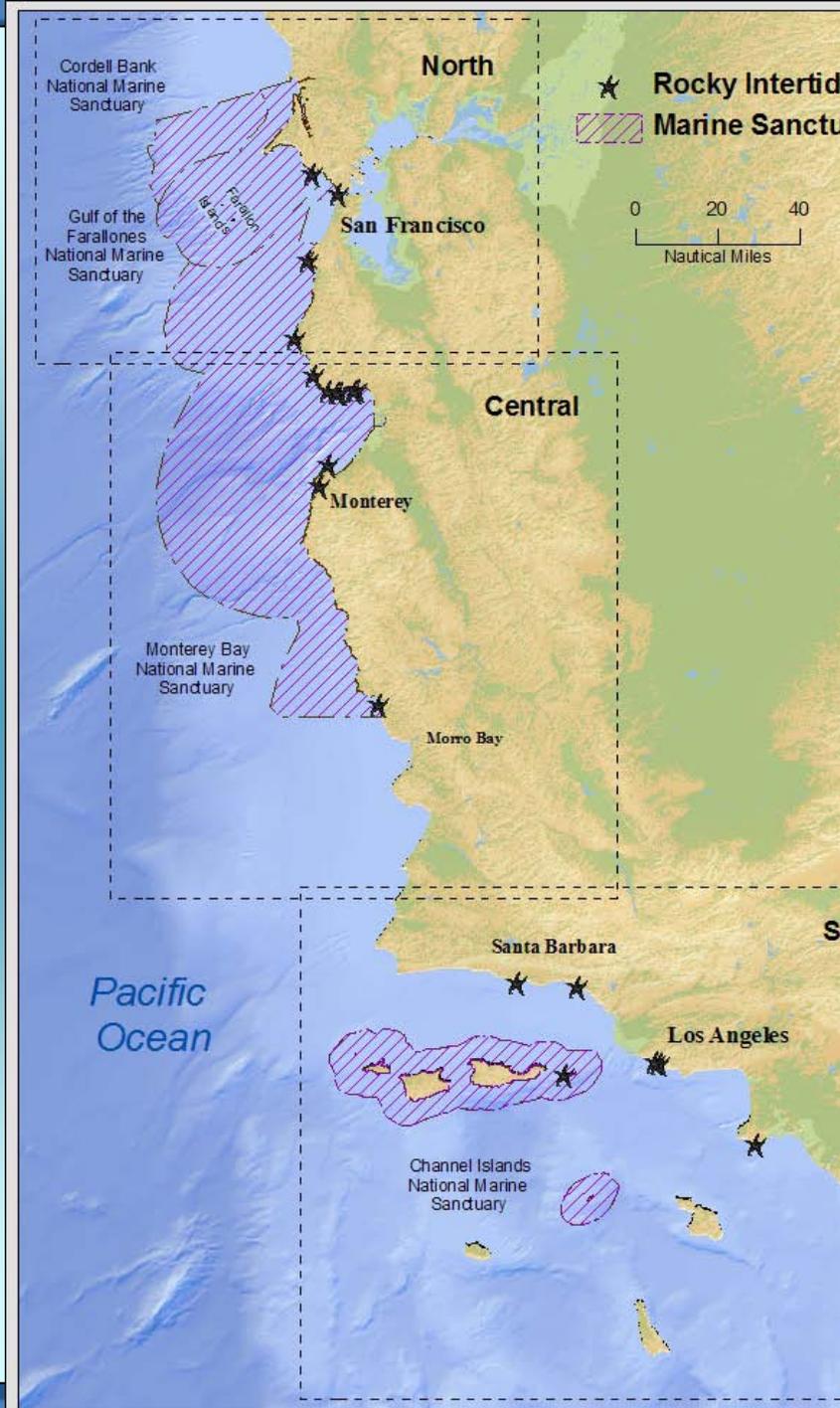




# Other Considerations:

Choose a monitoring site:

<http://limpetsmonitoring.org>



WHAT IS LiMPETS?

ROCKY INTERTIDAL MONITORING

SANDY BEACH MONITORING

TEACHER RESOURCES

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You are here: [Home](#) » [Rocky Intertidal Monitoring](#) » [Sites](#) » [North](#) » [Fitzgerald Marine Reserve](#)



## Fitzgerald Marine Reserve

### GPS coordinates:

37° 31.299' N, 122° 31.007' W

### LIMPETS monitoring site since:

2006

**Directions:** This site is located in the town of Moss Beach along the west coast of San Mateo County, approximately 20 miles south of San Francisco. From Highway 1, look for the large highway sign "California Avenue" and the smaller sign "Marine Life Refuge" just below it. Turn west onto California Avenue and proceed to the end of the road and the Reserve parking lot. Check in at the Ranger Station when you arrive. To reach the site, walk down the path to the tidepools and turn left. Walk south along the beach for about 0.5 miles until you round a point. The monitoring site is just beyond the point.

**Restrooms:** Restrooms are located at the Ranger Station near the parking lot.

**Site description:** Established in 1969, Fitzgerald Marine Reserve is one of the richest intertidal areas on the California coast. Extensive shale reefs are home for a wide variety of marine life, such as giant green anemones, limpets, gumboot chitons, and sea urchins. Over 25 new species have been discovered at the reserve.

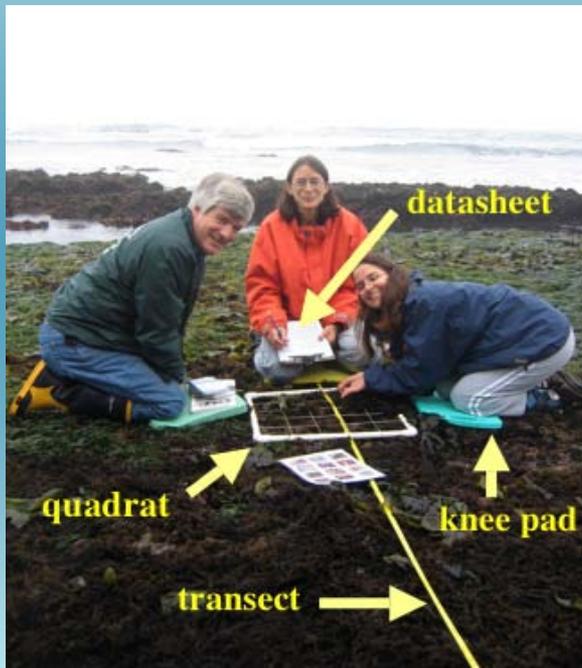
### LIMPETS methods:

1. vertical transects
2. random quadrats in a permanent area
3. total counts in a permanent area
4. size measurement in a permanent area

**Download site-specific protocols and datasheets used at this site.**



# Other Considerations: Equipment



	Vertical Transect	Random Quadrats	Total Counts	Size Measurement	Notes
Quadrats (1/4 m <sup>2</sup> )	✓	✓			Build your own. See instructions in appendix. \$50 to purchase materials to make 10 quadrats.
50 m tape measures (open reel fiberglass)	✓	✓			Available at <a href="http://www.cspoutdoors.com">www.cspoutdoors.com</a> \$36 each
Clipboards (with large rubber bands to secure datasheets)	✓	✓	✓	✓	Available at any office supply store.
Pencils	✓	✓	✓	✓	
Traffic cones (or tape measures)			✓	✓	Used to mark area perimeter. Quantity needed = 4
Flexible metric rulers				✓	Available at any office supply store. \$1 each
Tide book	✓	✓	✓	✓	Get tides online at <a href="http://tidesonline.nos.noaa.gov">tidesonline.nos.noaa.gov</a> Tide books available at <a href="http://www.tidelog.com">www.tidelog.com</a> .
Backpack, buckets, or large plastic bin	✓	✓	✓	✓	Used to carry equipment.
Laminated <i>Invertebrate and Algae Photo ID sheets</i>	✓	✓			Download from LiMPETS website.
Datasheets and field log	✓	✓	✓	✓	Download from LiMPETS website.
Monitoring protocols	✓	✓	✓	✓	Download from LiMPETS website.
Random numbers		✓			Download from LiMPETS website.
Kneeling cushions (optional)	✓	✓			Available at <a href="http://www.amazon.com">www.amazon.com</a> \$2.25 each
GPS (optional)	✓	✓	✓	✓	Available at <a href="http://www.garmin.com">www.garmin.com</a> \$270 and up

# Essential Elements of LiMPETS

## 1. Classroom Training



## 2. Field Training & Monitoring



## 3. Data Entry



# Data Entry 101

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You are here: [Home](#) » [Data Entry & Results](#) » [Data Entry Login](#)



## Data Entry Login

For authorized LiMPETS participants only.

New to LiMPETS? Contact your [LiMPETS coordinator](#) for a username and password.

Username

Password

Login

# Monitoring Value & Trends



Research • Education • Conservation • Stewardship

# Rocky Intertidal Data:

Size Frequency of Owl Limpets at Natural Bridges, Santa Cruz, CA

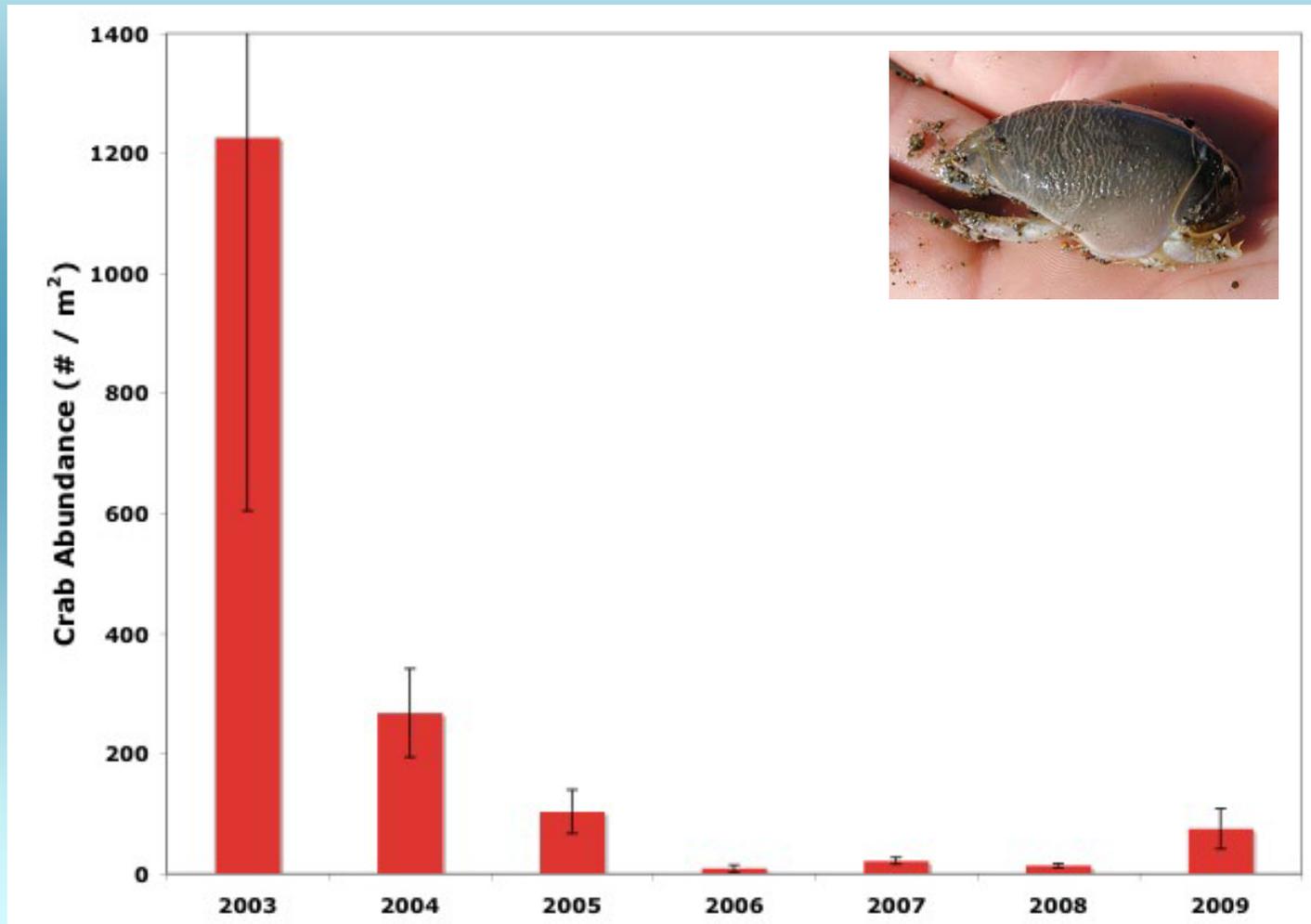
28 Jan 03 = 69 limpets

24 Mar 07 = 47 limpets

QuickTime™ and a  
decompressor  
are needed to see this picture.

# Sandy Beach Data:

Mole crab abundance ( $\pm$  SE) at Ocean Beach, San Francisco, CA



# Monitoring Value and Trends



- Dataset requested for damage assessment following 2007 San Francisco oil spill.
- LiMPETS Program Awarded 3 Years of Funding from CA ~ for North Central Coast MPA Baseline Program

# Why Participate?

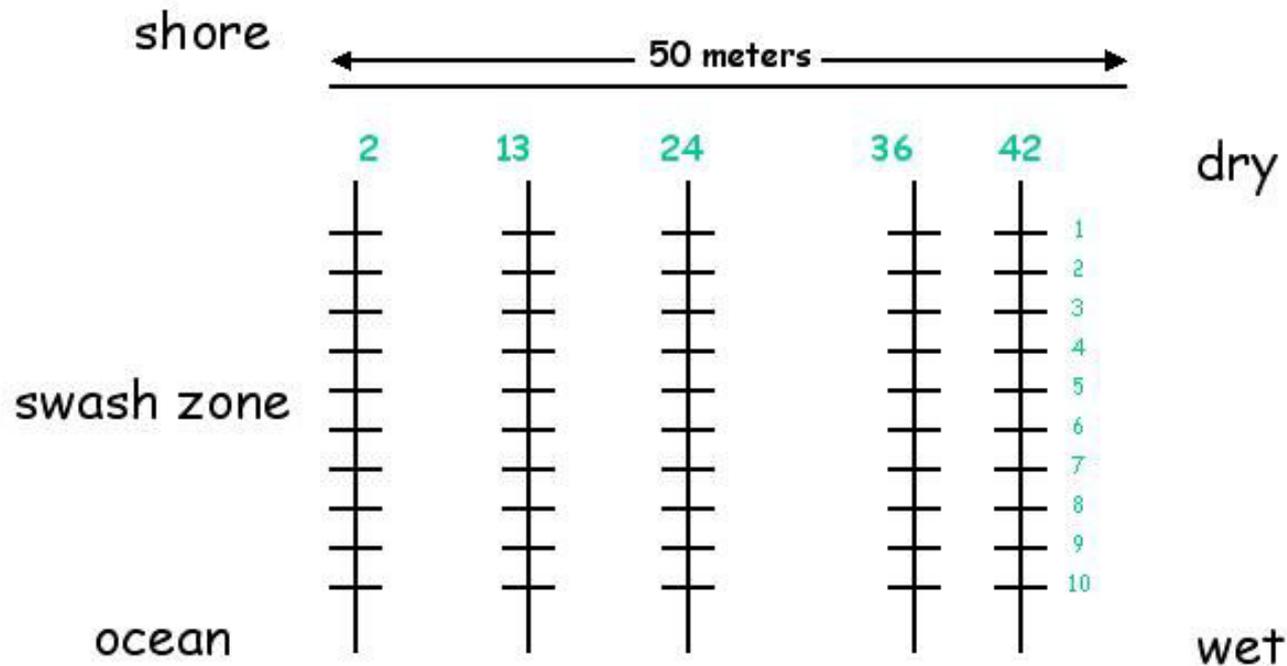


1. Hands-on OUTDOOR learning.
2. Authentic Scientific Investigation.
3. Ocean Awareness and Stewardship.
4. FUN!!
5. Sanctuary Support Services.

# LiMPETS Sandy Beach Monitoring



# Sampling Scheme



- Five random transects (2, 13, 24, 36, 42)
- Samples collected every one meter (1, 2, 3, 4, ...)

# LiMPETS Sandy Beach Monitoring



# LiMPETS Sandy Beach Monitoring



# LiMPETS Sandy Beach Monitoring



# LiMPETS Sandy Beach Monitoring



Female

# Off to Asilomar Beach

