



# LiMPETS Monitoring Site: Pillar Point



## Directions

Pillar Point is on the western coast of San Mateo County, approximately 25 miles south of San Francisco (Figures 1 & 2). From Highway One, take Capistrano Rd. to Pillar Point Harbor. Travel past the harbor entrance and turn left on Prospect Way. Turn right on Broadway and an immediate left onto Harvard. At the end of Harvard, turn right on West Point Ave. Pillar Point Marsh parking lot is 0.5 mile down the road on the left.

To reach the monitoring site, walk along the trail that begins in the parking lot, next to the outhouse. The trail ends at a beach just beyond the jetty. Turn right and walk along this beach until you approach the northern edge of the reef. Locate the monitoring area by finding the rocky outcrop shown in Figure 3. There is a stainless steel bolt drilled into the top of this large rocky outcrop. Note: the monitoring site is accessible when the tide is at or below 0 ft. Check the tides before you plan your trip.

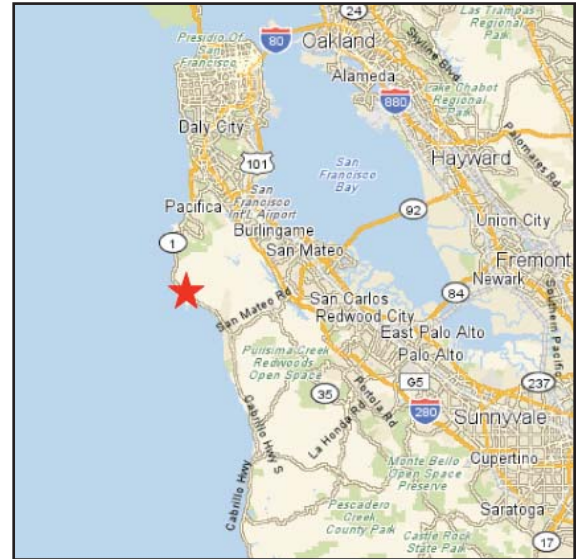


Figure 1: Location of Pillar Point.

## Sampling procedures

Locations of sampling areas and procedures are outlined below. Three sampling methods are used at Pillar Point for monitoring:

- 1) Vertical transect
- 2) Random Quadrats in a permanent plot
- 3) Total organism counts (ochre sea stars)

### 1. Vertical Transect

There is a stainless steel bolt embedded in the rocky outcrop (Figure 3), identifying the beginning of the vertical transect. Locate the bolt. Using a compass or GPS, lay a meter tape from this bolt, 228 degrees westward. 3 additional bolts are located 25 m, 40.5 m and 41.0 m along the line. The transect is 45 meters in length (Figure 4).

- Center the quadrats directly over the meter tape every three meters, beginning at the first bolt (meter 0) and ending at meter 45.
- Record species abundance within the quadrats as directed on the "Vertical Transect Data Sheet."
- Count only live organisms and algae attached within the quadrat.

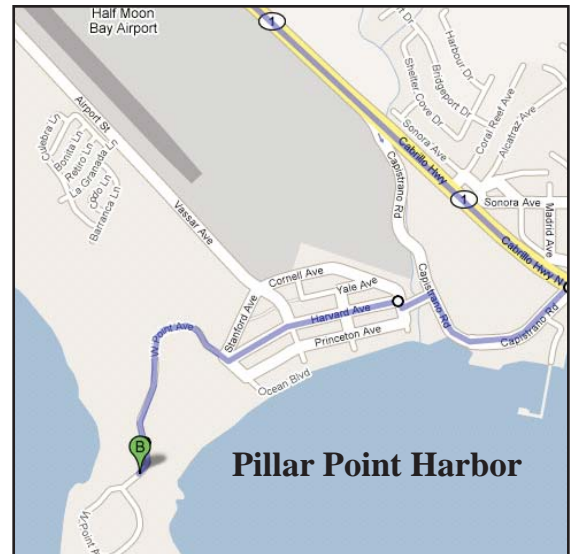


Figure 2: Location of Pillar Point parking area, (B).

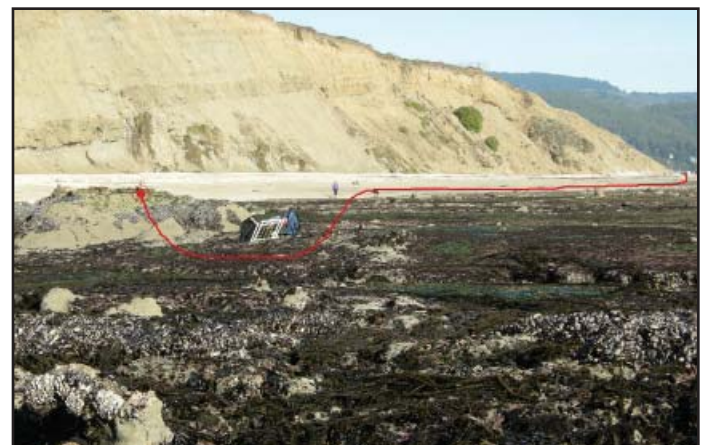


Figure 3. Location of rocky outcrop marking location of site.



# LiMPETS Monitoring Site: Pillar Point

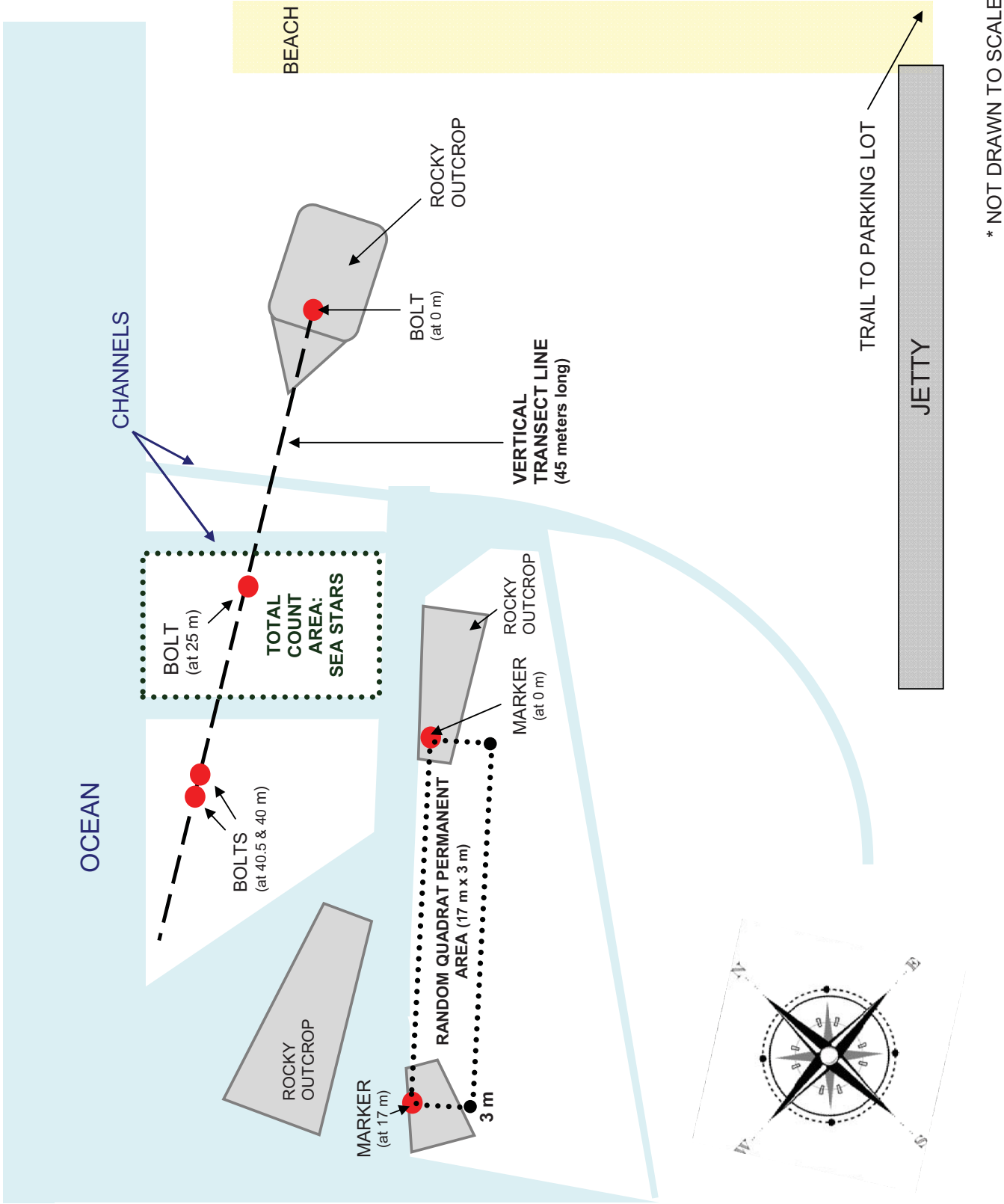


Figure 4: Schematic showing the location of the transect and permanent areas (for counting sea stars and owl limpets) at Pillar Point. Not drawn to scale.

## 2. Random Quadrats in a Permanent Plot

The transect line for the permanent plot runs between two rocky outcroppings to the southwest of the start of the vertical transect (Figure 4, Figure 5). Locate the green epoxy markers on the outcroppings, and lay a meter tape from the marker at 0m, southwest to the marker at 17m.

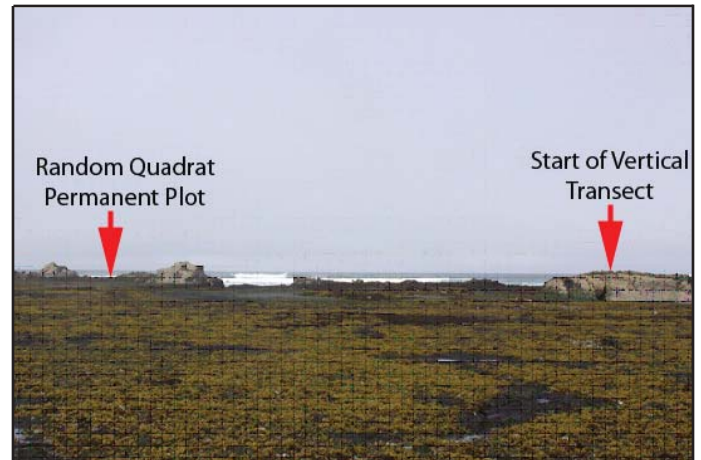
- Using the random number table for coordinate 1, choose a number between 0.0 and 17.0. Locate the number along the transect line.
- Choose a second random number for coordinate 2 between 0.3 and 3.0. This number indicates how far southeast from the transect you will place your quadrat. Use a second meter tape, at a right angle to the first, to find this location (Figure 6).
- Center the quadrat over the meter tape.
- Record data for taxa within the quadrat as directed on the data sheet.
- Repeat the above. Survey 20 random quadrats in total.

## 3. Total Organism Counts

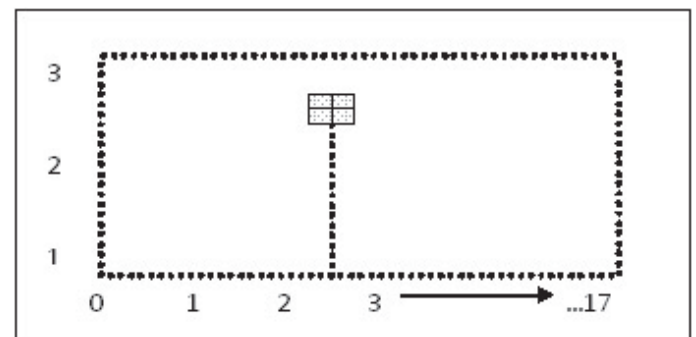
### *Ochre sea stars*

Ochre sea stars are surveyed within a large rectangular area surrounding the 25 meter bolt (Figure 4). Find the bolt. Next, locate the tidal channels that surround the bolt. These channels serve as the boundaries for the total organism count. Dimensions of this area are approximately 9 m x 14.5 m.

- Use a meter tape to measure and mark the boundaries of the area (see Figure 4).
- Systematically search the whole area in teams of 2 or 3, moving back and forth in successive swaths about the width of your outstretched arms.
- Record what you see, as you go.
- Record ochre sea stars as “orange” or “purple/brown”.
- When counts are finished, record the length of the count, in minutes, on the data sheet. Each count should last approximately 20 minutes.



**Figure 5:** Arrows show the location of the random quadrat permanent plot relative to the start of the vertical transect. Look for the two rocky outcroppings to the southwest of the start of the vertical transect.



**Figure 6:** Example of “Random Quadrat” within the permanent plot using the numbers 2.5 and 2.7.



**Figure 7:** Count all ochre sea stars found within the permanent area. Record individuals as “orange” or “purple/brown”.