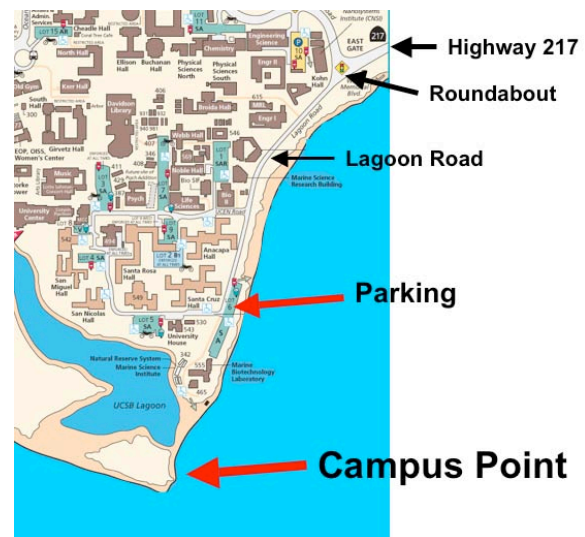


Directions:

Campus Point is located on the University of California, Santa Barbara campus. For a map of the University, visit <http://www.aw.id.ucsb.edu/ucsbmap.html>.

From 101 S, take the Patterson exit. Take a left onto Patterson and the next left onto Highway 217. From 101 N, take the Highway 217 exit. Take Highway 217 to the East Campus entrance of UCSB. Go left through the roundabout onto Lagoon Road. Follow Lagoon Road until you can take a left into parking lot #6. Lot #6 has 20 metered spots that can be purchased at the Pay Station. Pay Stations take \$1 and \$5 bills and do not give change. Prices range from \$2.00 to \$8.00 per space, depending on the length of time you plan to stay.

The study site is a rocky point, approximately 500 meters past the marine lab buildings and the public restroom. The site is the first large rocky outcrop you come to as you walk west along Campus Point Beach. The three rocks are surrounded by sand, which varies in height more or less seasonally. It consists of three parts, a shoreward portion, a middle rock and an oceanward portion, separated by sand and then a narrow channel. The shoreward portion is called Rock 1, the middle rock, Rock 2, and the oceanward portion, Rock 3.



Monitoring Protocols

Three monitoring procedures are used at Campus Point for monitoring:

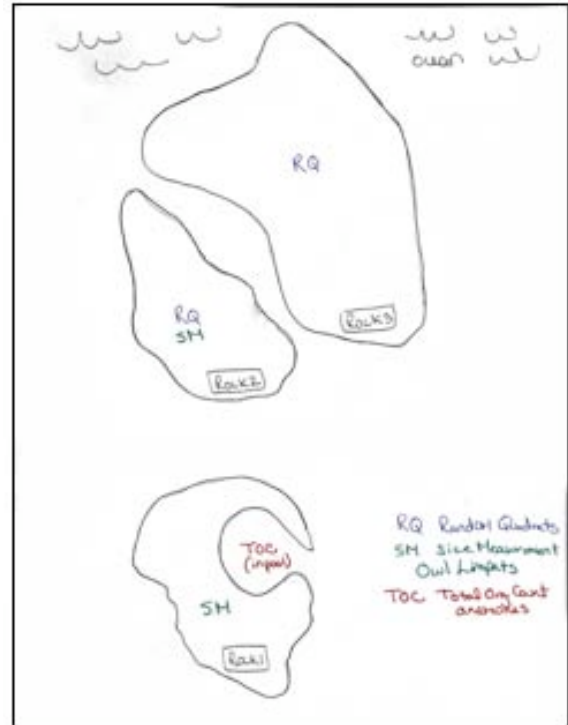
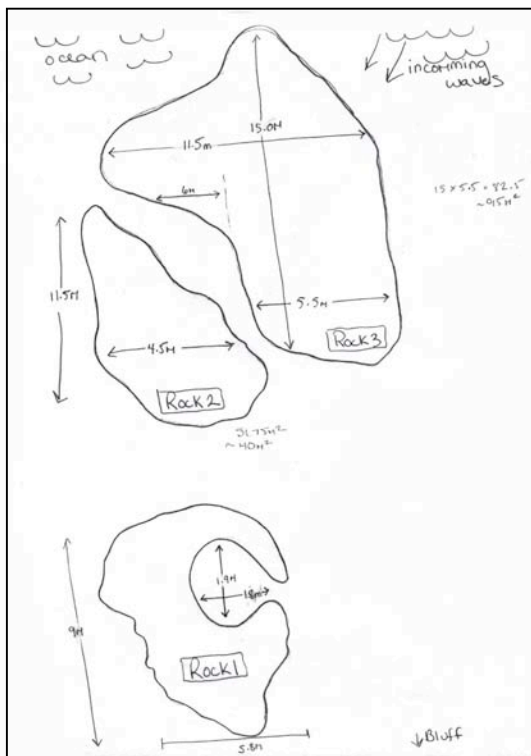
- 1) Random quadrats in a permanent area
- 2) Total organism counts
- 3) Size measurements



1. Random Quadrats in a Permanent Plot

The mussel bed on the top of Rock 2 and Rock 3 is uniform enough to do repeated randomized counts of selected organisms. The combined rock top area is approximately 140 meters². Survey 20 random quadrats in total.

- Stretch a meter-tape across the top of the outcrop, from the oceanward end to the shoreward end. (~10 m on Rock 2 and ~15 m on Rock 3). The permanent plot is the entire top of both rocks.
- Using the random number table, choose a number between 0.00 and 10.0 for Rock 2 or between 00.0 and 15.0 for Rock 3. Locate this number along the base transect line.
- Choose a second number between 0.0 and 2.5 for Rock 2 or between 0.0 and 10.0 for Rock 3. This number indicates how far from the



base transect line you will place your quadrat. Use the third random number table to decide whether your location will be east or west of the base transect. Lay down a second transect tape, perpendicular to the first, to find this location.

- Center the quadrat over the meter tape.
- Record data for taxa within the quadrat as directed on the data sheet.
 - Some species will be counted as individuals.
 - Some species will be estimated as the number of squares in the $1/4m^2$ quadrat containing any attached portion (total possible, 25).

Note: In some cases, the random numbers will place the quadrat in a deep pool or drop-off. When this happens, place the quadrat on a level area as close to the designated coordinates as possible, or halve the random number.

2. Total Organism Count

Sea anemones will be counted in a tide pool within Rock 1 to follow their abundance in the pool and because often anemones are not adequately counted in the 1/4m² quadrats.

The tide pool is approximately 1.9 m X 1.8 m, 4.4 m².

- Systematically search the whole tidepool in teams of 2 or 3. Look carefully in cracks and crevices, and under ledges.
- If you have the proper clothing, you can get into the pool and count from there.
- If you can't get in, lie on your belly on the side of the pool and count, repositioning to see each side of the pool.



Note: Of course, some individuals will be missed, so total counts are just estimates of the true abundance. If 5-10 teams count the selected species in the same defined area, the average number counted provides a reasonable estimate that can be compared over time.

3. Size Measurements

Owl limpets will be counted and measured on the tops and sides of Rock 1 and Rock 2. This area is approximately 160m². Count only owl limpets above 2.5 mm in shell length.

- In teams of 2 or 3, systematically search the whole area. Look carefully in cracks and crevices and under ledges.
 - Designate one person as the recorder. This person is responsible for completing the data sheet. The others should be searching for limpets and should tell the recorder what they see as they see it.
 - Use the rulers or calipers to measure the length of individual limpets.
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