



Directions

This site can only be reached when the tide is at or below $-1.0'$; such low tides occur in the afternoons of late fall and winter, and the mornings of late spring and summer.

1. From Highway 1 take the 41st Avenue exit in Capitola. Take a right on Portola Drive. Turn left onto 30th Avenue and follow all the way to the end. At East Cliff Drive take a left and park close to the East Cliff Dr. and 33rd Ave intersection.
2. To reach the outer-most platform and the sampling site, clamber down the surfer trail at the 33rd Avenue-East Cliff Drive intersection. That places you on the sand-covered platform, from where you can walk out on the surfgrass-covered platforms. You can circumvent the deeper portions of the channels by going around to the east, and then out to the sampling site by walking west on the outer-most platform.
3. A porta-potty is located at the intersection of 32nd Avenue and East Cliff Drive, or at the intersection of 41st Avenue and East Cliff Drive.



Figure 1. The 33rd Avenue site is in the vicinity of the Rockview and Opal Cliffs sites.

Sampling procedures

Only one sampling method is used at this site:
Random quadrats in a permanent plot.



Figure 2. The 33rd Avenue site, is at the end of 33rd Ave. at East Cliff Drive.

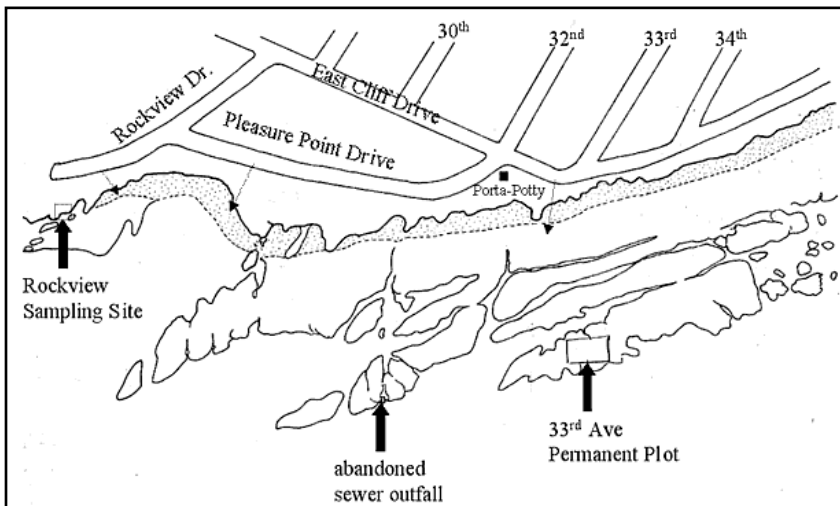


Figure 3. Diagram of the 33rd Ave site with the abandoned sewer outfall.

Random Quadrats in a Permanent Plot

The permanent plot is 15m by 30m in size, totaling an area of 450m². A stainless steel eyebolt marks 0m at the inner edge of the permanent plot on a 15m long line that bisects the plot, see Figure 5. Two other marker rods are at 9.1m and 11.9m on that line. The GPS locations of the 0m eyebolt, and the 9.1m and 11.9m rods are: N36° 57.302' W121° 58.260', N36° 57.299' W121° 58.254', and N36° 57.294' W121° 58.253', respectively.

The position of the quadrats is determined by a series of three, three-digit numbers, selected at random before going out in the field. The first and second numbers should be between 00.0 and 15.0; they determine the position on the line to start and how far away from the line the quadrat is located. The third number, between 00.0 and 99.9, determines the direction to extend the second tape; even numbers indicate east (toward Capitola), odd number indicate west (toward the Santa Cruz Harbor). Find the first number on the meter tape that is laid out along the stainless steel eyebolt and rods, and then extend the second tape perpendicular to the first tape, east or west, until it reaches the second number. Place the quadrat down so that the number is in the center. Record species as directed on the data sheet.

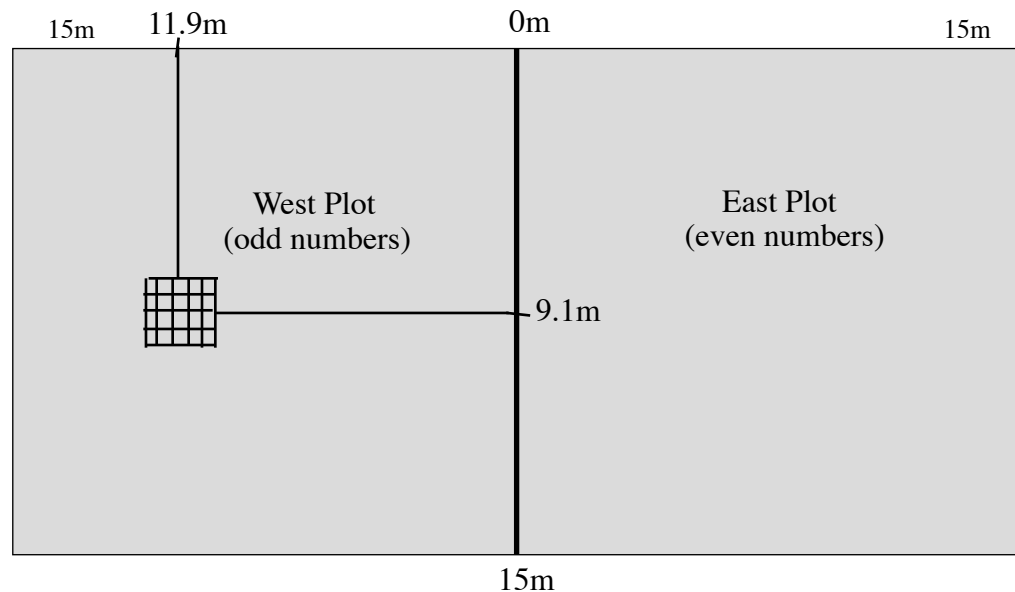


Figure 4. Diagram of the sampling layout for the 33rd Avenue site, with the positioning of a quadrat at 9.1, 11.9, 27 (west)

In some cases the random numbers will place the quadrat in a deep pool or channel. There is a deep channel, for example, between about 2 and 4 meters to the west of the first tape. When that happens, place the quadrat on a level area outside of the pool, as close to the designated number as possible.

Ideally, 20 or more quadrats should be sampled, in order for means and variances of the abundances to be calculated for statistically rigorous comparisons over time. If a visit involved 10 to 15 people, teams of 2-3 people would only need to count 3 or 4 random quadrats.



Figure 5. Dr. John Pearse standing at the 15m mark of the transect bisecting the permanent plot; the 0m mark is to the right of the red backpack.