

Explore Fossils from the Central Coast

Exploring Fossils from the [Central Coast](#) is one of three Virtual Fieldwork Experience (VFE) modules that explores the geology and paleontology of the Purisima Formation exposed along the Central Coast of California. The home page of the VFE, including access to other modules, can be found [here](#). The Exploring Fossils VFE is one in a series focusing on classic paleontological field sites and is part of the Eastern Pacific Invertebrate Communities of the Cenozoic (EPICC) Project, funded by the National Science Foundation.

In this virtual visit to two different locations where the Purisima Formation is exposed, you will explore sedimentary rocks rich in fossils and evaluate the evidence supporting claims that changes in environmental conditions in the geological past result in changes in the types and preservation of individual fossil species and fossil assemblages.

When technical and scientific terms are introduced, use the online [glossary](#) to define the terms and write their definitions in the table on Page 2. Additional terms are defined throughout the exercise but defining these terms now will be helpful in including them into answers in questions throughout the exercise.

In the photographs of Moss Beach (left) and Capitola Beach (right), below from the exercise:

What are some things you notice that are typical of beaches?

What are the similarities and differences between the two beaches?



Term	Definition
outcrop	
sand	
sedimentary rocks	
evidence	
evolution	
extinction	
bivalve	
gastropod	
beach	
assemblage	
preservation	
habitat	
erosion	
fossil	
Purisima Formation	

Table for writing definitions used throughout the exercise. If other scientific terms appear that you are unfamiliar with, write them in the space below and look up their meaning.

Taking a closer look at the fossils

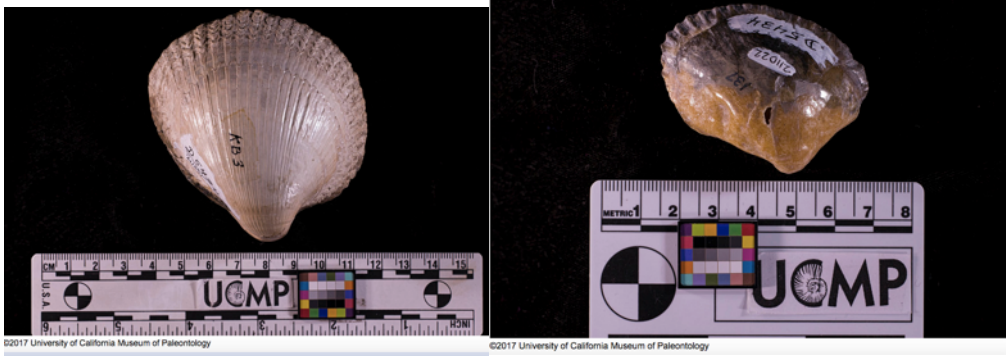


Questions to answer

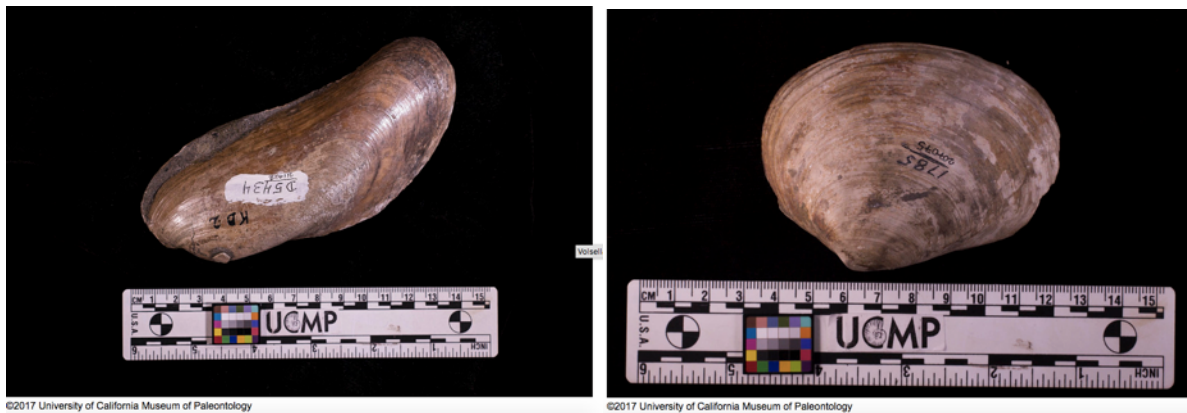
- (1) How many shells do you see in the photograph?
- (2) How many whole shells? How many fragments?
- (3) Do you recognize any of the shells, can you name the type of animal is represented by the fossils?

Examining museum specimens from the Purisima Formation

In slides 5-10, examine fossils from museum collections taken from the Purisima Formation. You are not expected to know or use technical terms when identifying shell features; you can use your own words to describe the shape and any distinguishing features. The museum specimens are named by genus and species.



The scientific name of the clam on the left is *Laevicardium meexianum* and on the right is *Anadara trilineata*. Sketch in the space below and describe (in your own words) some common features of the shell.



The scientific name of the clam on the left is *Volsella flabellate* and on the right is *Tresus pajaroanus*. Sketch in the space below and describe (in your own words) some common features of the shell.



The scientific name of the clam on the left is *Macoma nasuta* and on the right is *Crepidula praerupta*. Sketch in the space below and describe (in your own words) some common features of the shell.

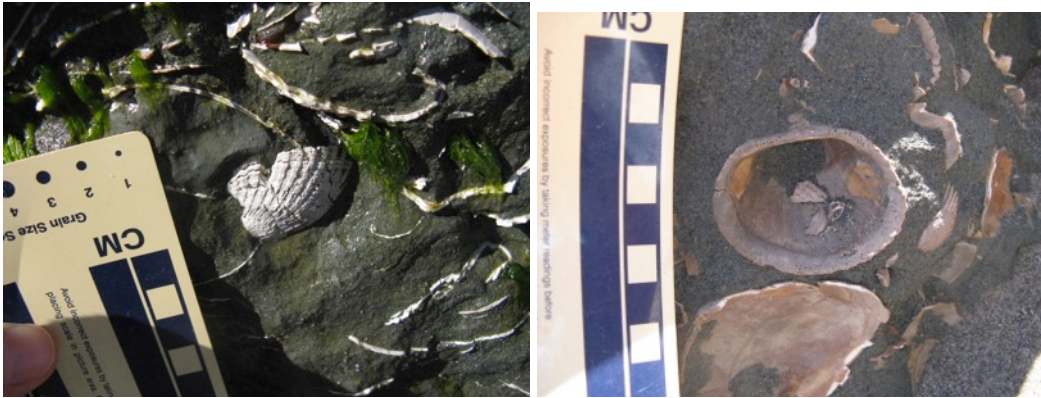
Gathering evidence from the seacliffs

Now that you are more familiar with common fossils from the Purisima Formation and the overall features of the beaches, let's return to the beach for a closer examination of the Purisima Formation.



Examine the photo on the left - where should you look for fossils in the cliffs and why?

If you picked these layers highlighted in blue, you are correct. Before we have a closer look, what might there be layers with less and more fossils?



In the two photographs above:

- (1) Do you recognize some of the shell forms in the Purisima rocks from the museum specimens?
- (2) Sketch the whole and fragmented fossils that you see and describe any features you recognize
- (3) Reflect on the environmental processes that might be responsible for forming what you see in the rock.

Living organisms and their habitats

Part of understanding fossils is comparing them to living organisms and living [habitats](#). Watch this short video of a burrowing clam. Compare it with the picture below from Moss Beach of a fossil clam in a burrowing position. Explain what you see in the video. How does it help us understand the presence of fossils in rocks?



Fossil burial and shell fragmentation

From the sketches in the diagram provide below, notice what happens to shells and other hard parts upon burial. Compare these sketches to the ones you made of fossils from rocks in the Purisima Formation and explain what happens to shells after they are buried.

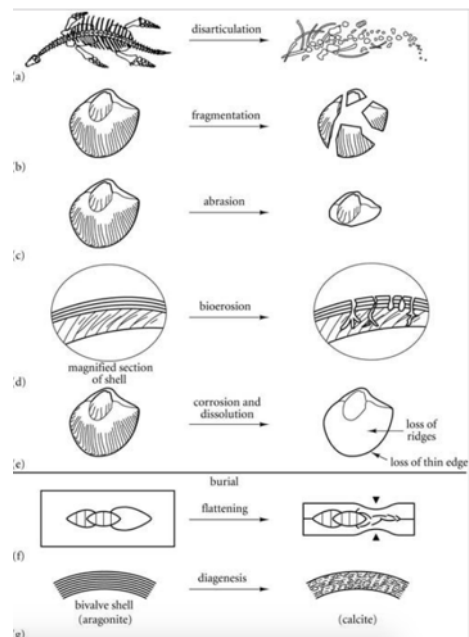


Diagram from slide panel 16.

Fossil preservation

Explore the photo below and 3D images of fossils on the Digital Atlas of Ancient Life website to gain further perspectives on fossil preservation and what parts of a fossil you might be viewing:

<http://www.digitalatlasofancientlife.org/vtc/preservation/>

<https://skfb.ly/6ArNo>

<https://skfb.ly/6AWPx>



Gastropod cast and mold from the Digital Atlas of Life website

Fossil preservation in the Purisima Formation

Look at the additional photo of fragmented fossils from the Purisima Formation show below. Also view a video of waves on a beach with sand and shell, <https://youtu.be/LSJp6avkvWc>. Explain what will likely happen to the shells on the beach over time and how that relates to the shell layers you have observed in the Purisima Formation. Additional information on the history of the sediments and the overall geology of coastal California can be gathered from the [Explore Sediments](#) and [Explore Geology](#) virtual field experiences



Summary with the scientists

Reflect on what you have learned exploring the Purisima Formation along the California coast. Spend some time listening to the scientists in these video clips describe their observations and interpretations. The scientists explain how **beaches** are places where active erosion and sediment accumulation occurs, and are places where organisms thrive resulting in high biodiversity. Over geological time, fossils and ancient sedimentary rocks of the kind we observed in the Purisima Formation preserve the history of beaches.



