

Gaviota State Park Beach

Gaviota State Park Beach offers excellent examples of the central coast's geologic landscape. The east-west trend of these features -- Santa Barbara Channel, sea cliffs, coastal mesas, and mountain ridges -- records millions of years of tectonic compression that has lifted the Earth's crust up, out of the water, and tilted its rock units south. The geology of Gaviota's sea cliffs displays this tilted folding with fine exposures of the Monterey Formation, an organic marine mudstone called shale.



Beach walking up the coast to the west requires careful attention to the tides. If teachers wish to make the most of Gaviota State Park Beach, be sure to select a date and time with the lowest tide. During a zero or minus tide, the sea cliffs offer a fascinating variety of rock layers, including hard tan porcelanite, shale, and a tar-saturated black conglomerate with pieces of these rocks. The action of the surf has eroded shallow caves in the sea cliff, and wave-cut rocks allow tide-pooling at the lowest tides. Beautiful arch-shaped recesses in the cliff are fine examples of weathering of weaker rock layers that subsequently erode away.

Down the coast, to the east, the beach is broader and usually accessible to the east. The Monterey rocks of the sea cliffs show fine layers tilted south with many varieties of color, texture, and chemistry alterations. Careful exploration may also reveal fossilized ripple marks in the shale, sand injectites pushing up through the rock layers, and the fossil bones of a marine mammal encased in a rocky outcrop in the sand.

Several offshore oil rigs are visible from the beach, built in 1976-1989 to pump oil from its source in the organic shales of the Monterey Formation. These structures form a point of discussion about fossil fuels in our changing world and the importance of the Santa Barbara Channel, which provides a rich habitat for many marine species.

By Susie Bartz

Appropriate for *Grades K – 12*

Available Field Trip Emphases: *Geology, Ecology, and Oceanography*
(study of the tides)

Led by experienced and enthusiastic Nature Track docents, field trips at Gaviota State Park Beach are designed to be used as a companion to state science standards and provide a real-life experience for students in geology and ecology. Docents can lead students in trips that focus on the appropriate grade level and subject and engage students in exploration of science and nature through hikes, guided discussion, and educational nature games. Nature-based art and other creative projects are also available.



Field Trips at Gaviota State Park Beach can be used in conjunction with the following California State Standards and Next Generation Science Standards:

Geology Field Trip

Grade	CA Standards	Next Generation
K	Earth Sciences: 3a	Energy: K-PS3.B
2	Earth Sciences: 3a, 3b, 3c	Earth's Place in the Universe: 2-ESS1.C; Earth's Systems: 2-ESS2.A, 2-ESS2.B, 2-ESS2.C
4	Earth Sciences: 4a, 4b, 5a, 5b, 5c	Earth's Place in the Universe: 4-ESS1.C; Earth's Systems: 4-ESS2.A, 4-ESS2.B; Earth and Human Activity: 4-ESS3.A
5	-	Earth's Systems: 5-ESS2.A, 5-ESS2.C; Earth and Human Activity: 5-ESS3.C
6	Earth Sciences: 1b, 1d, 1e, 1f, 2a, 2b, 2d; Investigation & Experimentation: 7f, 7g	Standards for 6-8: Earth's Place in the Universe: MS-ESS1.C; Earth's Systems: MS-ESS1.C, MS-ESS2.A, MS-ESS2.B, MS-ESS2.C; Earth and Human Activity: MS-ESS3.A, MS-ESS3.C, MS-ESS3.D
7	Life Sciences: 4a, 4b, 4c, 4d, 4f	See Above
8	-	See Above



Ecology Field Trip

Grade	CA Standards	Next Generation
K	Life Sciences: 2a, 2c	From Molecules to Organisms: K-LS1.C; Earth's Systems: K-ESS2.E, K-ESS3.C; Earth and Human Activity: ESS3.A
1	Life Sciences: 2a, 2b, 2c, 2d, 2e	From Molecules to Organisms: 1-LS1.A, 1-LS1.B; Heredity: 1-LS3.A, 1-LS3.B
2	Life Sciences: 2a, 2b, 2c, 2d, 2e, 2f	Ecosystems: 2-LS2.A; Evolution: 2-LS4.D
3	Life Sciences: 3a, 3b, 3c, 3d, 3e	From Molecules to Organisms: 3-LS1.B; Ecosystems: 3-LS2.D; Heredity: 3-LS3.A, 3-LS3.B; Evolution: 3-LS2.C, 3-LS4.A, 3-LS4.B, 3-LS4.C, 3-LS4.D
4	Life Sciences: 2a, 2b, 2c, 3a, 3b, 3c, 3d	From Molecules to Organisms: 4-LS1.A, 4-LS1.D; Earth's Systems: 4-ESS2.E
5	-	Energy: 5-PS3.D, 5-LS1.C; From Molecules to Organisms: 5-LS1.C; Ecosystems: 5-LS2.A, 5-LS2.B
6	Earth Sciences: 5a, 5b, 5c, 5d, 5e	Standards for 6-8: From Molecules to Organisms: MS-LS1.B, MS-LS1.C; Ecosystems: MS-LS2.A, MS-LS2.B, MS-LS2.C, MS-LS4.D; Heredity: MS-LS1.B; Evolution: MS-LS4.C
7	Life Sciences: 2a, 3a, 3e, 5a, 5f	See Above
8	-	See Above

