

# The Sharktooth Hill & BVMNH

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## **The Sharktooth Hill Bone Bed and Buena Vista Museum of Natural History –two San Joaquin Valley Treasures**

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The Sharktooth Hill Bone Bed, a thin sediment layer within the middle Miocene Round Mountain Silt, is known worldwide for its abundant and diverse fauna. The Bone Bed outcrops in dissected foothills of the southeastern San Joaquin Valley near Bakersfield, where Miocene sediments are exposed along the breached cross-valley Bakersfield Arch.

The six-inch to one-foot thick Bone Bed has yielded at least 141 species of fauna and flora. The most abundant fossils found are those of marine vertebrates, but terrestrial vertebrates and flora also occur. These fossils indicate diverse life forms lived in an arm of the Pacific Ocean that occupied the southern San Joaquin Valley 15-16 million years ago. Surprisingly, few invertebrate fossils are found in the Bone Bed. The most celebrated Bone Bed paleontologic treasures are marine vertebrate fossils such as sharks, sea lions, turtles, whales, and other large life forms.

Discovery of the Bone Bed is often attributed to William P. Blake, a geologist and railroad surveyor, in 1853. Blake's discovery and recovery of fossils prompted a scientific examination of the fossils by famed geologist and naturalist Louis Agassiz in 1856. Agassiz named at least eight new species of animals. Because of its' significance as a paleontologic resource and role in United States paleontologic history, an area of Bone Bed outcrop at Sharktooth Hill was designated a National Natural Landmark (NNL) in 1976. The NNL is now overseen by Bakersfield College.

Scientific interest in the Bone Bed has been sporadic since the 1850's, but it has received significant interest in the last several years. Part of the reason for the interest has been due to Bone Bed accessibility provided by local landowner Bob Ernst. Ernst passed away after a brief illness in 2007. Researchers from the University of California Museum of Paleontology, the Natural History Museum of Los Angeles County, the San Diego Museum of Natural History, Occidental College, and others have provided new insights as to how the bone bed formed, how old it is, and its' fossil record. These researchers have documented their work in several recent publications, including the June 2009 *GEOLOGY* magazine article "Origin of a widespread marine bonebed deposited during the middle Miocene Climatic Optimum," by Nicholas D. Pyenson, et. al. Among the most significant conclusions presented in this article were:

- 1) The Bone Bed formed over a significant length of time in which there was little or no net sediment accumulation, coincident with the beginning of the middle Miocene Climatic Optimum;
- 2) It is unlikely Bone Bed formation was caused by red tide poisoning, a volcanic event, or any other catastrophic mass death event;
- 3) The Bone Bed age can be bracketed to between 15.9 and 15.2 million years old;
- 4) The Bone Bed has approximately 200 fossil specimens per cubic meter of rock.

These researchers often worked through Ernst and Bakersfield's Buena Vista Museum of Natural History. Ernst was a self-taught paleontologist who recognized the importance of scientific study. Recovery, restoration, and display of fossils recovered by Ernst were the impetus for the creation of Buena Vista Museum in Bakersfield in 1995. Since Bob Ernst's death, his family has graciously continued to display Bone Bed fossils at the Museum.

The most famous of the Ernst fossils on display at Buena Vista Museum is a fully articulated sea lion, *Allodesmus kernensis*, in the sandy Bone Bed matrix. Other Sharktooth Hill fossils on display include:

- 1) a juvenile baleen whale
- 2) two sperm whale skulls
- 3) hundreds of shark teeth, including teeth up to six inches long from an ancestral large shark, *Charcarocles megalodon*. This shark, now extinct, grew to 60 feet in length.
- 4) a leatherback turtle

Buena Vista Museum continues Ernst's legacy by showcasing Kern County's scientific wonders and providing a place and resources to learn about them. An important mission of the Museum is creating programs for school-aged kids to learn about science. These programs supplement formal education by stimulating their senses of sight and touch. The Museum has grown from being strictly one of Sharktooth Hill fossil displays to an integrated Museum with displays of

- 1) Native American culture, including a restored Yokuts village
- 2) Geology, including rocks and minerals
- 3) Dinosaurs
- 4) Petrified wood
- 5) Hands-on, interactive biology displays in the "OH! Zone";
- 6) Astronomy
- 7) Taxidermy animals from Asia, Africa, and North America

The Museum welcomes thousands of visitors each year. It possesses a working fossil restoration lab, library, gift shop, and a classroom where classes, workshops, and presentations are given throughout the year.