

## MESAS IN CALIFORNIA?

By Larry Schemel, retired USGS scientist

### Chapter 2: The Lovejoy Basalt Flow

The largest volcanic flow in California originated near Thompson Peak in the Diamond Mountains, the range that links the Sierra Nevada to the Cascades, about 15.4 MY ago. Lava flows from eruptions, which lasted only a few centuries, extended as far as 150 miles into the Sacramento Valley (Garrison and others 2008).

Although much of the flow is covered by more-recent sediments, there are a few very distinctive surface features.

Oroville Table Mountain borders HWY70 south of where HWY149 turns off to Chico.



North Table Mountain Ecological Reserve allows public access to over 3k acres which include waterfalls, column and other rock formations and, of course, wildflowers in spring. Yes, dogs are allowed on trails!!!

Bidwell Park in Chico provides public access to Big Chico Creek. The Lovejoy Basalt is exposed in sections of the creek near Bear Hole. Flow of the creek over the exposure has polished some basalt so that it looks like obsidian. The drive up Big Chico Creek is beautiful and this is a great place to swim.

Only one location in the Sacramento Valley gives public access to the Lovejoy Basalt. The northern Orland Butte, just west of HWY 5 is where Black Butte Lake and campground is located. For rock hounds, this is a destination that is best visited when temperatures are cooler and the lake level is low. In addition to campgrounds on the lake, this location is close to hotels in Orland and a nearby casino, which are good options during the late fall and winter.



The lake was formed when the USCOE built the dam on Stony Creek. The shores of the lake are terrific areas to collect Stony Creek jasper as well as Lovejoy Basalt when the water level is low. PGGs had a fall field trip there nearly ten years ago and I still have jaspers and some basalt to show for it. However, I can always use more Lovejoy Basalt. It is very fine grain and polishes solid black. It was a critical part of the intarsia pins that won for me the "Lapidary of the Month" award from R&G Magazine.

Reference: Garrison, N.J. and others. 2008. A mantle plume beneath California? The mid-Miocene Lovejoy flood basalt, northern California. Geological Society of America Special Paper 438-20. This is a terrific paper that can be downloaded if you search for Lovejoy Basalt on the internet.