



Supplemental road log 2, to Black Mesa State Park, Oklahoma

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- 13.7 **Junction with NM-325.** At 12:00 Black Mesa dominates the horizon. At the base of the mesa the Triassic Sheep Pen Sandstone and Sloan Canyon Formation are exposed overlain by the Jurassic Entrada Sandstone. Above the Entrada are the Jurassic Morrison Formation,

the Cretaceous Lytle, Glencairn, Mesa Rica, Pajarito and Romeroville formations and the upper Tertiary Ogallala Formation overlain by Raton basalt (mile 61.6 on First-Day Road Log).

End of Supplemental Road Log 1.

SUPPLEMENTAL ROAD LOG 2, TO BLACK MESA STATE PARK, OKLAHOMA

SPENCER G. LUCAS and ADRIAN P. HUNT

Mileage

- 0.0 **Turn left** on paved road to Lake Carl Etling (Black Mesa State Park) (mile 43.3 of First-Day Road Log). **0.1**
- 0.1 Ogallala Formation calcrete to left of highway. **0.1**
- 0.2 Basalt-capped Black Mesa and the Dry Cimarron Valley in front of it are visible on the skyline from 1:00 to 3:00. **0.3**
- 0.5 Begin descent into Swede Creek; Ogallala Formation exposed on both sides of highway. **0.6**
- 1.1 Cattleguard. **0.2**
- 1.3 Ogallala Formation calcretes and calcareous sandstones on both sides of highway, next 0.5 mi. **0.9**
- 2.2 Ferruginous sandstones and gray shales to left and right of highway are Upper Cretaceous Graneros Shale. The Upper Cretaceous strata (Graneros Shale and Greenhorn Formation) exposed in the vicinity of Black Mesa State Park are among the southeasternmost exposures of these strata in the Western Interior (Kauffman et al., 1977). **0.2**
- 2.4 At 9:00 a low bluff of Romeroville Sandstone is visible. **0.2**
- 2.6 Note Romeroville sandstone on hill at 3:00. **0.1**
- 2.7 Exposures of Graneros Shale on both sides of highway next 0.1 mi. **0.5**
- 3.2 Bridge over a fork of Swede Creek. Sandstones to the left and right of the highway are Pajarito Formation. To the left, gray shale of the Graneros Shale rests on ferruginous sandstone of the Pajarito Formation. **0.2**
- 3.4 Cattleguard. **0.2**
- 3.6 Bottom of Swede Creek valley; road on right to B. W. Dawson Ranch; continue ahead on highway. **0.6**
- 4.2 Crest of hill; valley of South Carrizo Creek visible ahead. **0.1**
- 4.3 Soils on sides of highway are developed in Graneros Shale. **0.1**
- 4.4 **Intersection** with unpaved road; **turn right** and continue on paved highway. To the left (south) of this intersection is the top of Kauffman et al.'s (1977) section 2 (Fig. S-2.1) in the Lincoln Member of the Greenhorn Formation. We will now drive down through this section through the majority of the Graneros Shale. The outcrops at the intersection are of the Graneros Shale, upper member. **0.1**



FIGURE S-2.1. Lincoln Member of Greenhorn Formation at mile 4.4.

- 4.5 Cattleguard. **0.1**
- 4.6 Prather Ranch road to left. **0.4**
- 5.0 The limy sandstone to the left and right of the highway is the Thatcher Limestone Member of the Graneros Shale. At 10:00, the Mesa Rica Sandstone is visible on the skyline. **0.1**
- 5.1 Gray shale of the lower member of the Graneros Shale is visible to the left of the highway. **0.2**
- 5.3 Cattleguard. **0.3**
- 5.6 Cattleguard; **turn left** and continue on paved highway. **0.4**
- 6.0 Lakeside Country Store on left. **0.1**
- 6.1 Slab crossing of South Carrizo Creek followed by cattleguard. The strata exposed in the western cutbank of South Carrizo Creek just above the slab crossing pertain to the Pajarito Formation. Here, these strata contain thin lignite beds and dinosaur footprints (Fig. S-2.2). Continue N on the paved highway. **0.3**
- 6.4 Enter developed camping area of Black Mesa State Park; outcrops on 9:00 are Mesa Rica Sandstone. **0.1**
- 6.5 **Intersection** with "Dump Station" and toilets on right; **bear left** and note outcrops of the Mesa Rica Sandstone across the creek. **0.1**

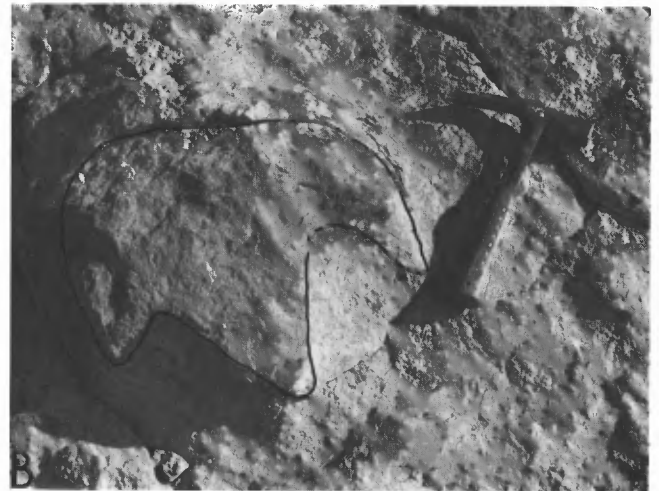


FIGURE S-2.2. The Pajarito Formation at mile 6.1 (A) and an ornithomimid dinosaur footprint (B) present here.

- 6.6 Mesa Rica Sandstone on left displays typical crossbedding. **0.2**
- 6.8 "Petrified Forest" on left (Fig. S-2.3). Park personnel have collected fossil logs from the Mesa Rica Sandstone in this area and stood them upright on concrete platforms. **0.1**
- 6.9 Road sign for Kenton; **bear left**; group camp straight ahead. **0.1**
- 7.0 Mesa Rica Sandstone well exposed in valley walls. **0.1**
- 7.1 Roadcuts to left and right are Pajarito Formation. **0.1**
- 7.2 Unpaved road to right leads to scenic overlook of Lake Carl Etling. **0.2**
- 7.4 Bridge over creek; the Mesa Rica Sandstone is exposed in the creek, and the Mesa Rica-Pajarito contact is on the right. **0.2**
- 7.6 Cattleguard; leave Black Mesa State Park. **0.2**
- 7.8 "Danger" sign on highway; view to east is of Mesa Rica-capped bluffs of the Dry Cimarron Valley. **0.1**

- 7.9 Enter valley of Willow Creek where the Mesa Rica Sandstone is extensively exposed. **0.2**
 - 8.1 At 10:00 the white sandstone is the Lytle Sandstone. Outcrops on the right are of the Glencairn Formation. **0.2**
 - 8.3 Paved highway ends. **0.1**
 - 8.4 Road crosses Willow Creek. **0.3**
 - 8.7 Lytle Sandstone at 9:00. **0.3**
 - 9.0 Cattleguard. **0.6**
 - 9.6 At 11:00 a good outcrop of the Glencairn Formation is visible (Fig. S-2.4). The Glencairn adjoins the road for the next 0.6 mi. **0.6**
 - 10.2 Road ascends from Glencairn into the Mesa Rica Sandstone. **0.2**
 - 10.4 Note crossbedded Mesa Rica Sandstone on left. **0.5**
 - 10.9 Intersection with mile 53.9 of First-Day Road Log.
- End of Supplemental Road Log 2.**



FIGURE S-2.3. The "petrified forest" at mile 6.8.



FIGURE S-2.4. Outcrop of the Glencairn Formation at mile 9.6.