

Thorndale Exit Stratigraphy Report

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Introduction

The first field trip for GO 570 was to the Thorndale Exit (Interstate 35 exit 135). The task was to measure strata exposed during the construction of a highway on-ramp.

Geographic Location

The Thorndale exit is approximately 4.6 miles east of Emporia State University (Figure 1. The area surveyed is the northwest road cut with exposed strata (*Figure 2*) accessible from the on-ramp.

Methods

Units were measured with a 1.5 meter Jacobs staff marked in 10 centimeter increments using a sightglass. Measurements were taken by groups of two then consolidated and averaged later in class. The averaged measurements were used to create the stratigraphy diagram in *Figure 3*.

Lithostratigraphic units

The site surveyed cosited of the Auburn (partial), Emporia, and Willard (partial) formations. *Figure 1* shows the surveyed site with the formations and members overlaid.

Auburn Formation (partial)

The Auburn Formation at the survey site consisted of a partially exposed bed of mudstone. The exposed portion was measured to be 110-150 cm with an average of 130 cm. Because the Auburn Formation could not be fully measured at the site, the lowest point was used as a base point for measurements.

The exposed strata is a highly weathered mudstone that was light grey in color (*Figure 4*).

Emporia Formation

The Emporia Formation consists of three members, from oldest to youngest: Reading, Harveyville, and Elmont. The Emporia formation is the most prominent formation visible at the survey site.

Reading Member

The Reading Member consisted of limestone with a thickness of 55-94 cm with an average thickness of 75 cm (*Figure 5*).

The Reading Member had a weathered color from tan to light orange and an unweathered color of off white.

Harveyville Member

The Harveyville Member consisted of mudstone with a thickness of 178-202 cm with an average thickness of 190 cm. Figure 6 shows weather grey mudstone of the Harveyville Member.

Elmont Member

The Elmont Member consisted of limestone with a thickness of 55- 94 cm with an average thickness of 75 cm (*Figure 7*). Digging was required to find the bottom of the Elmont.

The Elmont Member limestone had a tan to light orange color and an unweathered color of off white.

Willard Formation (partial)

The Willard formation consisted of a partially exposed bed of mudstone with a thickness of 27-30 cm and average thickness of 29 cm.

The Willard Formation had a weathered color of light yellow to tan.

Soil

The soil overlying the Willard Formation was not measured and samples were not taken. Visually the soil at the site resembled typical Flint Hills prairie soil.

Conclusion

The trip was interesting and a great learning experience for doing field stratigraphy. Unfortunately the author did not spend as much time on the post field-work data collection portion of the assignment as required.

Figures

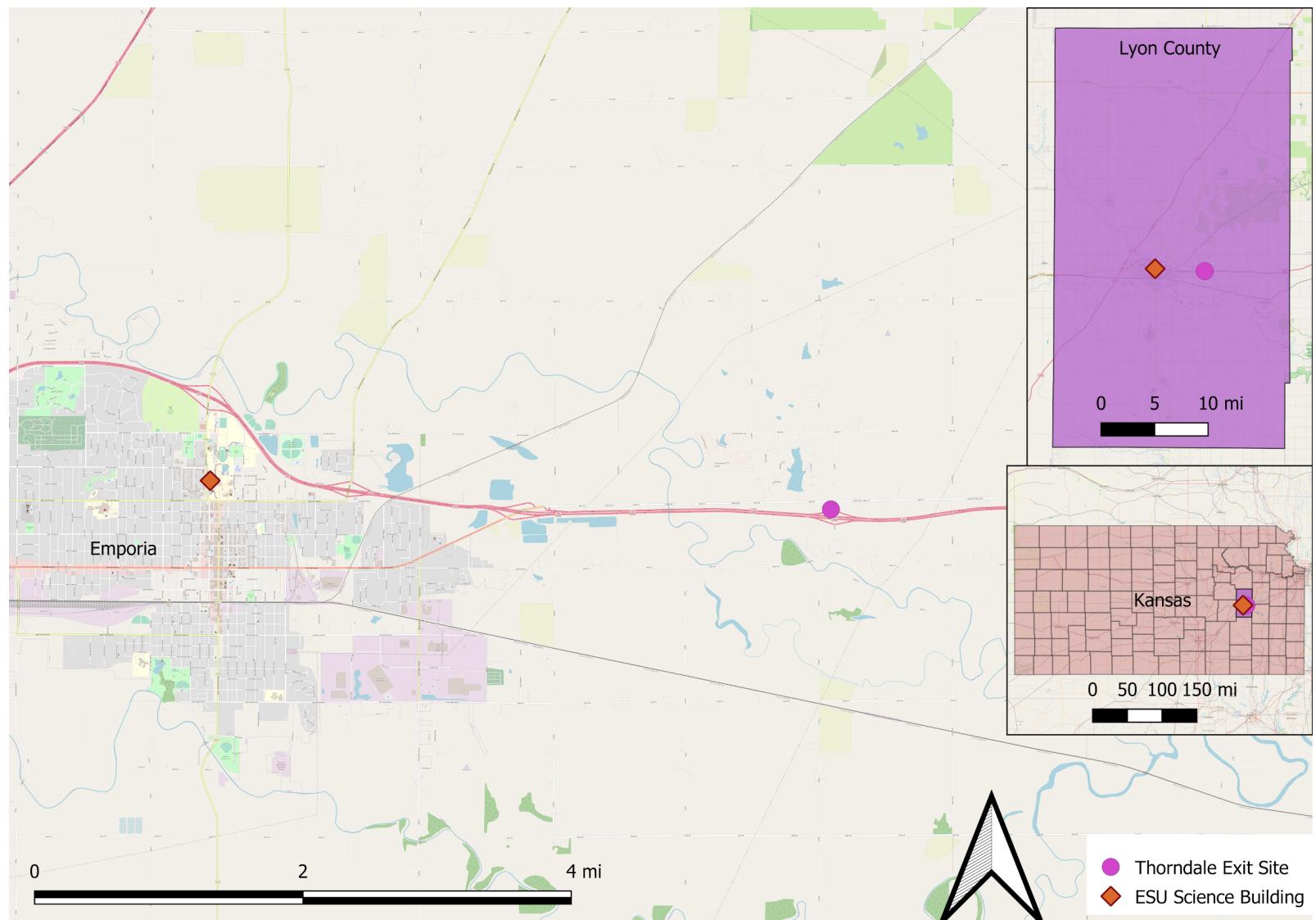


Figure 1. Relationship between Emporia State University and the survey site. R. Olsen

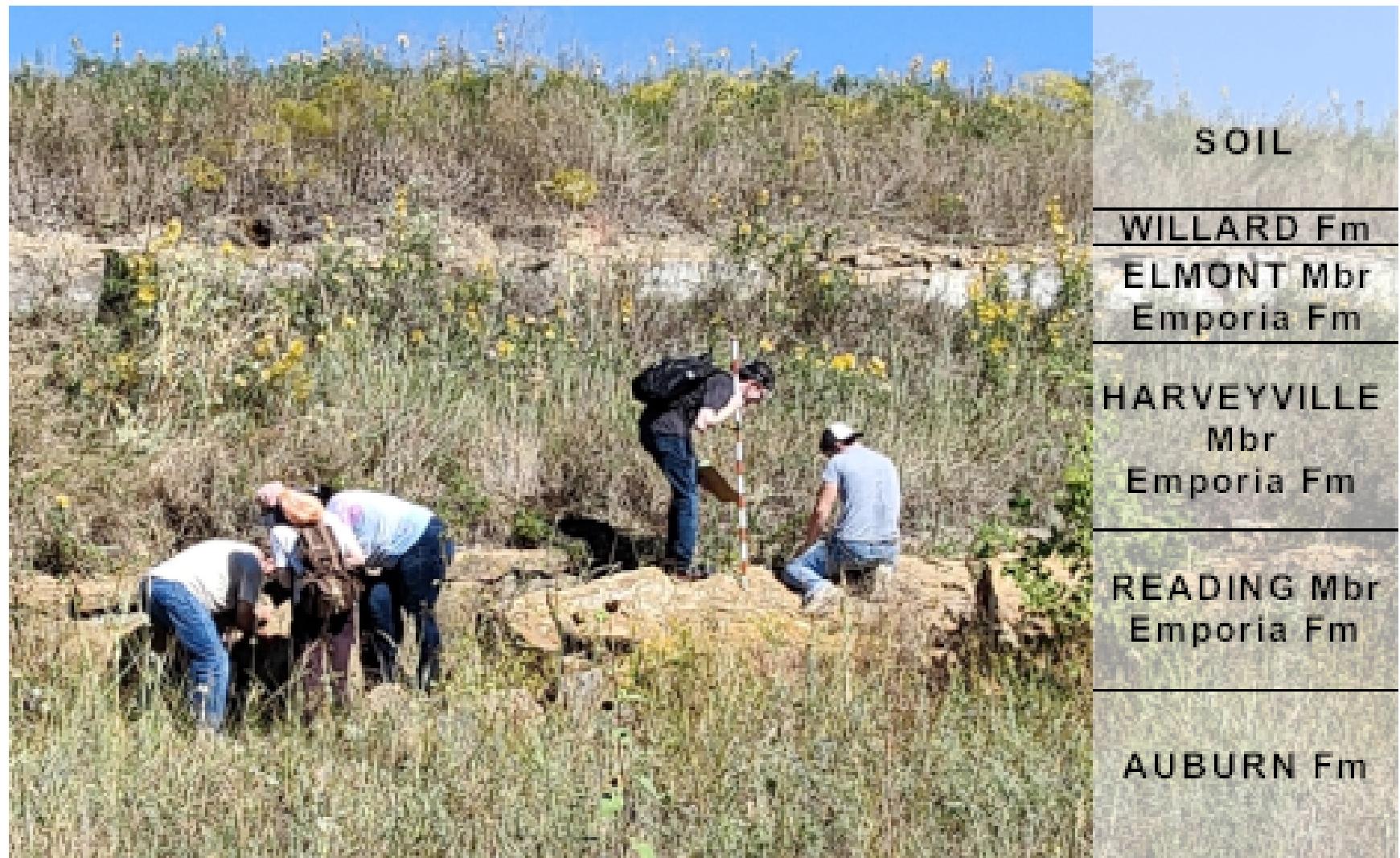


Figure 2. View facing north of the surveyed area, divisions on the staff are 10 cm. *R. Olsen.*

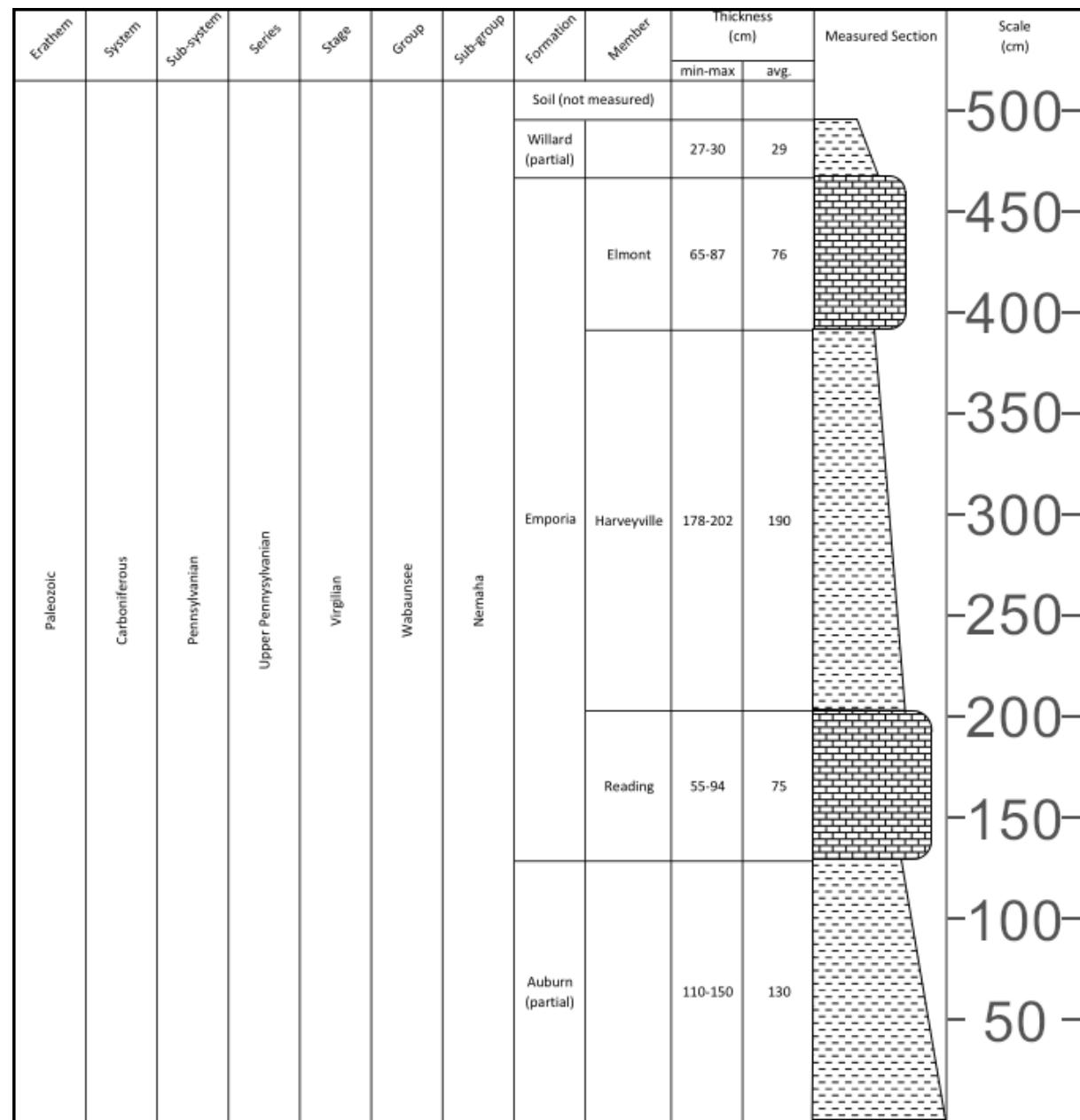


Figure 3. Stratigraphy diagram of the surveyed site. *R. Olsen*.



Figure 4. Exposed and weathered portion of the Auburn Formation, Jacob's staff for scale. *R. Olsen*



Figure 5. Exposed limestone of the Reading Member of the Emporia formation, rock hammer and Jacob's staff for scale. *R. Olsen*



Figure 6. Exposed mudstone of the Harveyville Member of the Emporia Formation, rock hammer for scale. R. Olsen

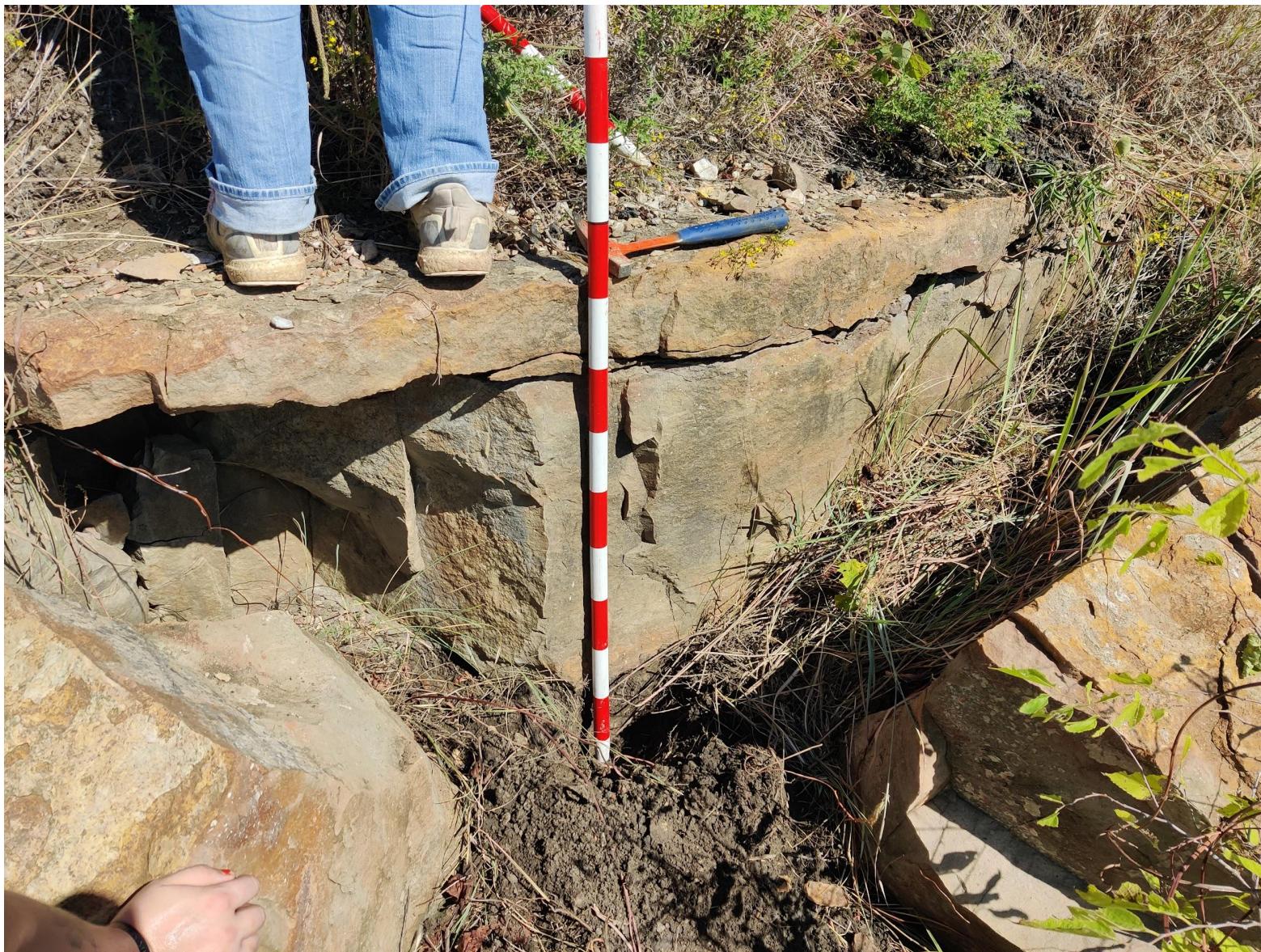


Figure 7. Limestone of the Elmont Member of the Emporia Formation, Jacob's staff for scale. *R. Olsen*.



Figure 8. Weathered mudstone of the Willard Formation. *R. Olsen*