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Stratigraphy and Mapping of Sandy River Floodplain Terraces, Franklin and Mercer County, Maine

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Abstract
The Sandy River is a 73 mile tributary of the Kennebec river, which originates from in Franklin county. The terraces along the Sandy River are mapped to understand their lateral extent and obtain a clear understanding of the processes responsible for fluvial terraces. The terraces consists of risers averaging 0.6 m – 3.4 m and extend 10s to 100s of meters away from the channel. There are three main terrace levels based on the height and distance from the river channel. Terraces are mapped using a color scheme of red green and purple for level 1,2 and 3, respectively. In addition, stratigraphic columns were constructed at various points along the terraces. The columns reveal that the level one terraces are mainly sand bars while the level two and three are clay and silt. Further research needs to be conducted to determine whether the clay is originally fluvial or marine, which would help classify how exactly they are formed.

Methodology

- Literature review
- starting point, provided basis of understanding for our fieldwork
- Reconnaissance work in the field
- GPS, compass, structure sections
- comparative studies between Franklin and Mercer counties
- Aerial photographs
- courtesy of the Maine Geologic Survey, Augusta
- allow for greater detail in topographic relief
- Google Earth Imagery
- vertical exaggeration necessary to see differentiation in terraces

Background on the Sandy River

- A tributary of the Kennebec River, which originates from Sandy River Ponds in Sandy River Plantations, Franklin County
- Northeast-flowing stream that is 73 miles in length
- Recently made headlines due to stream bank erosion threatening to wash away infrastructure approximately 3.6 miles upstream of the bridge crossing in Strong near the VoterVale farm in Avon, ME.
- River channel is flanked by generations of fluvial terraces, which document the rivers meandering and incision history
- **Fluvial terraces** consist of a relatively flat areas called **treads**, separated by steep **risers**.

Terrace Maps

- Three levels of terraces were common along the channel.
- Average height of risers was 0.6 m – 3.4 m and length of the treads varied from 10s to 100s of meters
- Stratigraphic column of the terraces indicate that the terraces are underlain by mostly Presumpscot Formation materials and silts (see stratigraphic section below)
- Level 1 terraces were mostly sand bars, level 2 and 3 were silts and clays

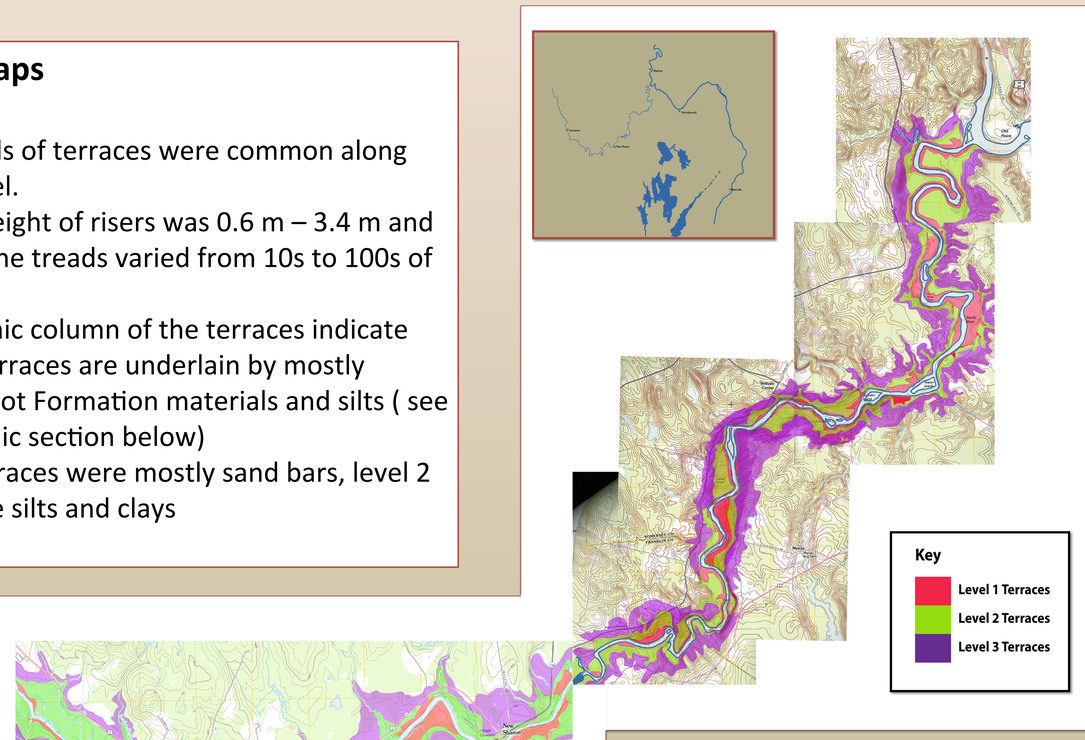

Figure 1. Map of Sandy River Terraces from Farmington Falls to Madison, Maine

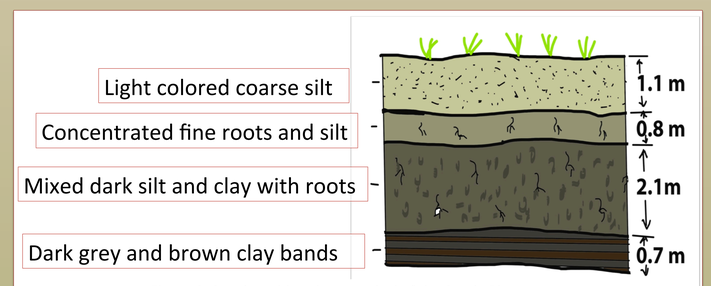

Figure 2. Stratigraphic column typical of the Sandy River terraces

Effects of glaciation on the Sandy River

- Presumpscot formation deposition results from deglaciation of Central Maine
- Gorge at New Sharon exists today and shows layers of till -- Till dates from Middle to Late Wisconsinian
- Clay varves once exposed at New Sharon can still be seen in the second terrace level near Mercer

Looking Forward

- Radiocarbon dating of material in the terraces, to determine age of deposition
- Further mapping of the Sandy River, from its headwaters to Madison
- Collaboration with Maine Geological Society to update geologic maps of the area to include terrace levels

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