Project Goals

- Compile and compare surveys to identify how woody debris dam has affected the channel shape over time.
- Determine the effects of the wood load associated with geomorphic changes, such as pool volume, shape of the stream, and sediment deposition including particle size and shape.
- Identify and document the effects that channel aggradation and degradation have on adjacent hillslopes, such as triggering landslides.

Structure from Motion Surveys

Utilize Agisoft’s PhotoScan software for 3D object reconstruction using structure from motion.

- Field survey: place control markers and survey them; take handheld photos with > 60% overlap; move in circle with photos directed in Lab workflow: load photos; align photos; build dense cloud; create mesh; texture the mesh; load control point coordinates; ID control points on photos; export oriented model for use in GIS.

Maps from SM handheld surveys

- 3D object models were exported as orthoimagery and DEM.
- GIS can open the models, and measure features of interest (we used Global Mapper).
- GIS type data greatly facilitates measurement and combination of new survey data with the rest of the world.

Key Point: Log Jam suffered a break after 2013.

Key Point: Nickpoint retreat erodes gravel stored behind LWD.

Data collected by students in a field methods course.

Conclusions

LWD in streams has not been characterized quantitatively in this part of New York.

Measuring LWD effects with handheld cameras and Structure from Motion works!

The models show changes in the landscape as well as the large debris pile.

The stream has degraded during the three year period.

A rich range of environmental conditions can be mapped with SfM.