An Integrative Study of Past Stream Restoration Projects in the Upstate of South Carolina for Use in Future Stream Restoration Projects: Preliminary Analysis and Results

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Background
- Historic agricultural land use, an increase in channelization, dredging with the removal of streamside or riparian vegetation, and urbanization effects has led to stream degradation.
- This results in incision of streams, bank instability, diminished water quality, and increased sedimentation in stream channels.
- Stream restoration aims to create a planned management activity that will re-establish natural functions of a stream system prior to any disturbance.
- Stream restoration activities include, but are not limited to, the building of in-stream structures for channel stability, implementing natural stream patterns, providing accessible floodplains for storm water, and establishing natural streamside vegetation.

Methods
- Cross-sectional analyses using the sight level method (Summer, Fall, Winter)
- Cross-sectional analyses of subsurface using the water periment probe public access (Summer, Fall, Winter)

Results

Hunnicutt Creek
- Cross-sectional Survey Changes - Upper Stream
- Cross-sectional Survey Changes - Lower Stream
- Cross-sectional Survey Changes - Downstream

Little Garvin Creek
- Cross-sectional Survey Changes - Upper Stream
- Cross-sectional Survey Changes - Lower Stream
- Cross-sectional Survey Changes - Downstream

Description of the Study Sites
Hunnicutt Creek & Little Garvin Creek

Future Stream Restoration
- Both stream systems are relatively unstable systems.
- Landuse has significant effects on natural stream systems. These influences are still in effect presently.
- Hunnicutt Creek has substantially greater impervious surface covers, indicating an urban watershed; this will have drastic effects on hydrology within the watershed (i.e. flashy flow, increased sediment deposition, increased surface runoff, etc.)
- The upper restored cross-section of Hunnicutt Creek is aggrading, both in the channel and the floodplain, but the thalweg of the channel is still deep. An incised channel could result in a tremendous rain event. This is most likely a result of urbanization effects.
- Little Garvin Creek is experiencing aggradation of the floodplain and channel, as well as a shift in the channel. This could be the result of multiple beaver dams located within the reach and upstream inputs.
- These restoration locations are at the bottom of the watershed, which increases the likelihood of unsuccessful restoration efforts. Choosing a better reach, more suitable for restoration, could have been potentially more successful, stable, and beneficial.

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Citations