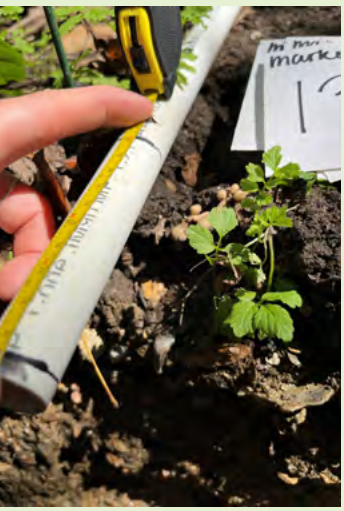
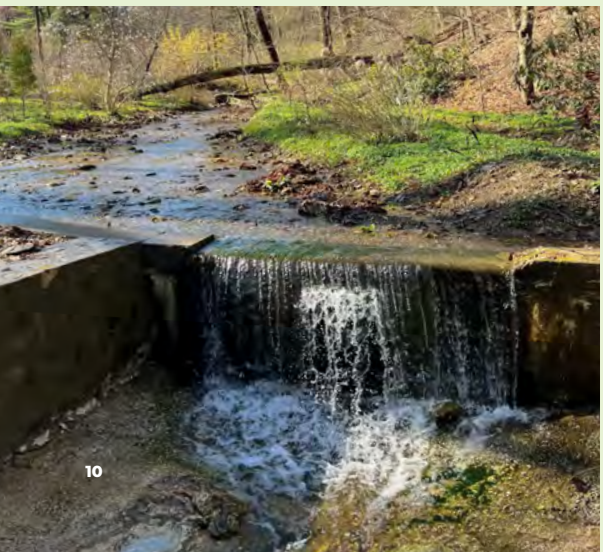
HAMILTON FELLOW PROJECT UPDATE

Floodplain Mapping and Stormwater Observation

THE HAMILTON EDUCATIONAL FELLOWSHIP is an immersive program designed to teach specialized skills in horticulture and public garden management. As a part of a Fellowship term, each Fellow completes a project over the course of their two years. Our current first year Fellow, Liesl Barkman, joined the horticulture staff in late March of 2022. Her strong interest in the floodplain and stormwater issues happening at Jenkins eventually developed into her project.

After the touchdown of a few recent storms, impacts of runoff and erosion have never been more visible at Jenkins. In the floodplain, the stream corridor has visibly eroded, leaving steep stream banks. Runoff from the road forms gullies through the soil and eventually makes its way to the stream corridor and further erodes the stream bank. In some areas, this has caused entire shrubs to wash out and fall down the bank, as their roots cannot hold the soil in heavy storm events. Due to these conditions, it is extremely difficult for plants to establish in the floodplain.





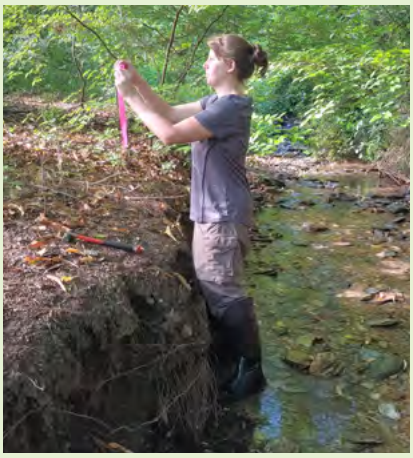
Liesl's project is aimed at gaining more information on erosion and plant life in the floodplain. The main aspects of her project involve monitoring and tracking the rain; placing markers in the floodplain and measuring erosion along the stream bank; mapping the stream bank and woody plants; and placing new accession labels on recorded plants.

Prior to starting work in the floodplain, the horticulture staff worked to clear access into that section of the Arboretum by weed whacking and removing large fallen branches. Over the course of a few weeks, Garden Volunteers and a corporate volunteer group assisted staff in the removal of invasive plant species throughout the floodplain. Managing invasive species will help gain control of the area and allow native species to better thrive.

Using stormwater erosion markers is one way to understand how severely and quickly the stream bank is eroding. Fifteen PVC rods were placed in the floodplain perpendicular to the stream at key erosion points. They were aligned with the soil edge of the stream bank, where fifteen-inch nails were then driven through the pipe into the ground. As erosion occurs, the rod will be etched at the new soil edge and measured. Liesl has been checking these erosion markers every two weeks and after any significant storm. Together, the rainfall amounts and the erosion tracking will give a better depiction of how quickly the stream bank is eroding. This information can be used in grant writing to advocate for financial assistance in dealing with these stormwater issues.

Monitoring rainfall is another way to develop a better understanding of the stormwater issues in the floodplain. Liesl placed two rain gauges, one in an open field environment and the other under a forest canopy, to mimic the two primary environments at Jenkins. The gauges are checked on a daily basis to establish a baseline of the rain conditions. This information can then be compared to erosion tracking data in the floodplain.

The next step in Liesl's project is happening this winter, now that the leaves have dropped. She will receive training on using a Total Station to survey the floodplain. This equipment will allow the floodplain plants to be mapped accurately onto known points in the Arboretum's mapping tool, BG Base, and for the stream corridor to also be outlined and mapped. The floodplain has already been added into the mapping database, but each recorded plant will require an updated label that indicates each plant's coordinates. Liesl will go through the process of preparing new tags by engraving them and placing them out in the field.



Liesl's project will help document the severity of stormwater erosion and give data that supports our need for continued funding of stormwater management initiatives. The Fellowship project is designed to teach new skills, and this project will help Liesl to learn a variety of skills including mapping with a Total Station, navigating the BG Base mapping system, and gaining a general familiarization of floodplain plant species.