

April 30, 2021

Michael S. Rolband  
Resource Protection Group, Inc.  
c/o Wetland Studies and Solutions, Inc.  
5300 Wellington Branch Drive, Suite 100  
Gainesville, Virginia 20155

Dear Mike,

This letter constitutes my third quarterly report for work on RFP #01 – Mussel Introduction into an Urban Stream Environment. The objective of this research is to assess the potential of the restored stream channels to support freshwater mussels. Data on survivorship and growth of the translocated and hatchery-raised mussels will allow us to assess the viability of the restored streams for stocking a larger population. This report was intended to cover the period from January 1 to March 31, 2021, but I delayed the report to include results from field activities conducted at the end of April.

Work during this quarter included a census of translocated and hatchery-raised mussels in Snakeden and The Glade (conducted in February and April). A second cohort of Alewife Floaters was stocked in The Glade and Snakeden. At present, we have ~190 mussels in the two streams. Preliminary findings are as follows:

Fate of translocated *Elliptio complanata* mussels collected from Bull Run: 100 adult *Elliptio complanata* mussels were tagged and released in Snakeden (50 individuals) and The Glade (2 sites, 25 individuals at each site) on November 11, 2020. Subsequent surveys detected 75 and 81 individuals (February and April, respectively). During the April census, a subset of these individuals (N=31) were retrieved to assess condition and growth. All were found to be in good condition.

Survivorship of hatchery-raised *Utterbackiana implicate*: 90 Alewife Floaters were stocked across two sites in The Glade on November 11, 2020. We tested three types of enclosures including concrete silos and two forms of plastic cages (square and pyramidal). At the first census date (February 24, 2021) there was low survivorship (15/30) among individuals stocked into concrete silos. Smaller mussels (<15mm) was used for the silos due to limited space within those enclosures. Individuals in the silos are held above the substrate and may have experienced mortality due to low temperatures or lack of benthic food resources. By contrast, we found high survivorship among individuals placed in plastic cages (24/30 and 27/30 at Glade #1 and #2 sites). One enclosure (5 individuals) was lost, potentially due to washout or tampering.

Overall, these results suggest favorable over-winter conditions in the restored streams for both translocated and hatchery-raised mussels. Activities during the next quarter will focus on continued monitoring of the stocked mussels. I will provide a copy of this report to our Contracts office and you should receive a separate invoice. Please contact me if you have any questions or concerns.

Sincerely,

A handwritten signature in black ink that reads "Paul A. Bukaveckas". The signature is written in a cursive style with a large initial 'P' and 'B'.

Paul A. Bukaveckas