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## Overview of Plaster Creek Stewards Transpiration Rate Across Different Species Over 3 Years

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Overview of PCS Transpiration Dataset 2018-2020  
Ana Singh and David Warners  
October 2, 2020

For the past three years during the months of July and August, Plaster Creek Stewards has been assembling a dataset on the transpiration rates of different plant species growing in our urban curb-cut rain gardens. Data were collected on four separate days in 2018, 6 days in 2019, and 5 days in 2020. On each of these sampling days we measured transpiration rate with a leaf porometer from at least 5 different plants per species in at least 5 gardens. Also, measurements were taken between 10am and 2pm during which times weather conditions were clear and sunny. To date, the data have been compiled and graphed and to that extent are reported below. Statistical analysis will be carried out this fall semester and a final report will be completed in the spring of 2021.

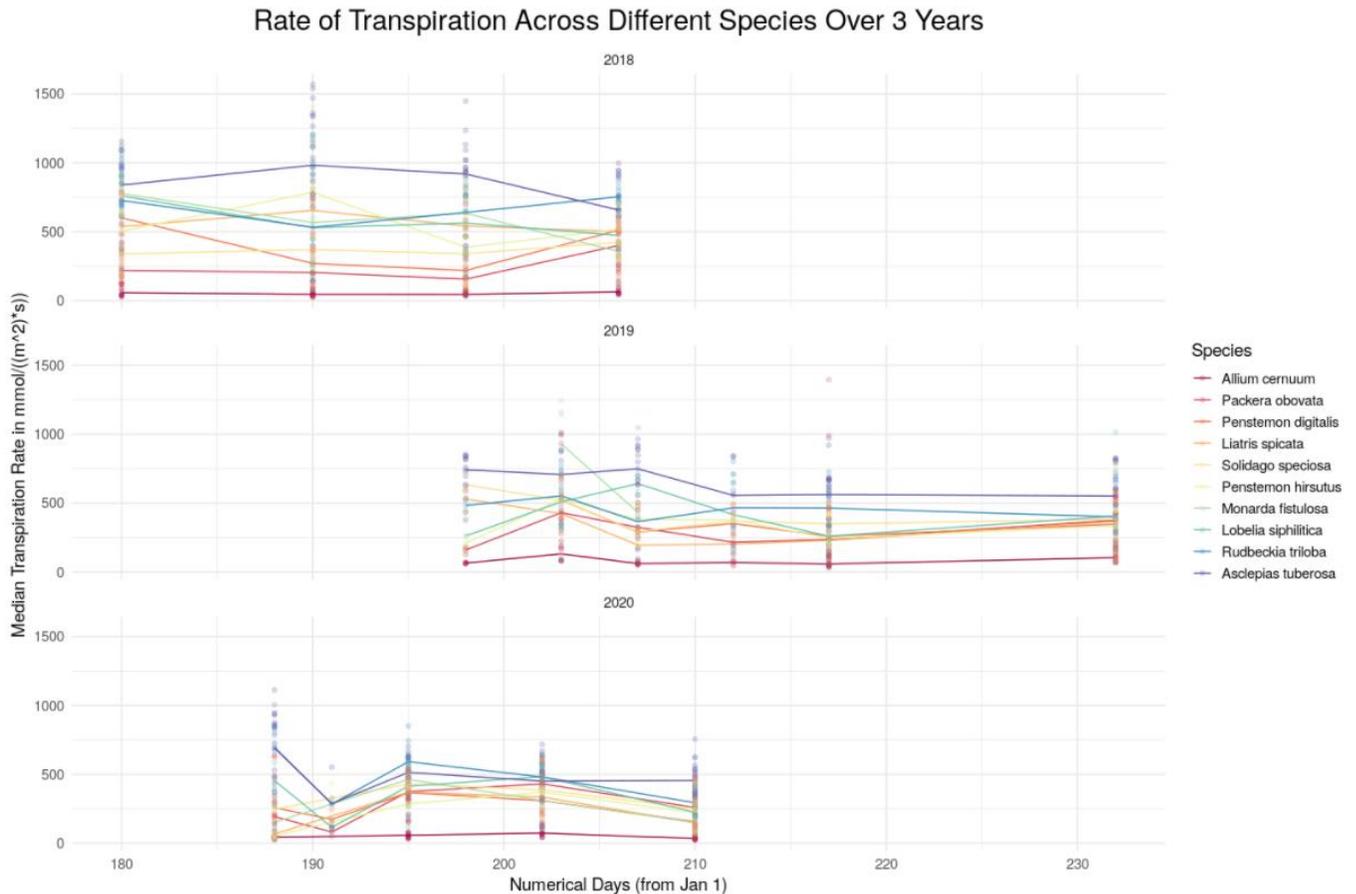


Figure 1. Median transpiration rate for 10 native species growing in urban curb-cut rain gardens during July and August, 2018, 2019, 2020. Lines are connecting median values for each species on different sampling days.

Our results show a relatively consistent ordering of species according to their transpiration rates. This consistency spans sampling dates within a calendar year and is also apparent across years. *Allium cernuum* (Nodding wild onion) regularly showed the lowest transpiration rate, while *Asclepias tuberosa* (Butterflyweed) almost always reported the highest value. We also found that transpiration rate varied quite widely among these species, with the highest values being around 100x greater than the lowest values on any given sampling day. We were somewhat surprised that there was not more variability across sampling days (with the notable exception of the second sampling day in 2020). The lack of wide fluctuations across sampling days indicates that even during relatively dry periods these plants are still pumping significant amounts of water from the soil into the air. We will be able to more confidently present conclusions from this dataset after statistical analyses have been performed.