

## THE IMPACT OF JAPANESE KNOTWEED ON STREAM BASEFLOW IN BONSAI PRESERVE, MONTCLAIR, NJ

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Japanese knotweed (*Fallopia japonica*) is an invasive exotic species. Found commonly in riparian habitats, it forms dense thickets along the banks of rivers and streams. Previous research has been completed on topics ranging from knotweed's impact on bank stability, water quality, and the effect of stream discharge on the dispersal of Japanese knotweed, but this study is unique in that its aim is to investigate the effect of Japanese knotweed on stream depth and discharge at baseflow. In early June 2008, pressure sensors were placed upstream, near downstream, far downstream and within a stretch of river containing the study area of Japanese knotweed. The study area is located along the Third River within the Bonsai Preserve, Montclair, NJ. Stream depth and temperature were recorded at 15 minute intervals for the next two months. A rating curve was also determined to calculate stream discharge from the recorded depths. Knotweed daily photosynthesis, stomatal conductance, and leaf water potential patterns were also recorded during the course of two, day-long samplings. The plants in the study area were then cut down in early August 2008 and their leaves were harvested. Leaves were air dried followed by placement into a 55°C drying oven for two days. Total leaf mass and a leaf mass to leaf area conversion factor will be used to calculate the leaf area index (LAI is m<sup>2</sup> of leaf per m<sup>2</sup> of ground) for the study area. Pressure sensors will continue to remain in the stream for the remainder of September and October 2008, and weekly discharge measurements will be taken. Preliminary data suggests a diurnal pattern in stream depth that coincides with daily photosynthesis, stomatal conductance, and leaf water potential patterns observed in the knotweed. Full data analyses will be performed and are expected to confirm these results. The significance of these data with regard to stream baseflow management will be discussed.