



# Japanese Knotweed Flood and Climate Resiliency, and Transportation Networks: A Summary of an Upcoming Publication

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 [September 2, 2020](#)

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by Brian Colleran, MS, CERP, PWS, Principal, [Ecological Land Management](#), Newbury, MA



*The knotweed surrounding this culvert is contributing to the loss of soil, which threatens both the roadway and the guardrail.*

A paper I was lead author on was recently accepted by River Research & Applications, titled “[Invasive Japanese knotweed \(\*Reynoutria japonica\* Houtt.\) and related knotweeds as catalysts for streambank erosion](#)“. Halfway through the paper, we present a transportation-based example of why re-framing both management approaches to this plant and the criteria by which

successful management is measured opens a wide range of opportunities. Most roadside management of this plant is currently accomplished through mowing or by herbicide application. Experience has taught us that mowing will spread this plant, and herbicide use is a temporary solution as it only reduces the amount of vegetation for a season. While helpful for maintaining safe sightlines, the underground rhizomes remain untreated by both methods, and the threat this plant poses to infrastructure remains undiminished.

Where knotweed exists on rivers, our paper argues that they catalyze erosion. Since knotweeds spread easily along both transportation and river networks, bridges and culverts are especially susceptible to infestation. This means that bridges and culverts with infestations will suffer more erosion than would otherwise be expected. Due to knotweed-induced erosion and the increased power of the waterway during flooding, knotweed infested banks are far and away the most likely places to collapse during a flood, potentially risking failure of any nearby infrastructure. With the continuing changes to hydrological regimes due to climate change, in many areas climate change resiliency and flooding resiliency are nearly synonymous. By eliminating knotweeds, you are making riverside infrastructure more resilient to flooding. So, the criteria for successful management of this plant ought to have more in common with climate risk-reduction strategies than with traditional vegetation management.

While effective management of Japanese knotweed requires more time and attention than normal roadside vegetation management operations, in my mind, the payoffs are worthwhile. These include reduced risk of transportation infrastructure failure and impeded travel during weather related emergencies or in the weeks following a severe flooding event, and avoidance of rushed and unplanned emergency repair expenditures. These types of events can ruin budgets, and in today's economy many of those budgets were already tight to begin with.

As we lay out in our paper, the cost of managing this plant is comparable to many other normal maintenance activities. The cost of removing knotweed once it has become established will certainly be greater than normal management. However, its removal provides the added benefit of providing insurance against the costs associated with climate change induced flood damages. Additional benefits of a proactive management strategy include improved public relations through positive press, opportunities for partnerships with other agencies and non-

governmental organizations interested seeking to help, offering alternative funding mechanisms, and a better understanding of what may happen during the next big storm.



*Black River Roadside: This knotweed along Vermont's Black River is being managed by mowing, which will spread the knotweed further, since pieces of knotweed can root and grow. Additionally, sudden failure of this bank during a storm would significantly impact the roadway.*

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