Japanese Knotweeds Effect on Erosion Rates in Riparian Corridors

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Japanese Knotweed
(*Fallopia japonica*)

- Member of buckwheat family
- Native to Eastern Asia
- **Habitat:** Along streams and rivers, in moist low-lying and disturbed areas.
- Introduced to the U.S. as an ornamental on estates in the 1800s
Why is it a problem?

- Rhizomal propagation
- Fragile root structure
- Allelopathic properties
- Monoculture
Hypothesis

Japanese knotweed will increase the rate of erosion in riparian corridors due to its allelopathic properties and fragile root structure.
Site Locations

- Mad River
- 3 different buffers
  - 2 Knotweed
  - 2 Forested
  - 2 Bare Bank
- All eroding river banks
- 10 mile long transect
Methods

- Erosion Pins = 2 ft long rebar
- 5 Pins hammered into eroding bank
- Covered a width of 5m
- Measure receding bank
  - Periodic interval or after rain storm
Results

Figure 1: Receding bank measurement over time compared to three different buffer types.
Figure 2: Rate of stream bank erosion compared to different vegetative buffers.
Figure #3: Shows the difference in erosion locations compared to vegetative buffer.
Source of Error
Statistics:

Figure #3: One-way ANOVA determined that there is a statistical difference in bank retreat between buffer types \( (F_{(2,271)}=11.7713, P=0.0002^*) \). The Turkey-Kramer means comparison also determined that both a bare stream bank and Japanese Knotweed buffer are significantly different than a forested buffer.
JAPANESE KNOTWEED DOES INCREASE THE RATE OF EROSION AND SHOULD BE HELD TO THE SAME URGENCY OF RESTORATION AS A BARE BUFFER.
References


Parkinson, H. (2010). Biology, ecology and management of the knotweed complex. Montana State University,
Questions