Japanese Knotweed
Fallopia japonica

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Description and Biology

- Polygonaceae
- Shrub-like herbaceous perennial 4 – 10 ft
- Stems are smooth, stout, hallow, and swollen at the joints (Mexican Bamboo)
- Blooms August and September in Maryland
- Spreads by seeds, stems, & large rhizomes (15 – 18 ft).
- Leaves ~6 inches long & 3 inches wide, flat at the base
- Moist open to partially shaded habitats
    - Riverbanks, wetlands, along roadways

Credit: USFWS

Credit: Alamy Stock Photo

Invasion and ecological threat

- Native to Japan, China, Korea, and Taiwan
- Introduced to United Kingdom as ornamental in 1825
- UK to US late 1800's as ornamental, erosion control, & landscape screening
- Additional introductions via ballast (soil)
- Spreads quickly to form dense thickets
- Phenotypically plastic through epigenetic variation despite low genetic variation (*1*)
- Clonal growth – one of the world's largest vascular plants (*2*)

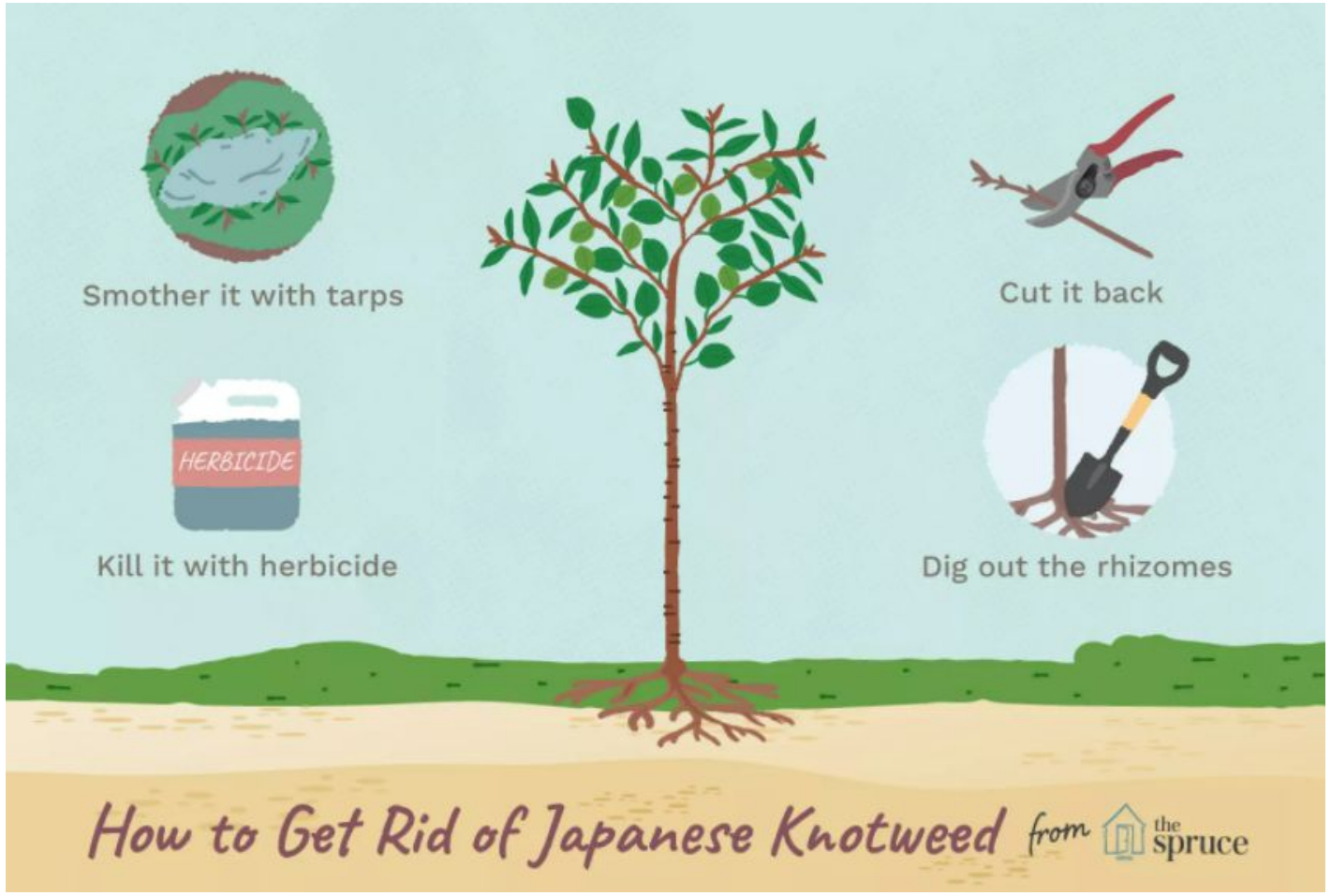
Negative ecological effects

- Reduced herbaceous diversity (*3*)
- No difference in soil nutrients (*3*)
- Removes water via transportation and reduces stream flow (*4*)
- Green frogs reduced foraging success (*5*)

Non-negative effects and uses

- Provides similar allochthonous input to native leaf litter (6, 7)
- Generally doesn’t affect riparian avian communities (8)
- Rhizome can be used as dye – yellow turning to deeper orange-brown when exposed to light.(9)
- Potential renewable energy source when added to liquid manure. (10)
- Briquette production (11)
- Resveratrol – antioxidant, anticancer, anti-inflammatory, anti-microbial (12)

Managment



- Four cuts needed annually to reduce rhizome biomass (*13*)
- Early colonists prioritize stem growth over rhizomes, EDRR first two springs can prevent flood dispersal (*14*)
- Uprooting often ineffective because stems or root fragments can regrow (*15*)
- Notes from Andrew Landsman
  - Brush cutters/weed whackers early June, Late summer (July) application of glyphosate (labeled for aquatic applications)
  - Retreat July second year
  - Target areas for visitor safety (reduce collisions)

Biological Control and Technology

- A psyllid (plant-louse) *Aphalara itadori (16)*
- Long-term rearing reduces ability to establish populations (*17*)
- Unmanned Aerial System imagery isn't an effective tool to classify knotweed infestations (*18*)
- Notes from Landsman
  - USDA Aphis PPQ assessment
    - Concern – impact on buckwheat
    - 7-year process
    - Advisory group
    - Extensive surveys in native areas
    - Host specificity testing – F1 generation
    - In-situ testing
    - NEPA public review

Credit: CABI

C&O Canal

- Towpath – dirt and stone path
- 184.5 miles long
- Built for mules to tow canal boats through the Patomac
- 1500 species of plants including ~100 T&E

Paw Paw Tunnel by Garner Woodall

Invasive management at C&O Canal

- Prioritize invasive management by feasibility and disproportionate negative effects
- Early Detection and Rapid Response EDRR
- Known nearby – next big invasion = water chestnuts and wavy leaf basketgrass in DC area
- Invasive plant management team
  - Located in DC
  - Experts in control and suppression
  - 13 national parks
  - Target 5% of what needs to be done
  - Not getting to Williamsport

Recommendations

- Control efforts need to be coupled with restorations effort
- Replace with native plants
- Mindshift from species specific to site specific
- Remove stressors to allow native plants to survive (esp. T&E)
- Restoration plans – species list by habitat type
- E.g. Ernst seed mix for upper piedmont oak hickory forests

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