

# Knotweed & Infrastructure



Created by Brian Colleran, Vermont Department of Fish and Wildlife, 2012



# Contents

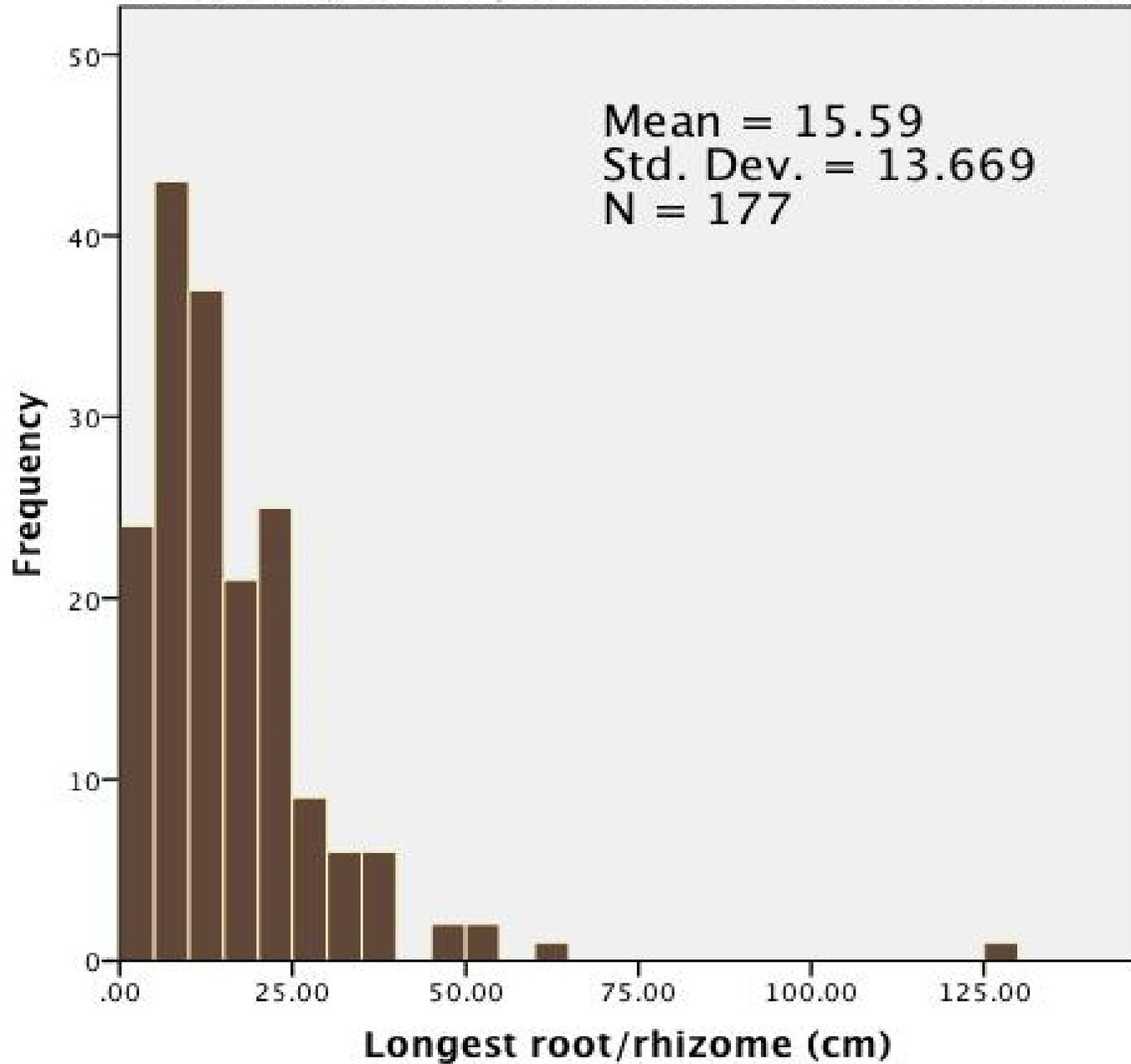
- Who I Am, & Some Graphs
- Scary Stories & Pictures
- Ecology & ID skills. Maybe a Video
- Why do we Care about Knotweed?
- How is it Spread?
- How to Handle It, & What I Want from You
- Potential Fiscal Threat
- Q & A

# Who am I and what am I doing here?

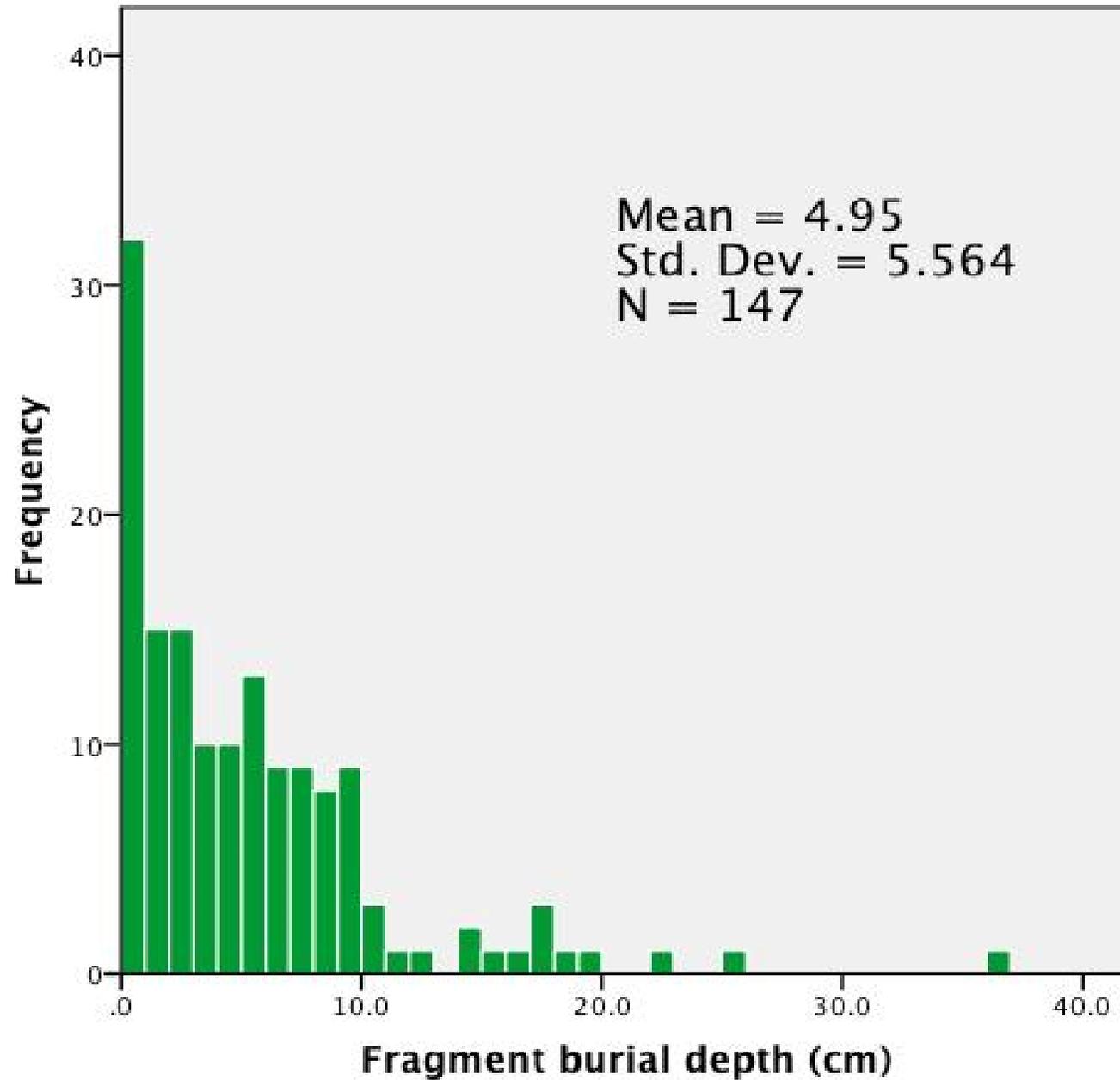


- Temp with F & W
- Irene response hire
- Knotweed specific
- New Plant oriented
- Rivers Oriented
- Roads spread knotweed
- Knotweed eats infrastructure

### Frequency of Longest Below Ground Growth (cm)



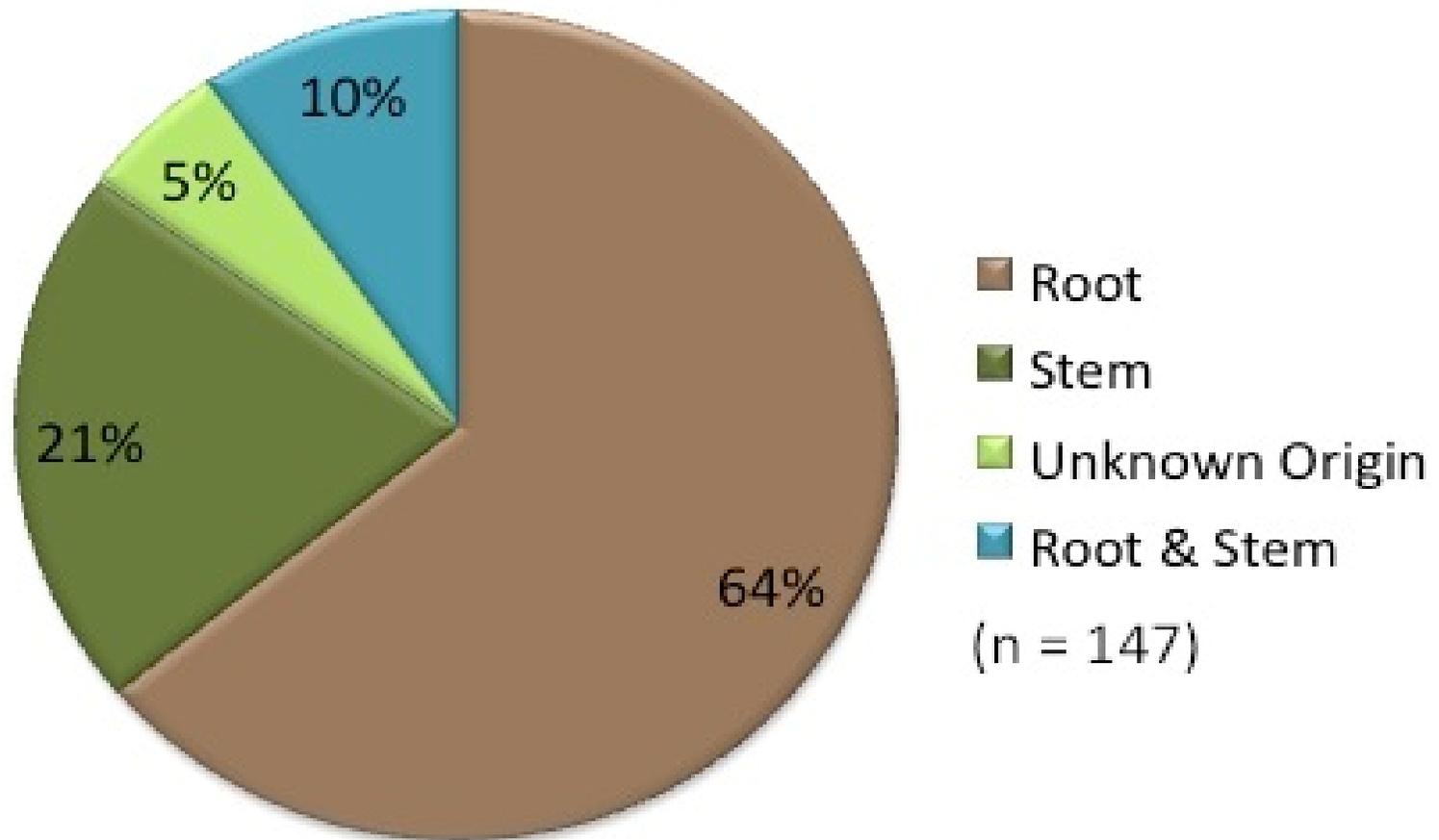
### Frequency of Fragment Burial Depth (cm)



# River Specific – Erosion Implications?

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Debris Fragment Type (%)



Questions?

# English & British Columbia Law

- Environmental Protection [Act 1990](#)
  - Japanese Knotweed is classified as “controlled waste” and as such must be disposed of safely at a licensed landfill
- Wildlife & Countryside Act 1981
  - An offence to plant or otherwise cause the species to grow in the wild
- Noxious Weed Control [Act 1996](#)
  - The B.C. Weed Control Act imposes a duty on all land occupiers to control designated noxious plants.

## Japanese Knotweed Solutions



## Cockram's Surveying



## West London Invasive Weed Council



# West Burke, VT



## Highway 1 British Columbia

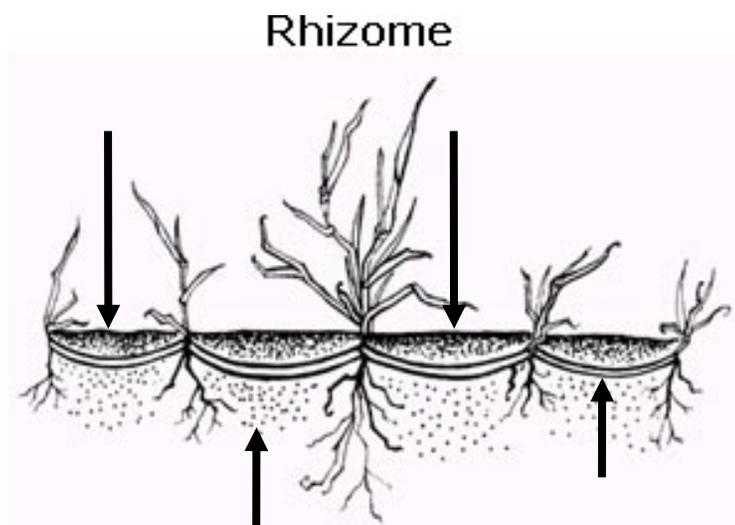
- And it now has transportation ministry officials scrambling after it was discovered splitting concrete in the footings of the Ironworkers Memorial Bridge and infesting a Burnaby section of the \$3.3-billion Port Mann/Highway 1 expansion project.
- July 2012

# Mortgage Refusal & Home Devaluation

- All of the main banks contacted by The Sunday Telegraph, including Santander, Lloyds Banking Group, and Barclays, said they would now turn down mortgage applications if Japanese knotweed is deemed to threaten a property.
- March 2010
- The price of a couple's Hertfordshire house has dropped by more than £250,000 because Japanese knotweed has invaded it, according to an independent surveyor. With its value falling from an estimated £305,000 to £50,000, experts have told owners Matthew Jones and Sue Banks from Broxbourne that, unless action is taken, it will be impossible to sell.
- October 2011

# Ecology

- Invasive Species – Native to volcanic deserts
- Vegetative Spread – Primary spread method
- Nodes are the parts that can regrow. Nodes are where the leaves come off the stem
- Rhizomes, the underground roots, also have nodes, and are very long



## ID Skills

- Zig zag stem
- Red stems when young, red spots when older
- Hollow
- Spade shaped leaf, with a generally flat base
- Drip tip
- White flowers, early Sept.

# Why Do We Care?

- Ecological Impacts
- Erosion & Streambank Stability
- Flooding Hazard
- Infrastructure Threats



# Ecological Impacts

- Shades out groundcovers, saplings, etc
- alleopathic
- Not a wildlife resource
- Poor contributor to instream & insect food chains: low nutrient leaves



# Fish & Wildlife Impacts

- Shades out plants: Forage and habitat vanish – riverbanks become less useful to mammals, amphibians, etc.
- Low nutrient leaves: food web is diminished, starting at the invertebrates that decompose instream biomass, leading to a change in the composition and density of animals further up the food chain
- i.e., Fewer and/or different fish, and fewer fish predators
- The change in the food web is better studied in

# How Knotweed Contributes to Erosion

- From the top down
- From the bottom up
- From within the root system

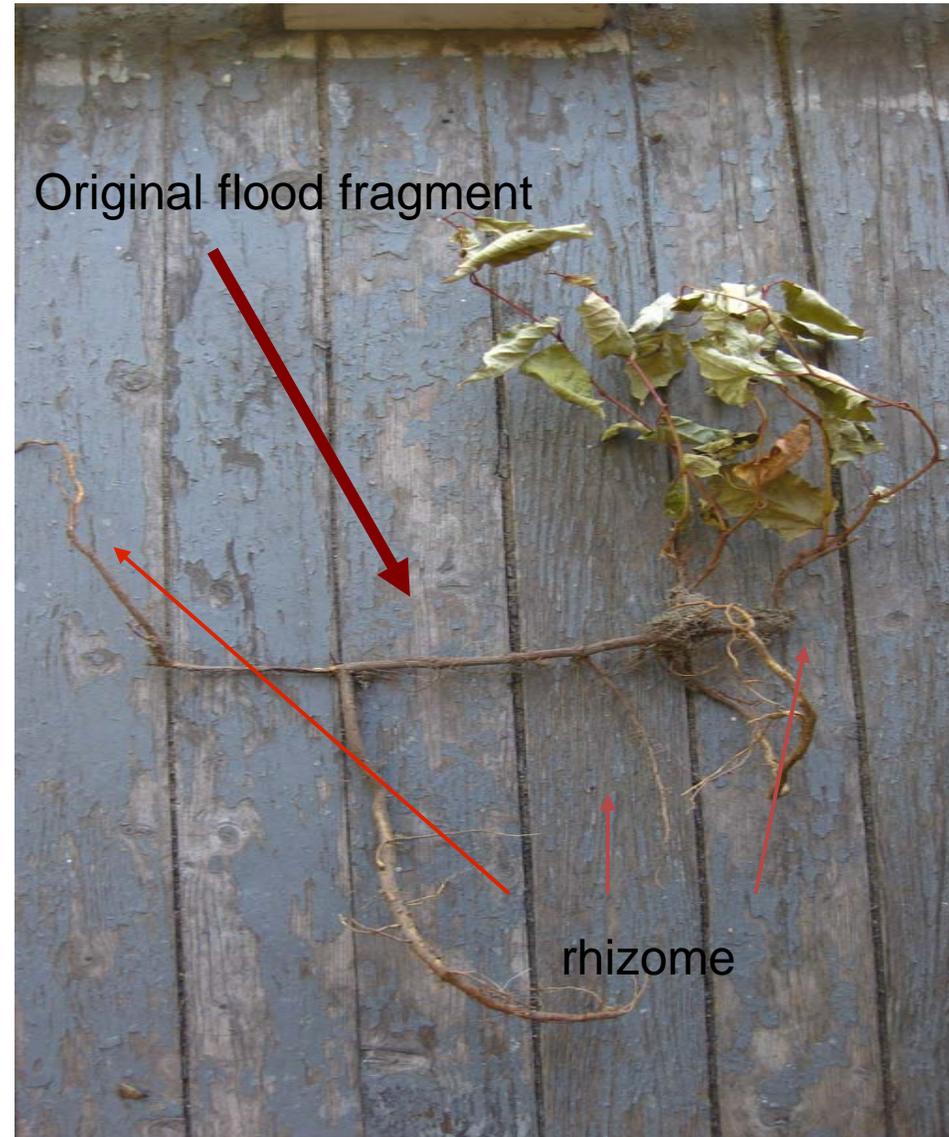
# Erosion



# Erosion



# Stream bank Stability



# Decreases Floodplain Access & Increases Flow Velocity



# Infrastructure Threats

- Lava colonizer
- Can grow through foundations
- Grows through pavement
- Not limited by soil type, can be found growing just about anywhere



# “Soft” Infrastructure: Brattleboro Farmer's Market



What's the problem here?



# How it's spread: Intentional

- Gardening was the historic spread mechanism
- Some historical use to stabilize river banks
- Bee keepers plant it as it's the last crop of the season

# How it's Spread: Accidental



# Why might this be bad?



# Any potential for accidental movement? Grafton



# Any potential for accidental movement? Moretown



# Any potential for accidental movement? Moretown



# Any potential for accidental movement? Moretown



# Better Backroads: Huntington





# Better Backroads: Guilford



# THE ASK

- ID skills
- Clean up Fragments
- Disposal: Landfill or Burn
- Vegetation Management Plan



# THE ASK

- ID skills
- Clean up Fragments after cutting the plant
- Disposal: Landfill or Burn
- Start Considering Treatment Options
- Vegetation Management Plan

# BMP's

- [VTrans: 9.10.12](#)
- “Priority Invasive”
  
- My Own View:
- 1<sup>st</sup> focus: Don't spread it
- 2<sup>nd</sup> focus: Identify threat stands
- 3<sup>rd</sup> focus: Treatment



# Treatment

- Spray
- Dig & Spray
- Cut & Spray
- Herbicide Injection
- Cut & Fill
- Cutting every 3 weeks



# The Economic Cost of Invasive Non-Native Species on Great Britain

F. Williams, R. Eschen, A. Harris, D. Djeddour, C. Pratt,  
R.S. Shaw, S. Varia, J. Lamontagne-Godwin, S.E. Thomas, S.T. Murphy

CABI/001/09

November 2010

[www.cabi.org](http://www.cabi.org)

KNOWLEDGE FOR LIFE

# Costs in Great Britain

	England	Wales	Scotland	GB
Local Authorities	270,000	66,000	96,000	432,000
Research	319,000	19,000	32,000	370,000
Railways	1,726,000	100,000	174,000	2,000,000
Roadsides	3,901,000	438,000	757,000	5,096,000
Riparian	3,444,000	469,000	1,724,000	5,637,000
House Devaluation	963,000	56,000	97,000	1,116,000
Development	141,358,000	7,644,000	1,508,000	150,510,000
Householders	383,000	23,000	42,000	448,000
Total	152,364,000	8,815,000	4,430,000	165,609,000

An estimate of the length of road network in Great Britain enables extrapolation of the regional figures (provided by respondents to the questionnaire) to national estimates. The Highways Agency indicated that their total spend on all INNS on the 30,000 ha of trunk roads in England was £228,500 (questionnaire response). They stated that “by far the largest expenditure is on knotweed control” and in the absence of exact figures we assumed that 2/3rds of the cost was on Japanese Knotweed, so their annual Japanese Knotweed costs for England would be £152,333. This figure was used to produce a cost per km for Japanese knotweed control on major roads of £4.32. However, using this figure to extrapolate for the rest of the country’s minor roads would provide a massive underestimate, since major roads are newer and less subject to disturbance. Minor roads are also more often the subject of the problem of fly tipping, which can be a source of new Japanese knotweed infestations. A more suitable figure was derived from the actual spend of one representative council on this weed. Hampshire County Council provided the most detailed response and quoted that they spend £78,000 controlling Japanese knotweed on 9,000 km of non-trunk road, giving a cost of £8.67 per km.

These management costs provided do not include the extra costs to road building projects due to the presence of Japanese knotweed. We were made aware of one case where the originally preferred course of a road was changed because of a Japanese knotweed patch and one specialist (in confidence) had come across at least four other cases recently.

Approximately 16 major road projects are undertaken by the Highways Agency each year on the trunk road network, in addition to those undertaken on the minor road network. In the absence of real data on the number of new road builds each year that are affected by Japanese knotweed, we have assumed that 10 road construction sites in the country are affected by Japanese knotweed per year. Given the vast expense of new road construction or widening, it was assumed that each construction site would incur additional costs of at least £150,000 based on advice from a retired consultant (in confidence). Hence, a further cost of £1.5 million p.a. was included, to give a total cost of £5,095,894 of Japanese knotweed to the road network (Table 4.4).

# Costs to Roads in Great Britain

	England	Wales	Scotland	GB
Trunk Roads(km)	35,266	4,305	10,678	50,249
Other Roads (km)	265,700	29,552	48,964	344,216
Trunk Roads (4.32/km)	152,349	18,598	46,129	217,076
Other Roads (8.67/km)	2,303,619	256,216	424,518	2,984,353
New Road Construction	1,144,459	128,745	226,796	1,500,000
Total	3,901,393	437,416	757,085	5,095,894

# If VT allows knotweed to grow....

- Today, Vermont has approximately 14,000 miles of roadway, 320 miles of Interstate, over 2,370 miles of toll-free state highways and 11,210 miles of municipal roads.
- 1 pound = 1.62 dollars  
(9.17.12)
- 1 mile = 1.61 km

# ....this is what knotweed will cost

Vermont Roads	Annual Costs
Interstate miles	320
State Highway Miles	2370
Other Roads	11210
Interstate (11.26 dollars/mile)	3,603
State Highways (11.26 dollars/mile)	26,686 – 53,586
Other Roads (22.61 dollars/mile)	253,458

# River Situation in Great Britain (& Vermont?)

GB	England	Wales	Scotland	Vermont?
Length of rivers and canals (km)	33,828 km 54,463 miles	4,603 km 7,411 miles	50,250 km 80,902 miles	7,100 miles
% infested	9.20%	9.20%	3.10%	
Total infested area m <sup>2</sup>	12,448,704 meters sq	1,693,904 meters sq	6,231,000 meters sq	1,693,904 Meters sq
Annualized cost for 3 year program (1.66 pounds/2.69 dollars)	.55 pounds/.9 dollars	.55 pounds/.9 dollars	.55 pounds/.9 dollars	.9 dollars
Annualized control costs	6,888,283 pounds	937,294 pounds	3,447,820 pounds	1,518,416 dollars
Cost for 50% under management	3,444,141 pounds	468,647 pounds	1,723,910 pounds	

# Q & A



# Resources

- Craig Dusablon, VTRANS
- Bob Popp, VT Fish & Wildlife
- Kathy Decker, VT Forests & Parks
- Ann Bove, VT DEC
- Sharon Plumb, VT TNC
- [Knotweed Code of Practice](#), England
- [Vermont Invasives](#)
- [Vermont Landowner's Guide](#)