

# Evaluating the effectiveness, cost, and impact of herbicides to suppress invasive shrub in Douglas County 2017-2018

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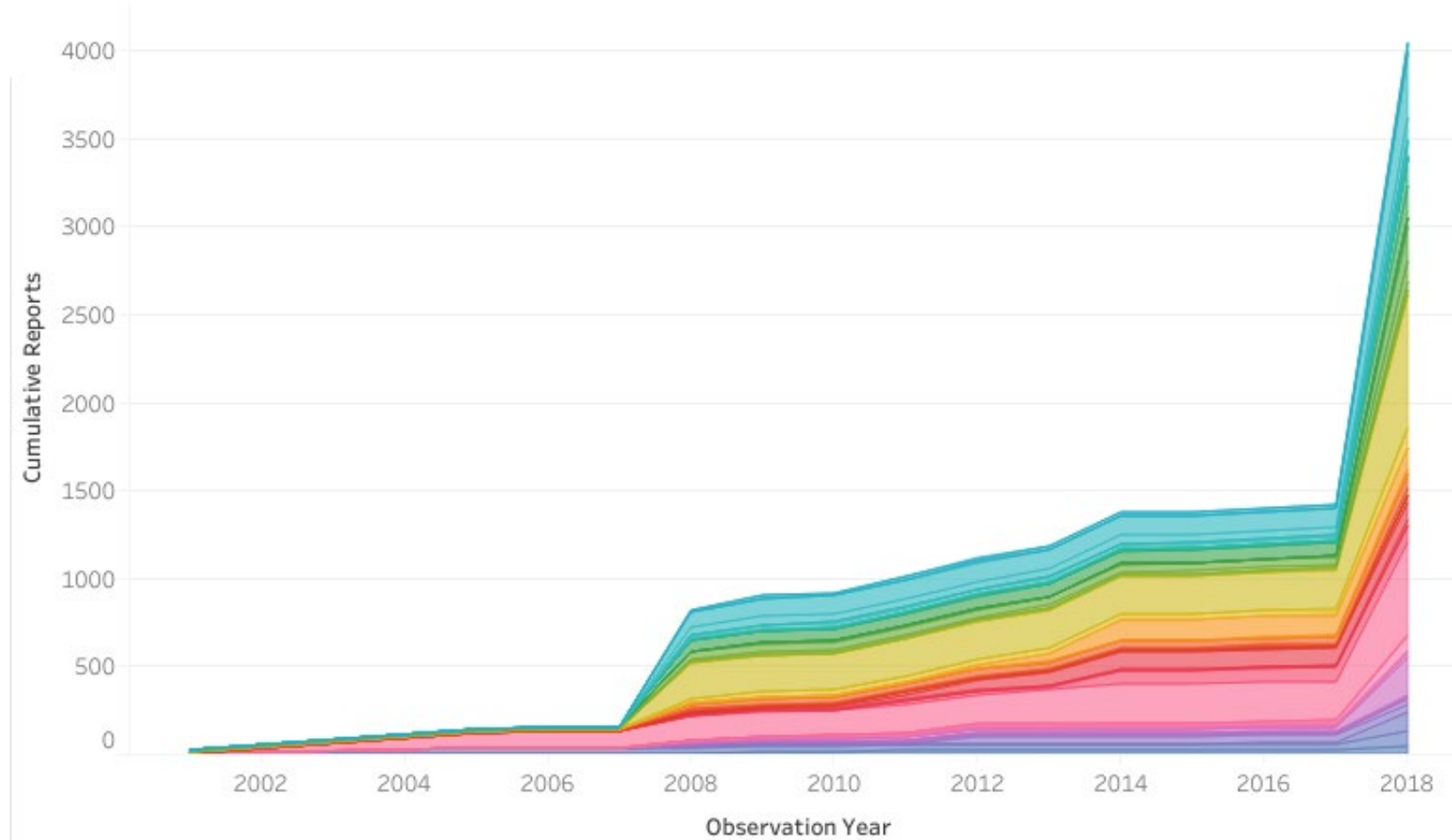




# Why did we do the research?

**Douglas County** Cumulative Number of Reports Over Time<sup>1</sup>

- Invasive plants are causing harm to Wisconsin's economy, environment, and humans.





# Wisconsin Forests are susceptible to invasion

Many northern forests are not yet invaded....

**Lucius Woods**



**Forest in Wisconsin Dells**





# How do you effectively control woody shrubs invading forests while minimizing the impact?

Interested in the effectiveness, cost, impact to existing vegetation

**Goats**



**Foliar  
herbicide**

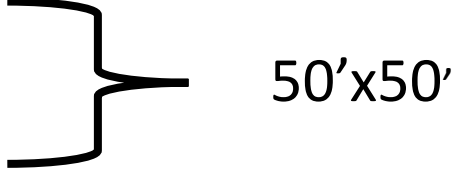


**Cut surface herbicides**





# What we did:

- Set up 3 treatments, replicated three times and compared to goat trts
  - Control
  - Foliar Application
  - Cut Stump Application

50'x50'
- Applied treatments to individual plants (explained next slide)
  - Calculated the expense of treatments (product used + time spent)
- Rated the plots in the fall of treatment year and following spring
  - Effectiveness on controlling plants and how it impacted the nearby vegetation



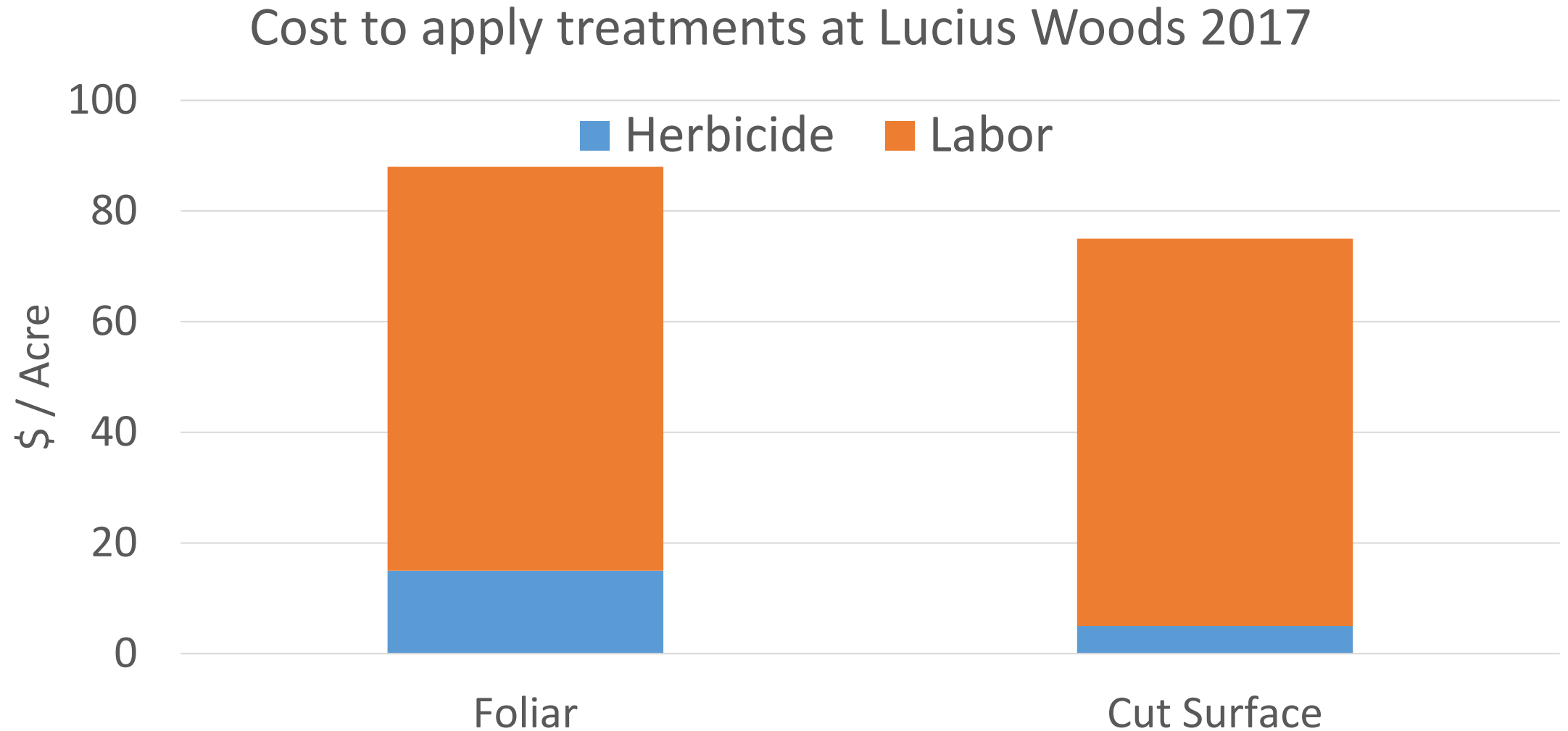
# Application methods = IPT treatments

- Applied Garlon 4 (triclopyr) to buckthorn and honeysuckle individual plants
- Foliar: used hand sprayer to selectively apply herbicide to target species
  - Used **2%** solution, water as carrier
- Cut Stump: used hand sprayer to apply herbicide to stems of target species
  - Used **30%** solution, bark blue as carrier
  - Cut stems ~6"-10" from ground, applied treatment within 30 min of cutting





# Cost of herbicide treatments





# How well did the application work?

- Nearly all treated plants with either application method
- Seedlings were seen germinating and re-invading the location





# Did the treatments reduce non-target plant cover or # of plants?

- No impact to plant cover or # of species was observed with any of the treatments at 3 or 12 months after treatment





Plot 301-  
Foliar





## Goat-grazed area

The initial shrub density was **higher** in the goat grazed area

- 20x buckthorn
- 5x honeysuckle





# Conclusions/Discussion

- Herbicide applications are effective
  - Suppressed shrubs >12 months
  - Minimal herbicide was sprayed
    - 4 fl.oz. of Garlon 4 applied on 1/3<sup>rd</sup> of an acre
  - Efficient way to prevent invasions
    - 74 mins spent treating 1/3<sup>rd</sup> of an acre
- Methods, **when applied to individual plants**, did not impact nearby vegetation
  - No differences in herbaceous cover of plant richness 3 and 12 months after treatment
- Difficult to directly compare results to goat treatments
  - Due to concerns, established plants far away from river where goat plots were
    - Shrub density was 2-5 times greater



# Thoughts on the future

- While effective, site is being re-invaded by seedlings
  - Need to remove source populations near the park
- Volunteer programs have been successful at mapping and managing infestations
  - Dane county volunteers reported >1,000 invasive plants in one year
- We develop resources to aid in tracking invasive plants and management methods employed to improve efficiency
  - Resources available at [fyi.uwex.edu/wifdn](http://fyi.uwex.edu/wifdn)