

Public information campaigns' effectiveness on increasing detections of invasives: Spotted Lanternfly (*Lycorma delicatula*)

Fall 2022 - Invasive Ecology Class Final Project

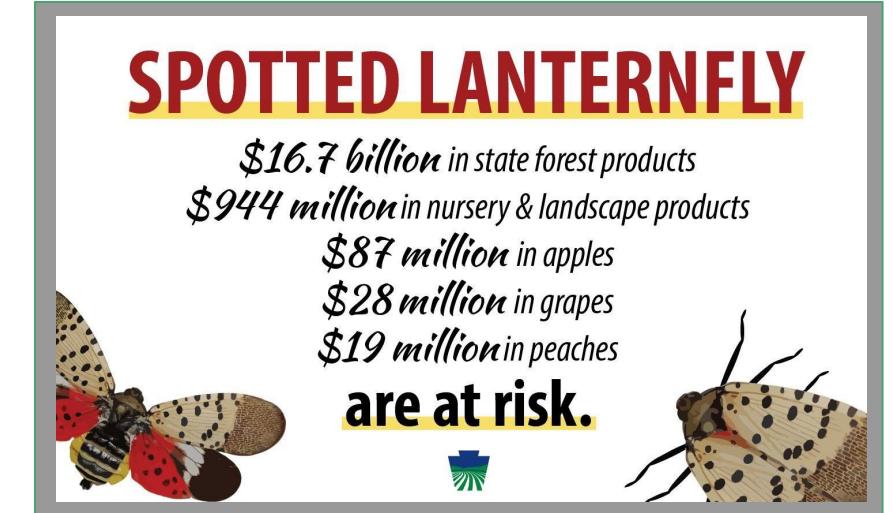
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Overview

1. Species information
2. Temporal spread
3. Public information campaigns
4. Objectives
5. 3 Questions and the methods/results
6. Interpretation
7. Future Directions

Spotted Lanternflies- Threats

- Spotted lanternflies actively threaten...
 - Agricultural and lumber industries
 - Native plants
 - Ground transportation and shipping pathways



SPOTTED LANTERNFLY



Adult (wings closed) can be found in July–December



Nymph (early stage) can be found late April–July



Egg mass (fresh) can be found September–June



Adult (wings open) can be found July–December



Nymph (late stage) can be found July–September



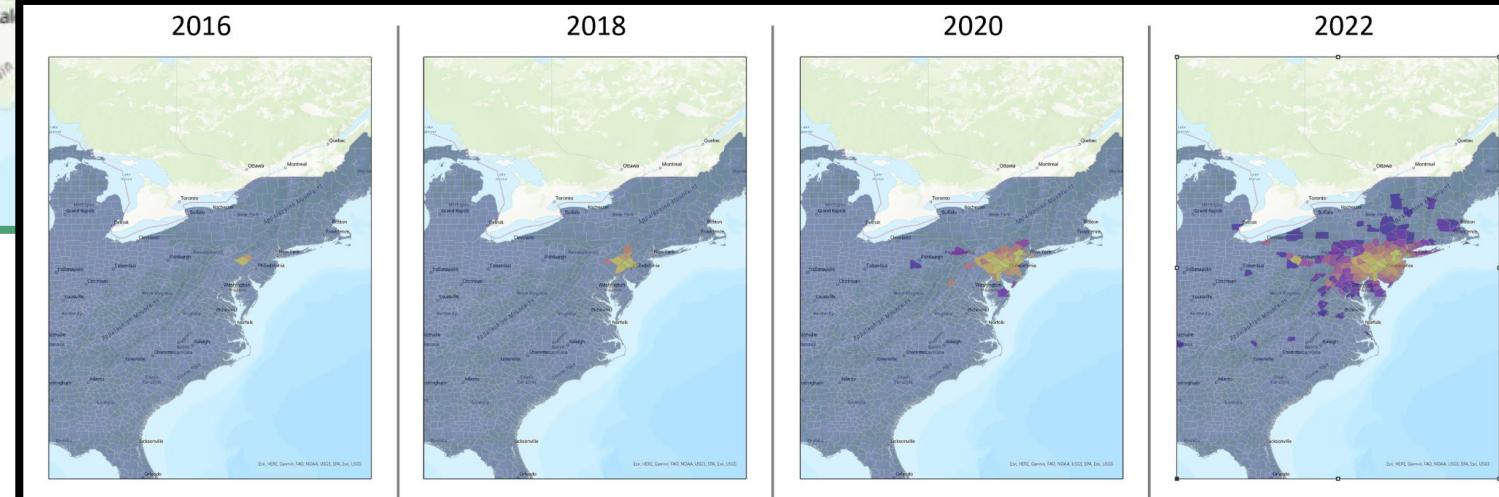
Egg mass (older) can be found September–June

The Spotted Lanternfly

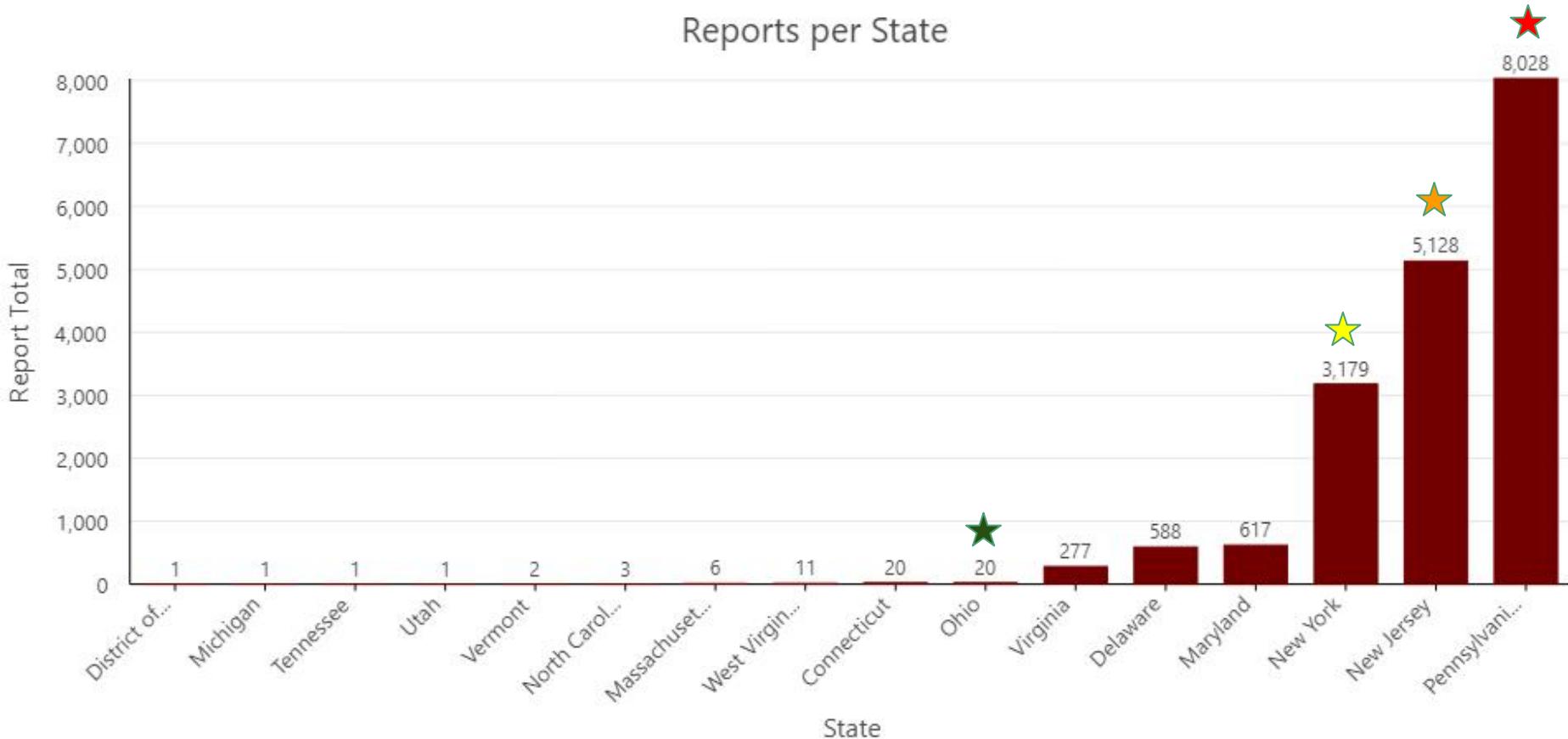
- A generalist herbivore native to China
- A life cycle of one year
- Preferred Host Plant is Tree of heaven
- Excrete honeydew when feeding that is detrimental to plant health



Spotted Lantern Fly Spread and Spread Fast!



Which states did we choose?



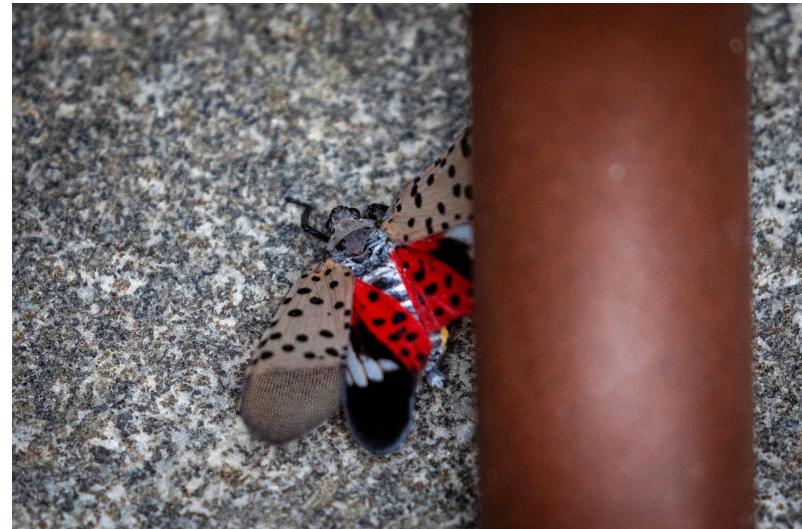
Public Communication Strategies

Public communication can

- Promote awareness
- Encourage behaviors
- Lead to greater trust and communication
- Financially support management

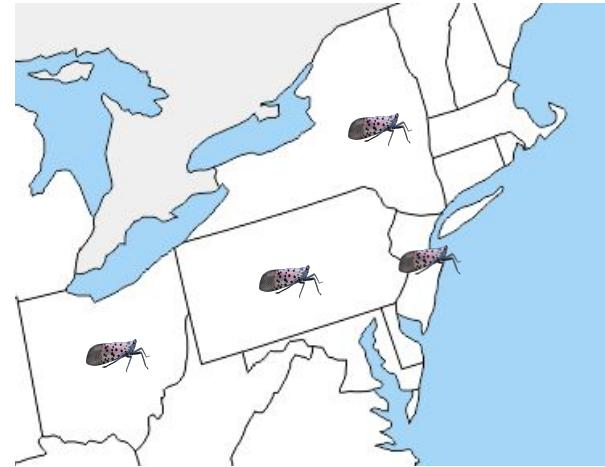
However

- Not all communication is equal
- Determining the most effective strategies is essential

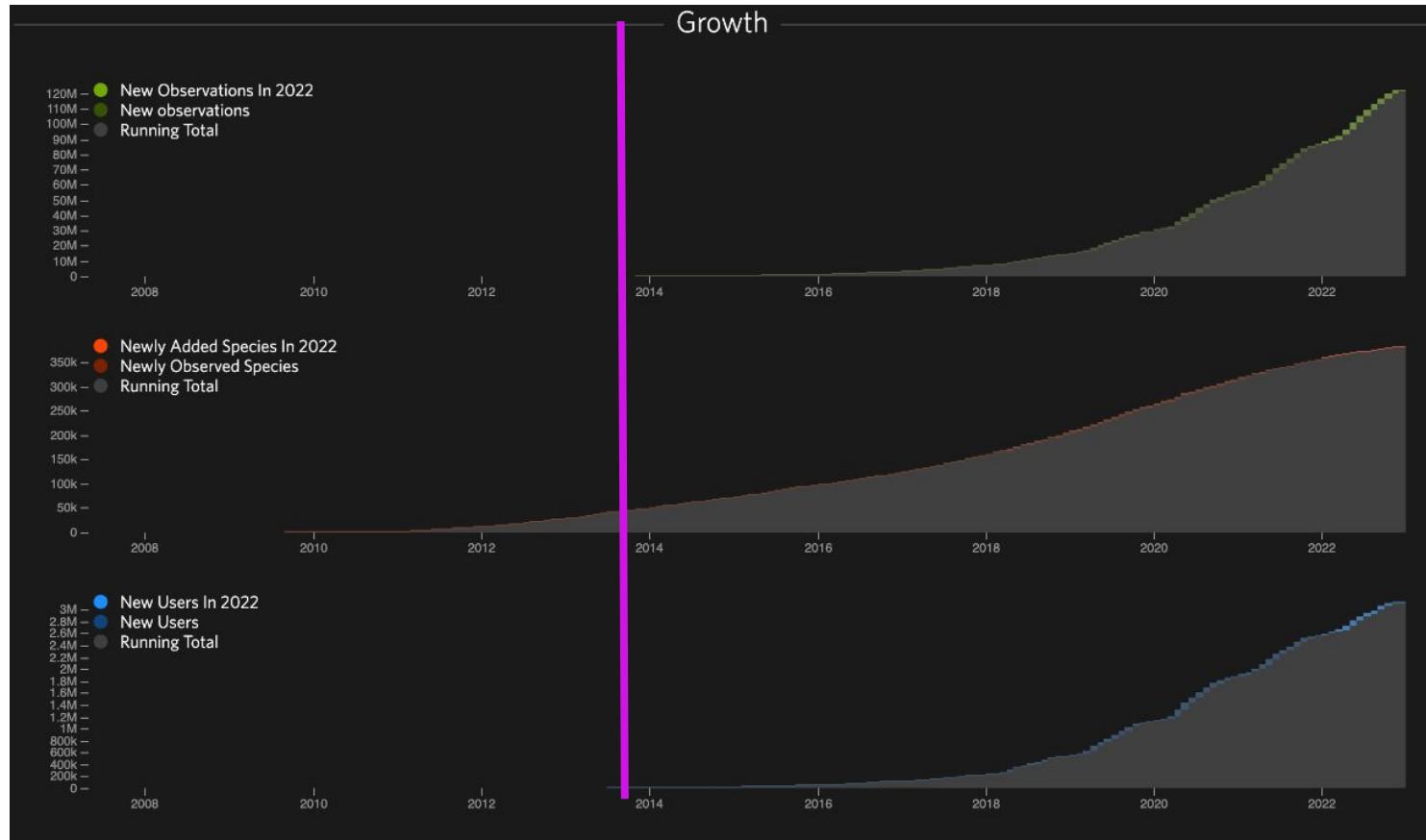


Objectives

1. Understand influence of information campaigns on public participation
 - a. iNaturalist reports as a proxy of participation
2. Compare each state's invasive species action plan
3. Theorize about potential mechanisms of increased public participation



Assumptions & Limitations: iNaturalist usage over time



Assumptions & Limitations: iNaturalist as a proxy

Image credit: Fuse



Longitudinal surveys, focus groups, interviews



Knowledge-Behavior gap

Assumptions & Limitations: **Virtual only**



Campaigns extend beyond the internet

Assumptions & Limitations: Cross-validation

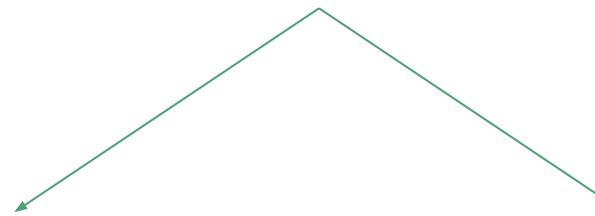


No data reasonably available from USDA

How has the public reported spotted lanternflies over time?

SLF reports have the same pattern across states and time

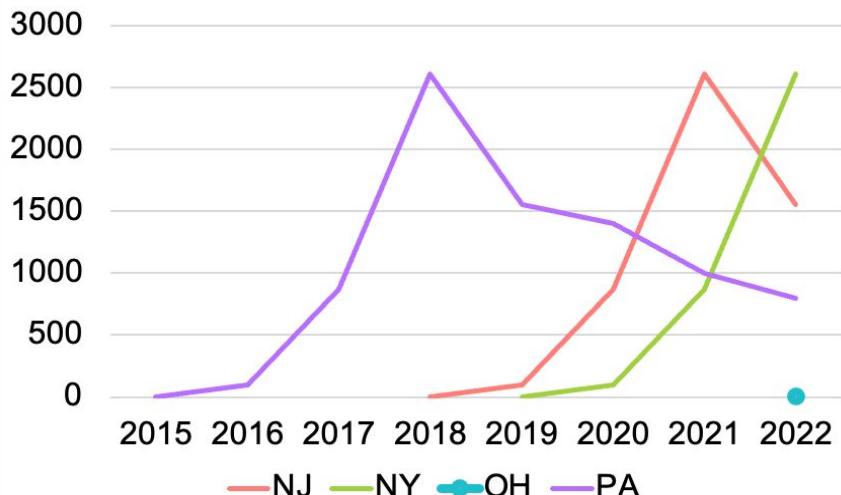
SLF reports vary beyond seasonal explanation



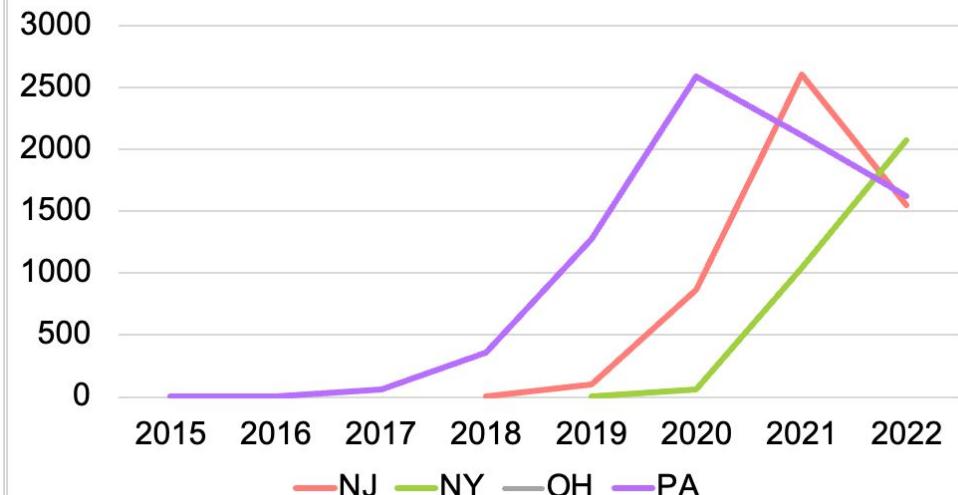
Question 1

How has the public reported spotted lanternflies over time?

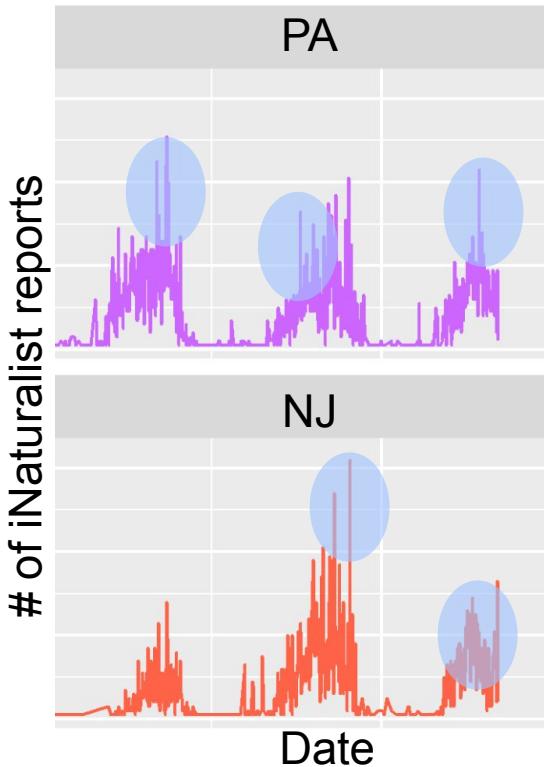
Null Hypothesis



Results

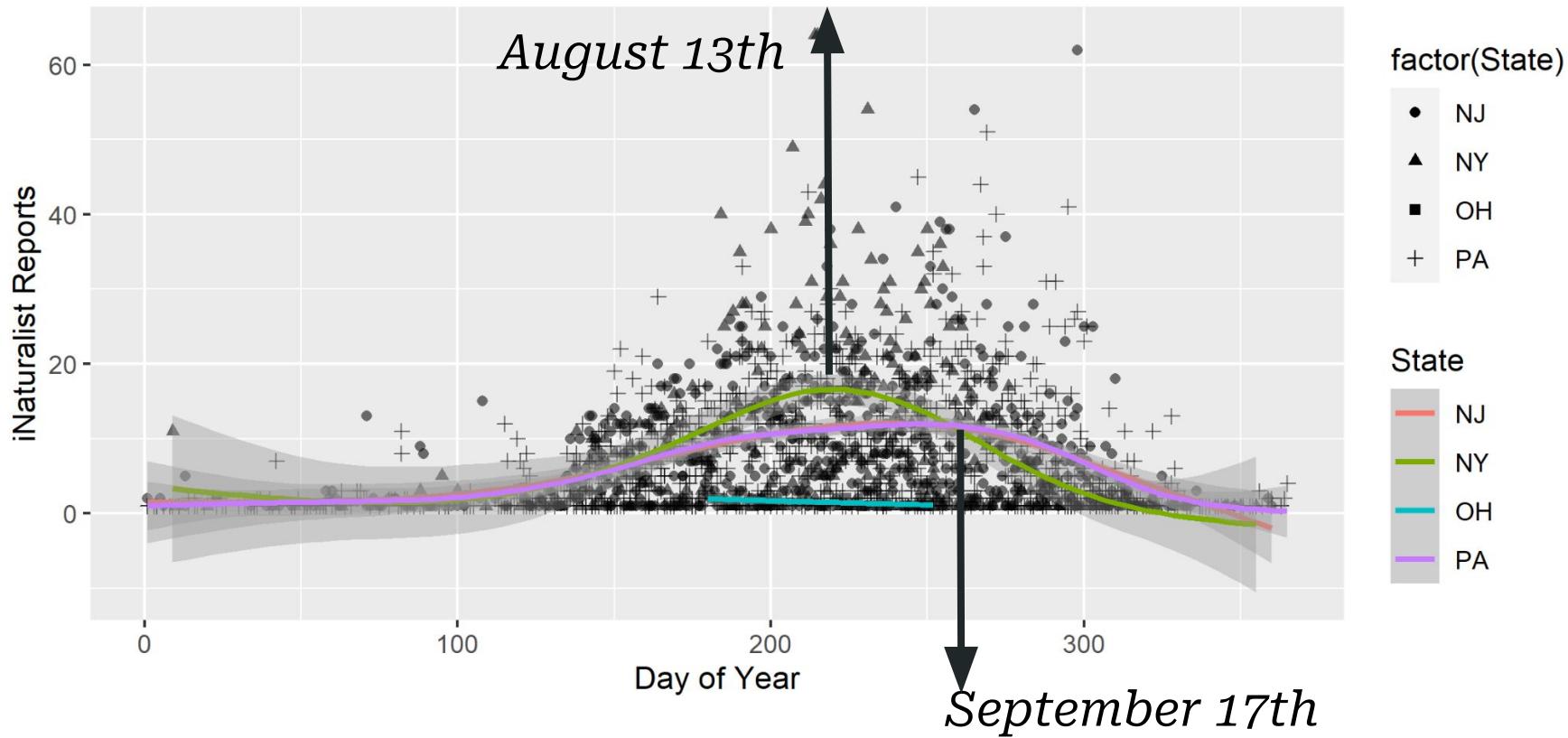


Question 2A



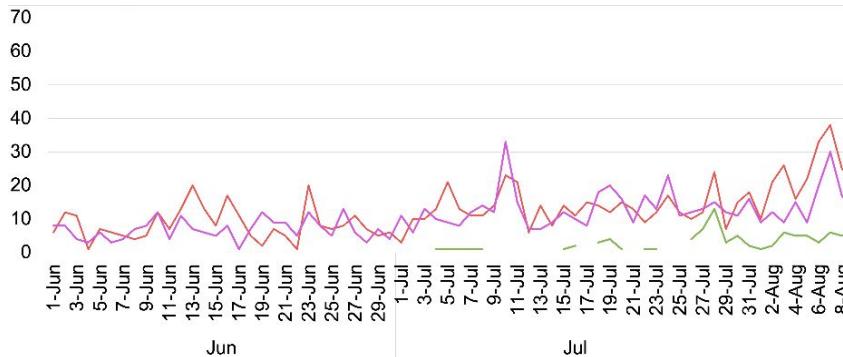
Are the differences in reporting connected to public information campaigns?

Accounting for seasonal variation



Question 2A

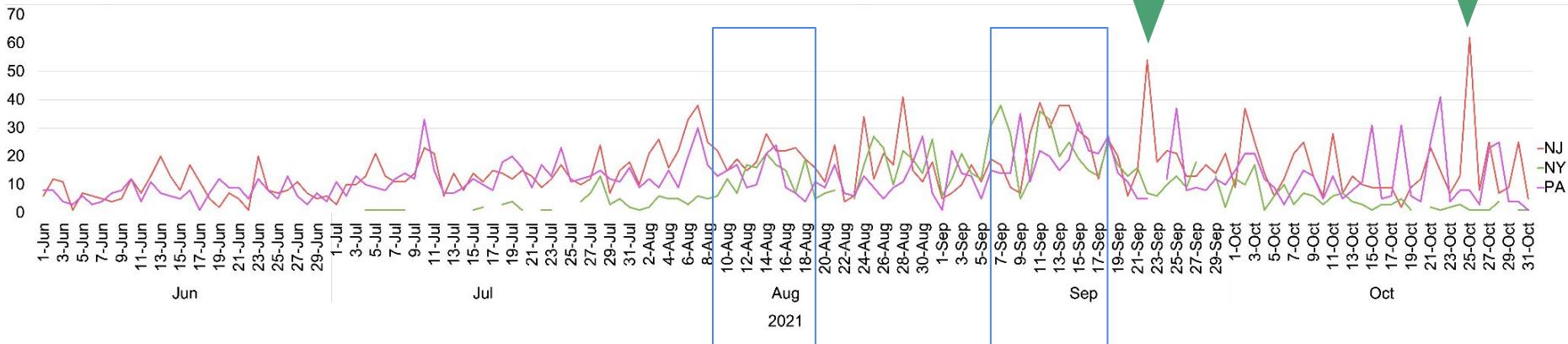
Reports jumped outside of our baselines of annual peak
SLF reporting times



Was NJ's spike linked to public information campaigns?

Question 2A

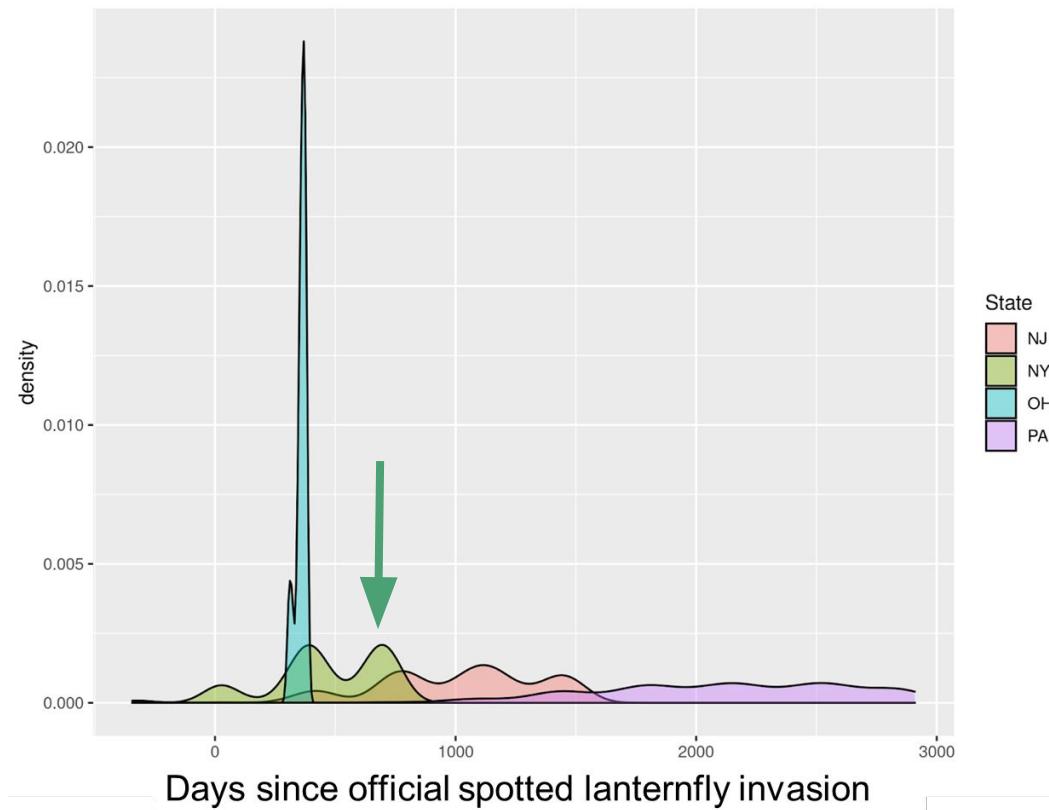
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Was NJ's spike linked to public information campaigns?

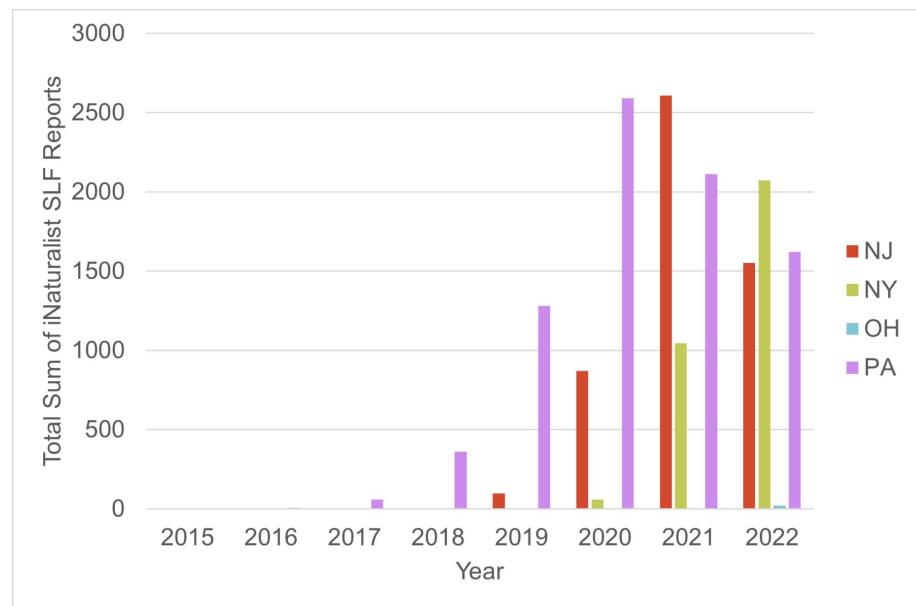
Question 2A

New York's SLF reports don't follow the expected arc either

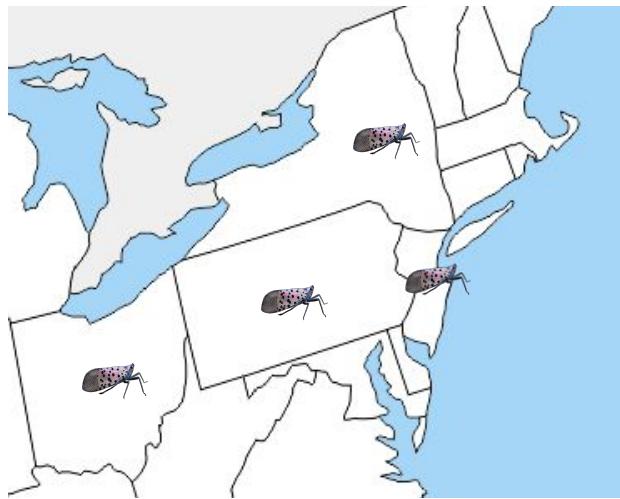


Summary of trends needing explanation:

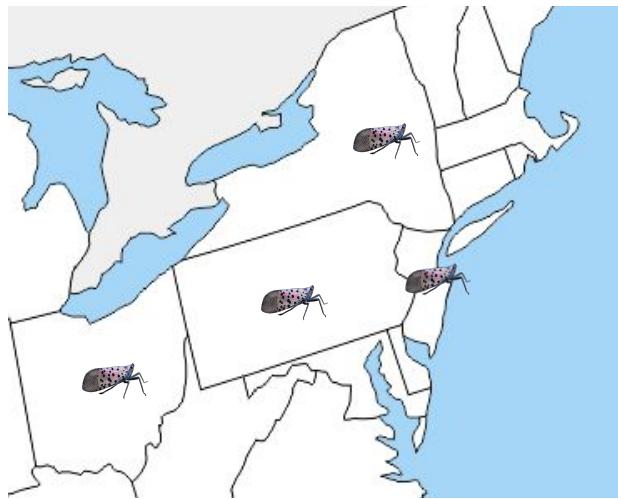
- NJ: two spikes outside of the “average” peak times
- NJ: has had highest number of reports
- NY: fastest reporting rates
- NY: early detection (2019)



When were key moments of public information campaigns vary across states?



= Collect campaign materials + analyze them for
content, impact, & date



Question 2B

New York Campaign



2,900+ engagement



1 react + 3 shares



2,700+ engagement

 The New York State IPM Program · September 9 · 

A population of Spotted lanternfly has been confirmed in Buffalo
<https://agriculture.ny.gov/.../state-agriculture...>

The New York State IPM Program joins NYS Department of Agriculture and Markets in asking all Western, Central, Upstate and Finger Lakes region residents to report sightings immediately at agriculture.ny.gov/reportSLF. Learn more about these destructive invasives at <https://nysipm.cornell.edu/> See more

   1.7K  193 comments  1K shares

Impersonal, Unemotive,
call to action

 The New York State IPM Program · June 21 · 

Spotted lanternflies are hatching. Learn how to spot and minimize the impacts of these invasive vineyard foes in this article from USA Today, featuring @NYSIPM's Brian Eshenauer.
<https://www.usatoday.com/.../spotted.../7646226001/>

 1  3 shares

Impersonal,
Unemotive, no call to action

 The New York State IPM Program · August 19 · 

NYC is the place to be this summer, just ask these dapper looking insects. While they're pretty to look at, spotted lanternfly can be devastating to trees and vineyards. Do your part to stop the spread--take care not to move live SLF from one location to another, and check your vehicle before leaving an infested area to ensure that no invasive hitchhikers are along for the ride.

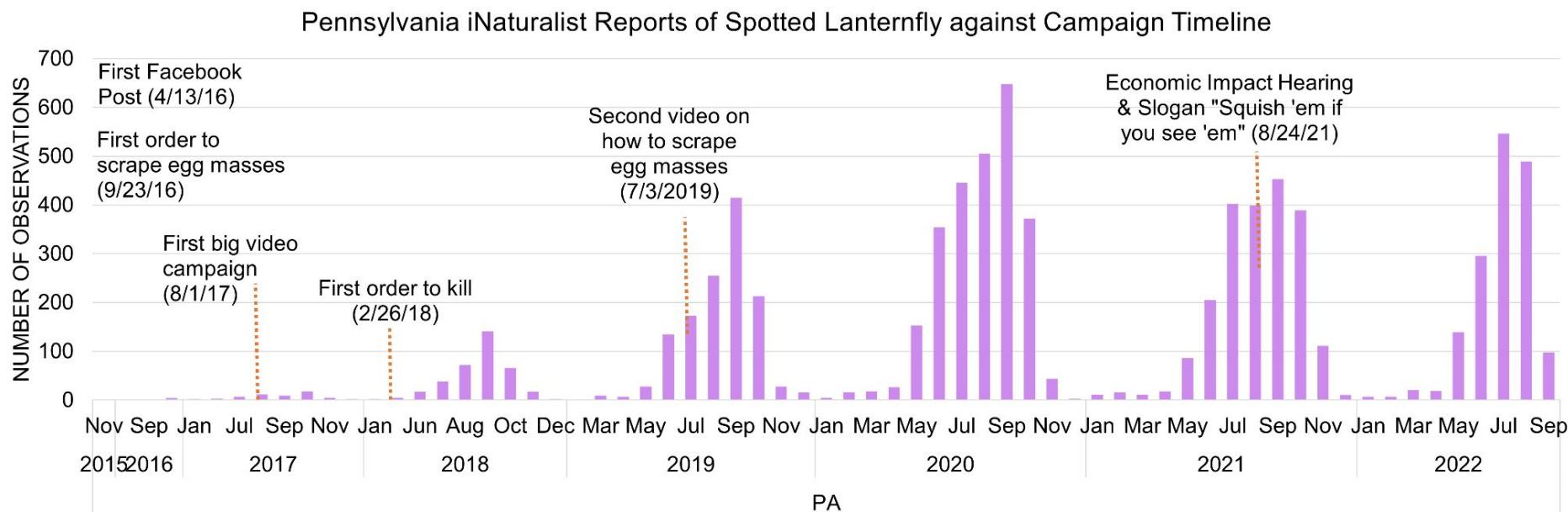
   1.1K  226 comments  315 shares

Personal, persuasive
Call to action

Question 2A

Are the differences in reporting connected to public information campaigns?

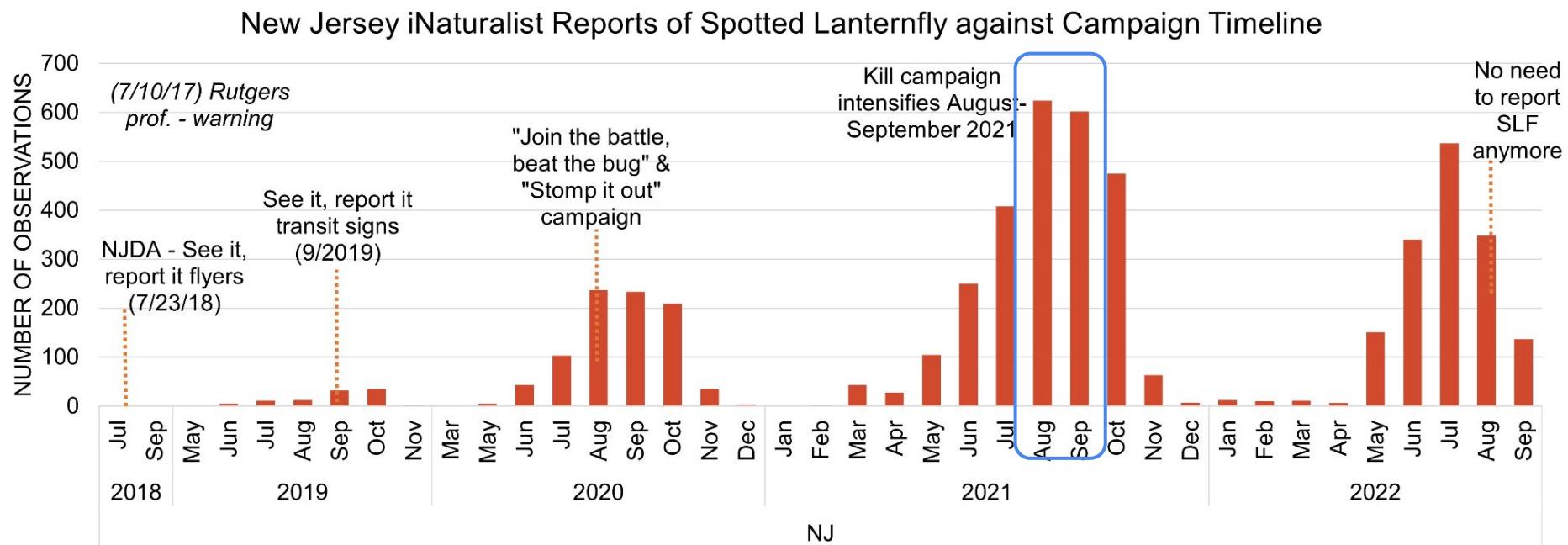
Pennsylvania



Question 2A

Are the differences in reporting connected to public information campaigns?

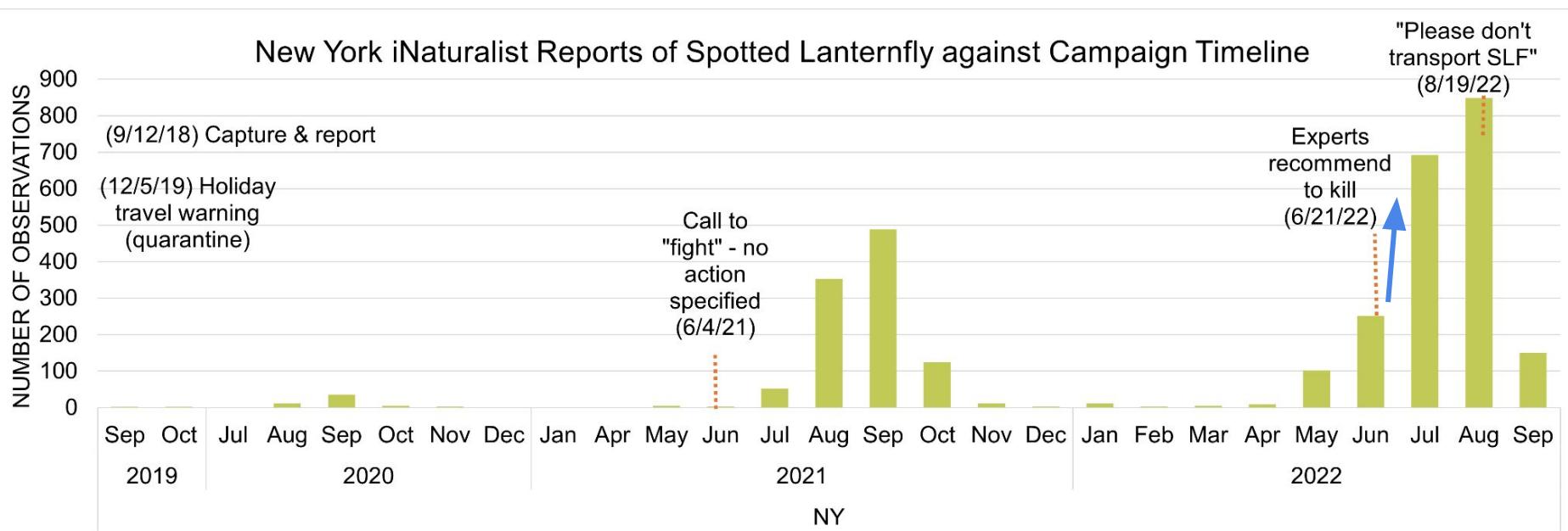
New Jersey



Question 2A

Are the differences in reporting connected to public information campaigns?

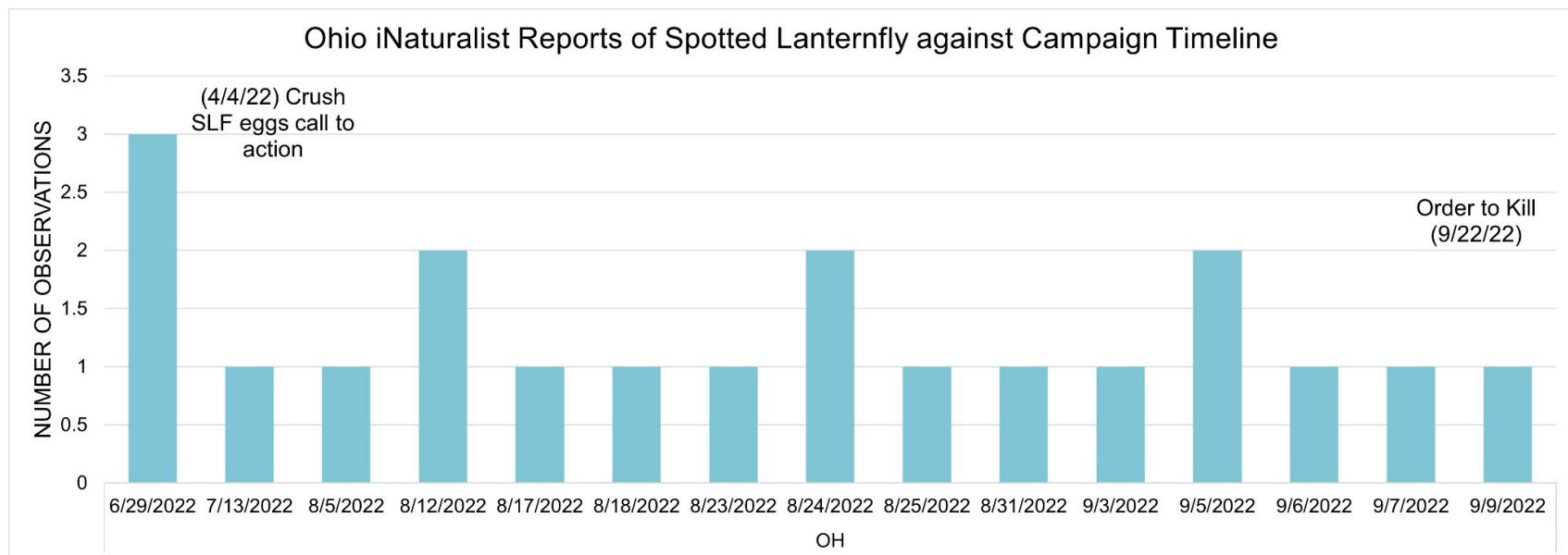
New York



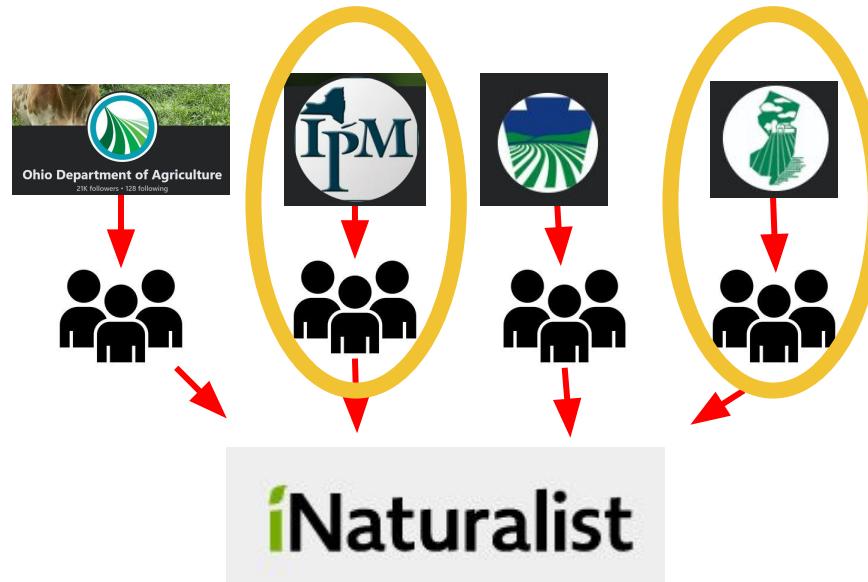
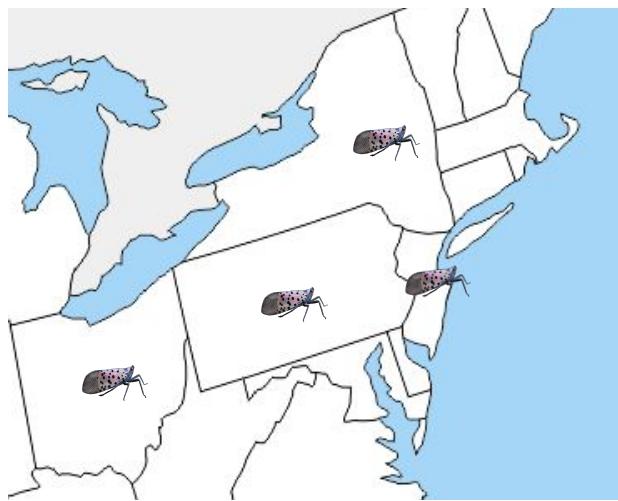
Question 2A

Are the differences in reporting connected to public information campaigns?

Ohio



How did public information campaigns vary across states?



NJ's SLF campaign



Most:

- consistent campaign
- diversity in social media platforms

More:

- followers than OH/PA

Also:

- strong, clear commands
- one of 2 states w/ slogans
- appeal to community
- culturally relevant

SEE IT, REPORT IT!



Spotted Lanternfly

What to do:
If you see egg masses, scrape them off, double bag and throw away.
You can also place the eggs into alcohol, bleach or hand sanitizer to kill them.

Collect a specimen:
Specimens of any life stage can be turned in to the New Jersey Department of Agriculture's lab for verification.

Take a picture:
With your GPS function turned on your smartphone or a camera with GPS, take a photograph of **ANY** life stage (including egg masses)

Submit picture to: SLF-plantindustry@ag.nj.gov

Report a site:
If you can't take a specimen or photograph, call and leave detailing your sighting and contact information

NJ Spotted Lanternfly Hotline at 1-833-223-2840 (BADBUG0)



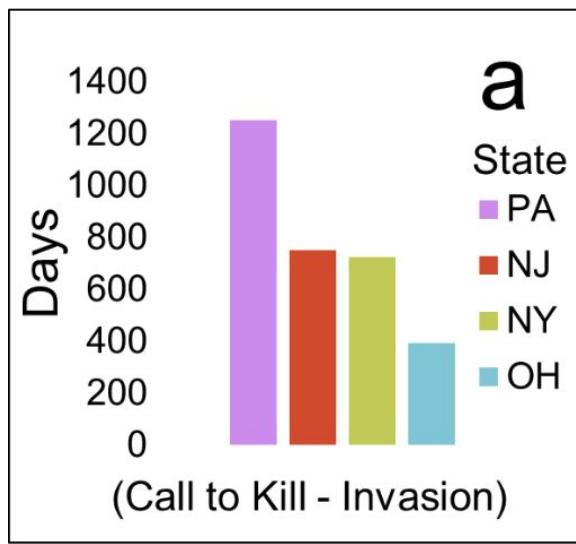
NJ's SLF campaign

Power of culture & slogans:

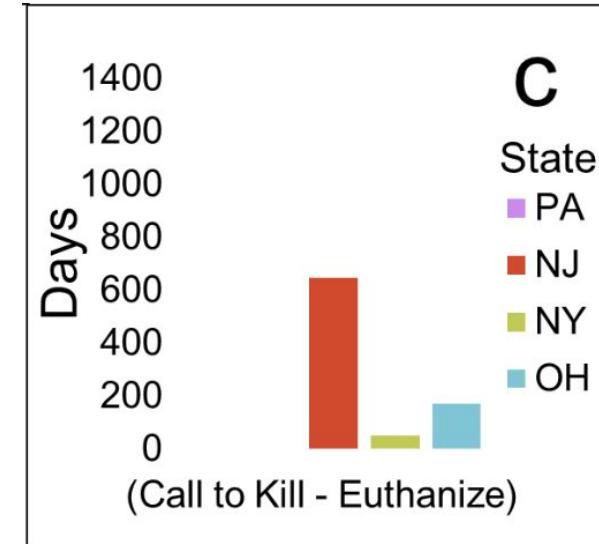
The MTA of NYC adopted the slogan “*If you see something, say something*” and reports of suspicious packages in New York grew from 814 in 2002 to 37,614 in 2006.

Question 2B

NY: What is driving the fluctuations? Is it campaigns?



We're adapting
more quickly...



NY: unafraid to
tell it like it is

NY: What is driving the fluctuations? Is it campaigns?

Help Stop the Spread of Spotted Lanternfly.

Scan the QR code to learn how.



Have You Spotted
THE SPOTTED LANTERNFLY?

Department of Environmental Conservation Agriculture and Markets Parks, Recreation and Historic Preservation

www.dec.ny.gov



This invasive insect from Asia threatens the health of New York's agricultural crops and forests. Help protect our resources by learning how to identify and report infestations of this destructive pest.

WHAT TO DO:
The spotted lanternfly is spread when egg masses are moved.

CONTAMINATED EGG MASS

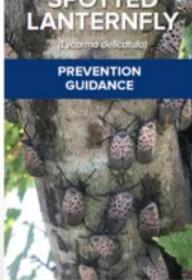
INCUBATING EGG MASS

- Search on tree trunks, stone surfaces, vehicles, lawn furniture, and any smooth surface. If you find a white egg mass with a gray puffy-like covering on top of them, Tree of Heaven is the preferred egg laying site.
- Remove masses from the surface. Be sure to remove any small, tan or brown egg from under the waxy coating.
- Double bag and trash, burn, or submerge the eggs in soot or hand sanitizer.

These simple steps can reduce the spread of the Spotted Lanternfly!

SPOTTED LANTERNFLY
(Lycorma delicatula)

PREVENTION GUIDANCE



SPOTTED LANTERNFLY
(Lycorma delicatula)

FREQUENTLY ASKED QUESTIONS (FAQ)



Outreach:
began two years before invasion
(2018)

Question 2B

NY: What is driving the fluctuations? Is it campaigns?



More life stages, no repetitive posters?

Question 3

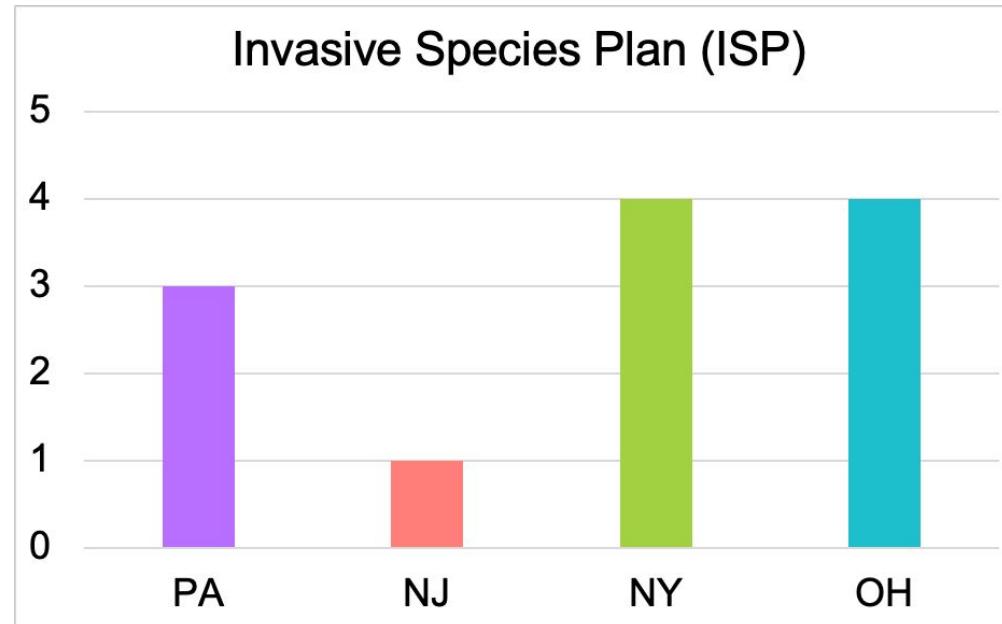
How do states differ in their invasive species action plans? Does it explain outreach success?

Hypothesis: NJ + NY will have formal, developed, publicly accessible invasive species action plans.

PA + NJ will emphasize public outreach the most in their plans.

Question 3

NY + OH had accessible plans, PA had a public plan that was inaccessible, NJ has no formal public plan



All states emphasized public outreach as a pillar to their spotted lanternfly response

STATES WITH PUBLIC OUTREACH PLANS

- PA, NJ, NY, OH



Overview and Future Directions

Clear goals -> public more likely to respond positively

Timeline is critical, calls to action should be decisive and early

Social science could become an even larger part of invasive species management

More unified reporting is needed



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