

# Status of *T. japonicus* redistribution releases in the eastern USA

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**USDA** United States Department of Agriculture National Institute of Food and Agriculture  
Specialty Crop Research Initiative

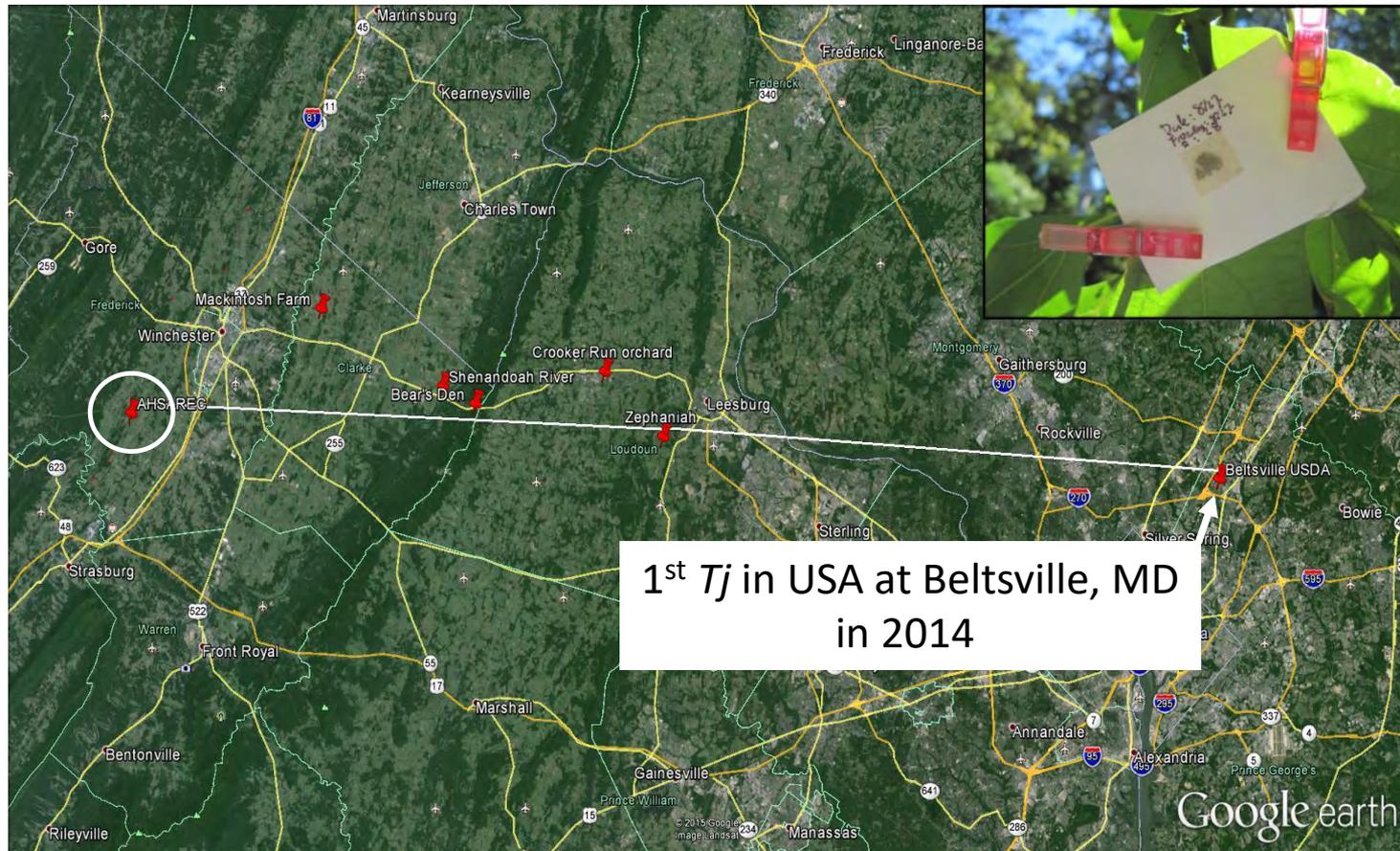
*Collaborating Institutions*

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**NC STATE UNIVERSITY**  
**PennState**  
**OSU** Oregon State University  
**UNIVERSITY OF MARYLAND**  
**UNIVERSITY OF GEORGIA**  
**WASHINGTON STATE UNIVERSITY**  
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# Baseline sampling in Virginia: 2015

- West-east transect using sentinel eggs resulted in 1<sup>st</sup> *Tj* detections (2) in VA via at Virginia Tech research station in Frederick Co.



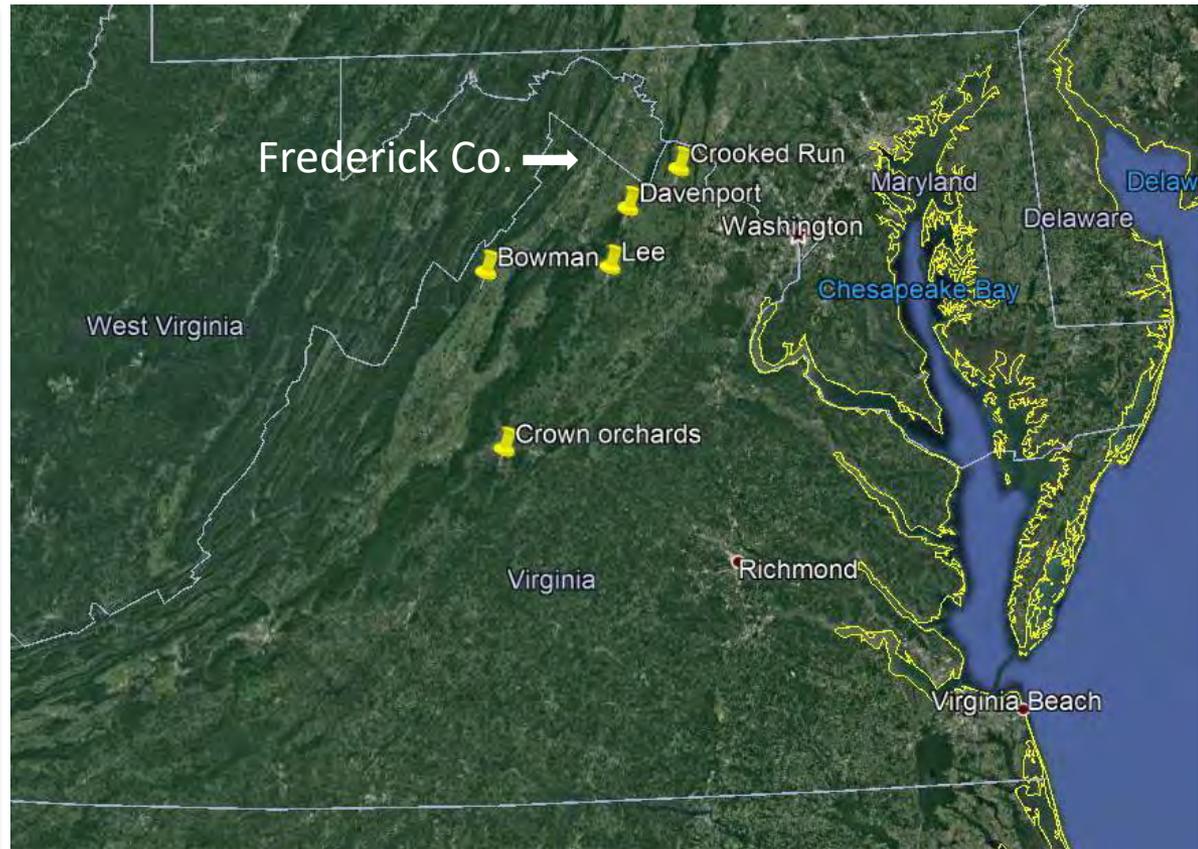
# Sampling *Tj* using YSC: 2016 -2017

- Destructive sampling for egg masses and vertical transects
- Most BMSB motiles, BMSB eggs, and *Tj* detections in mid- and upper-canopy Quinn et al. 2019. Environ. Entomol. 48: 173-180
- Documented the effectiveness of yellow sticky card (YSC) and of YSC deployed in mid-canopy atop bamboo poles



# Baseline sampling in VA: 2017

- 51 *Tj* detected via YSC in Frederick Co., VA
- Five sites outside of Frederick Co.
- 3 YSC per site for 2 weeks from mid- to late Aug
- No *Tj* detected outside of Frederick Co.

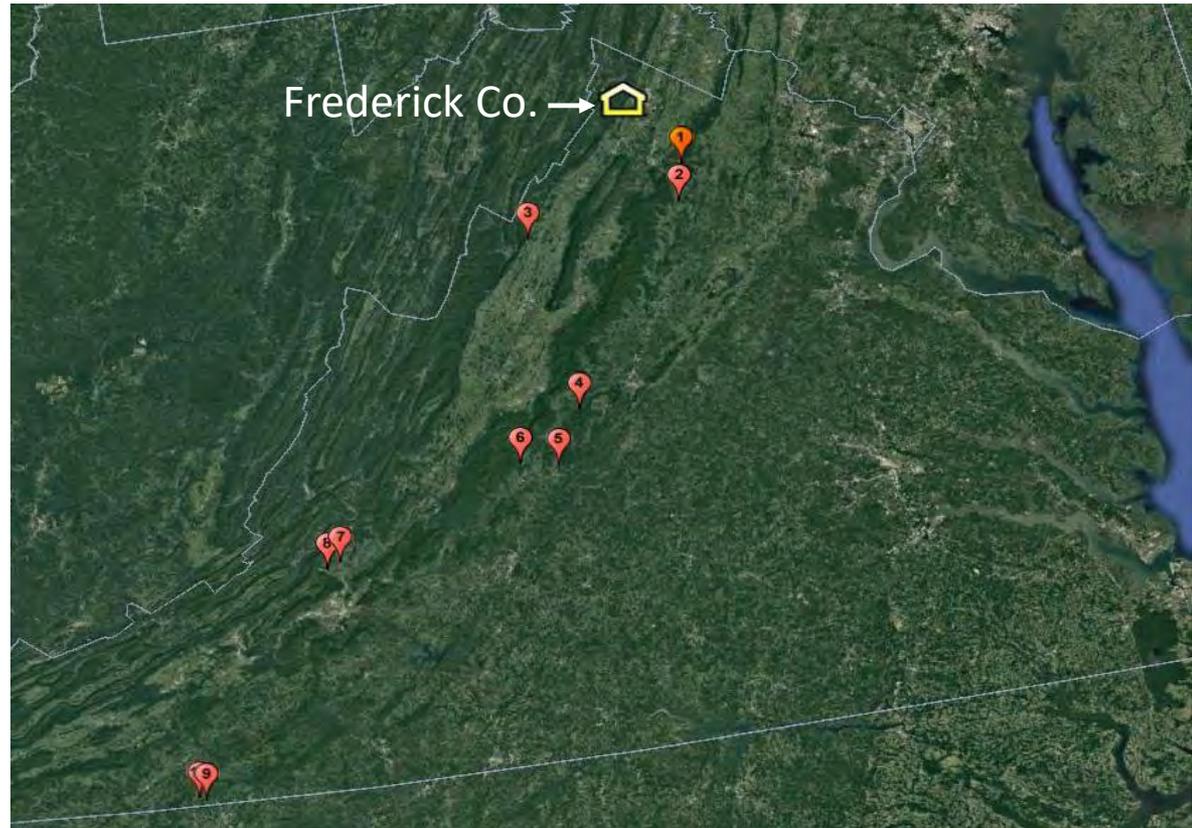




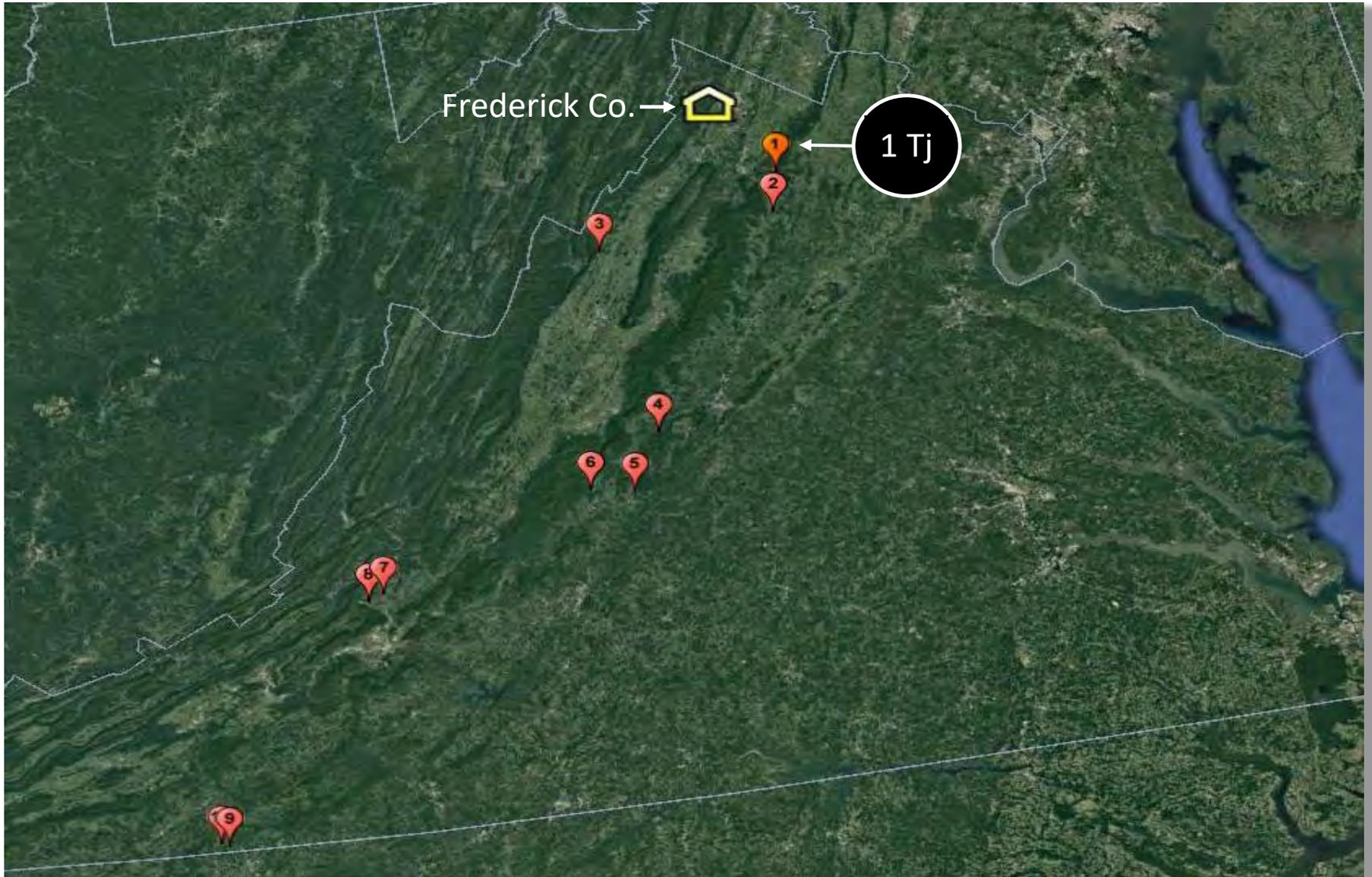
- Increasingly frequent detections in Frederick Co. since 2016
- In 2018, captured 234 *Tj* in Frederick Co. via YSC in mid-canopy of host trees

# Release sites and pre-release sampling: 2018

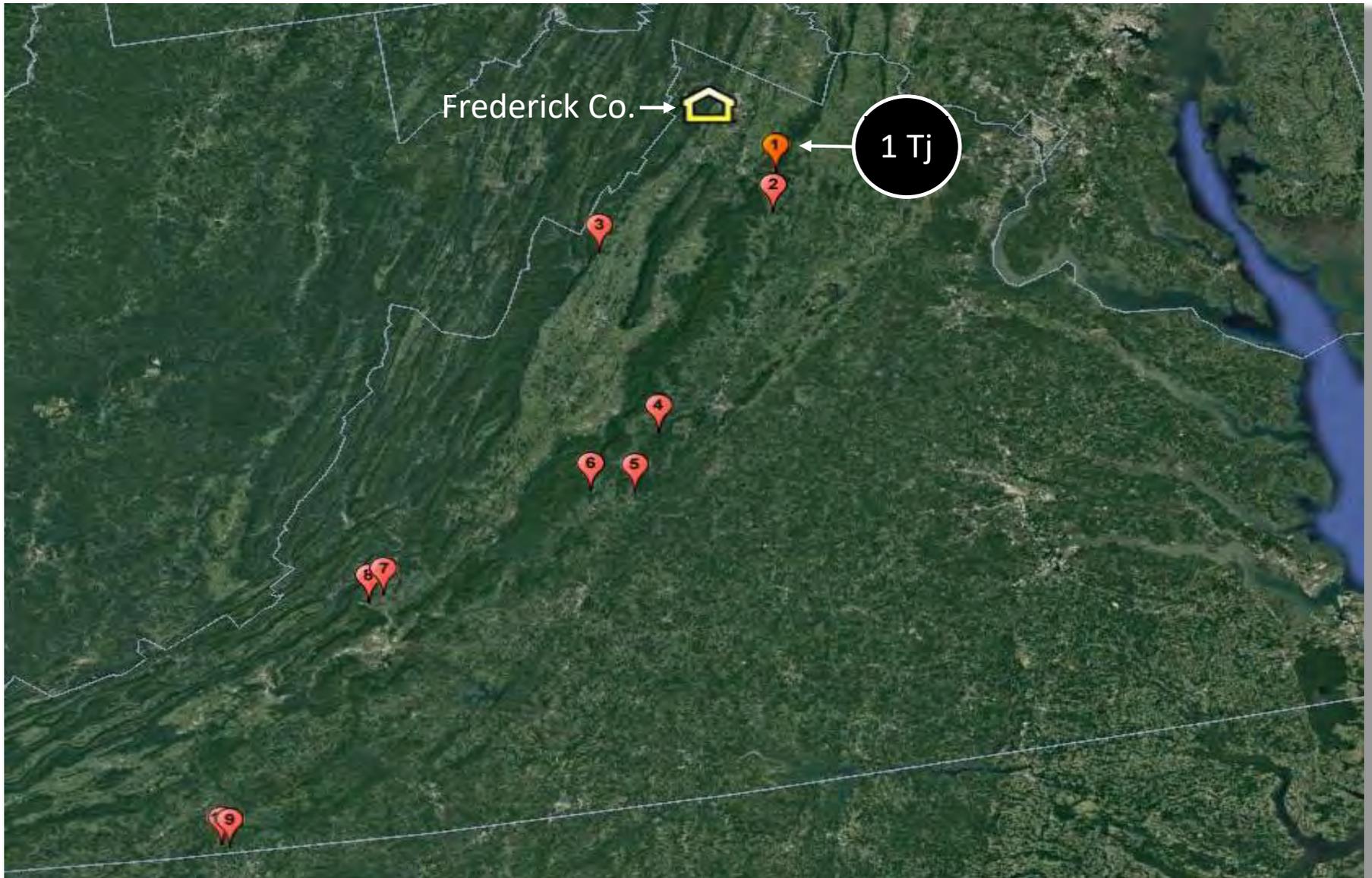
- 10 sites from northern to SW VA
- Selected based on reports of high BMSB populations
- Pre-release monitoring using 3 YSC/site
- Two, 7-day trapping intervals from late May to mid-Jun



# Pre-release sampling results



The 2<sup>nd</sup> *Tj* detection outside of Frederick Co. in VA;  
1st was in Arlington by D. Weber in 2016.



# Releases in Virginia: 2018

- Eggs from lab colony and NJ
- Frozen eggs held at  $-80^{\circ}\text{C}$
- 12 parasitized egg masses/site/release x 2 releases
- Egg masses on cardstock attached to Petri dish in mesh cage

## June releases

- 50:50 fresh:frozen
- Frozen: max 8-wk-old
- Parasitized Jun 6
- Released Jun 11 - 15

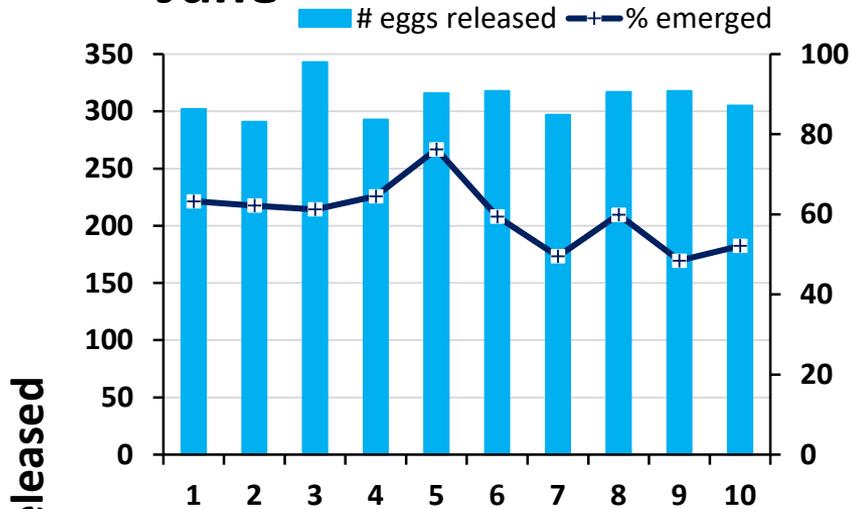


## July releases

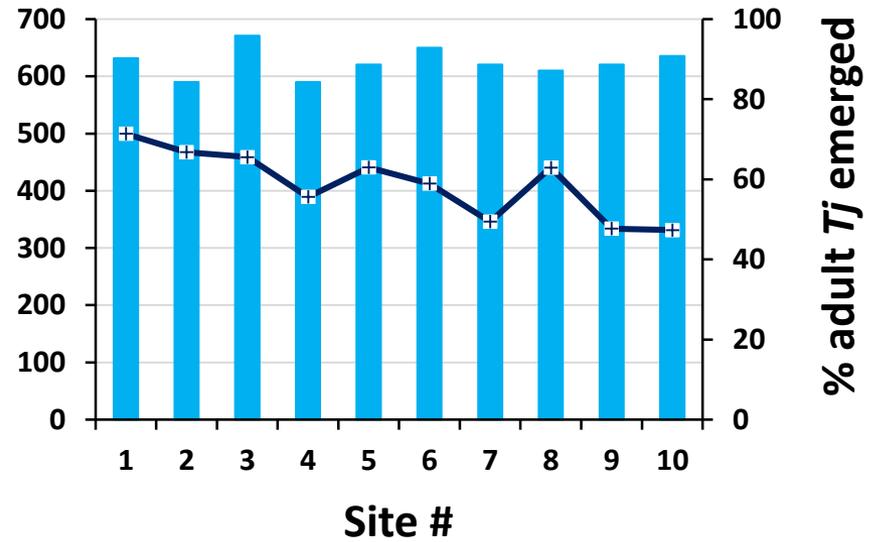
- 100% frozen
- Max 5.5-wk-old
- Parasitized Jul 17
- Released Jul 24 - 26



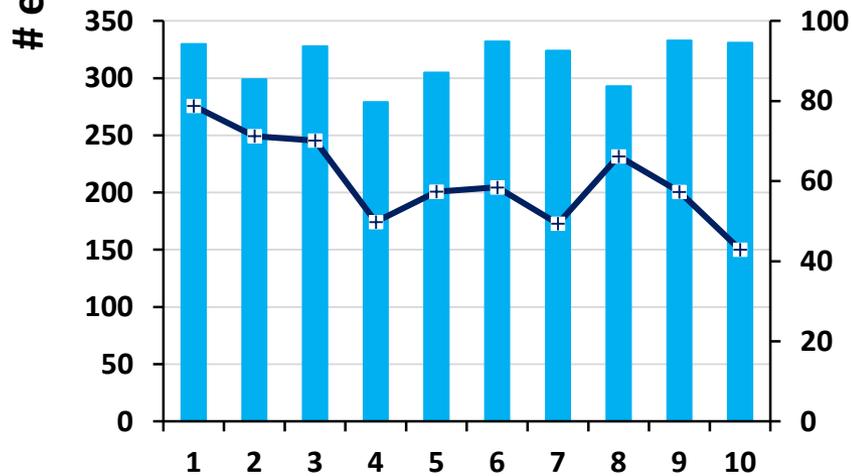
## June



## June + July



## July



## Mean emergence

June: 59.7% (48.4 – 76.3%)

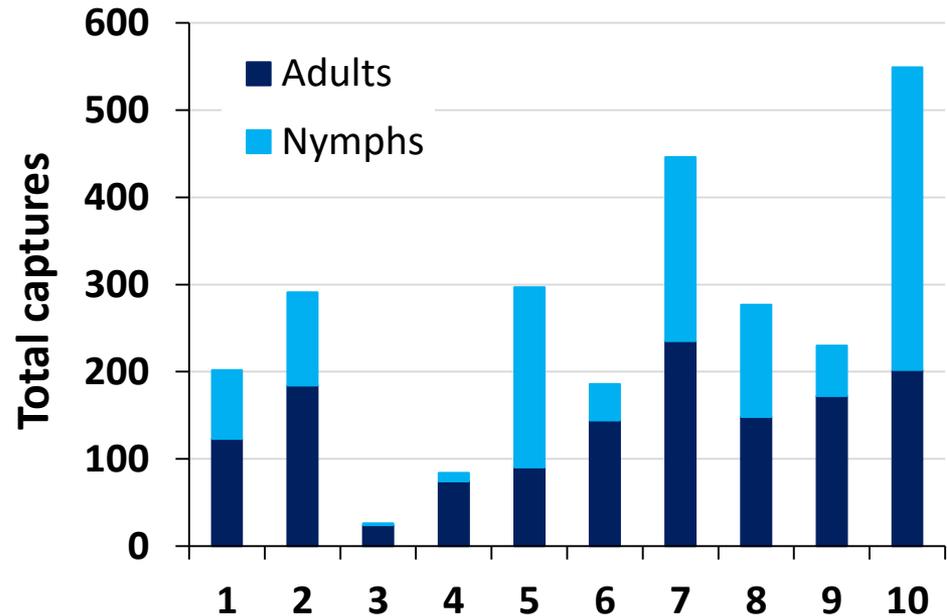
July: 60.2% (42.9 – 78.8%)

June + July: 59.9% (47.3 – 71.4%)

# Post-release sampling



- 3 YSC/site
- 3 BMSB sticky traps/site
- Traps replaced weekly for 2 wk between Aug 14 - 31



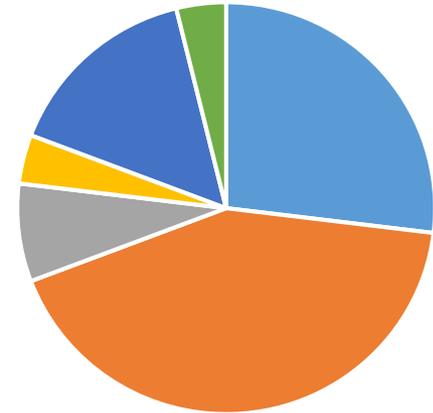
High adult and nymph counts in late Aug suggest eggs present when *Tj* released at many sites. May bode well for *Tj* establishment.

# No *Tj* captured during post-release sampling



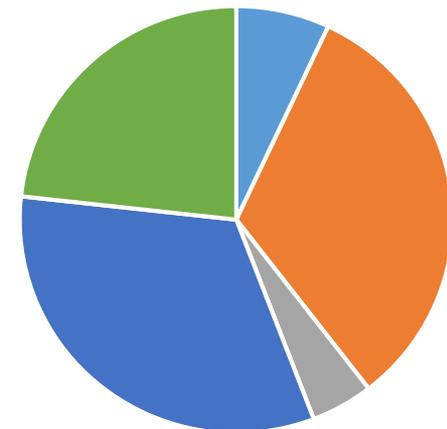
Pre-release (n = 26 specimens)

- Te. podisi
- Tr. brochymenae
- Tr. thyantae
- Tr. japonicus
- Tr. euschisti
- Gryon spp.



Post-release (n = 43 specimens)

- Te. podisi
- Tr. brochymenae
- Tr. thyantae
- Tr. euschisti
- Gryon spp.



# Baseline sampling in New York: 2016 - 2017



- **2016:** First *Tj* detection via sentinel eggs
- **2017:** Sentinel eggs from mid-Jun to Oct
- 2 egg masses/site/week at 9 sites subsequently used for redistribution
- Detections in Jul at the 2016 site (enabled *Tj* lab culture)
- Otherwise, no pre-release detections in 2017

# Parasitized egg mass deployment: 2017

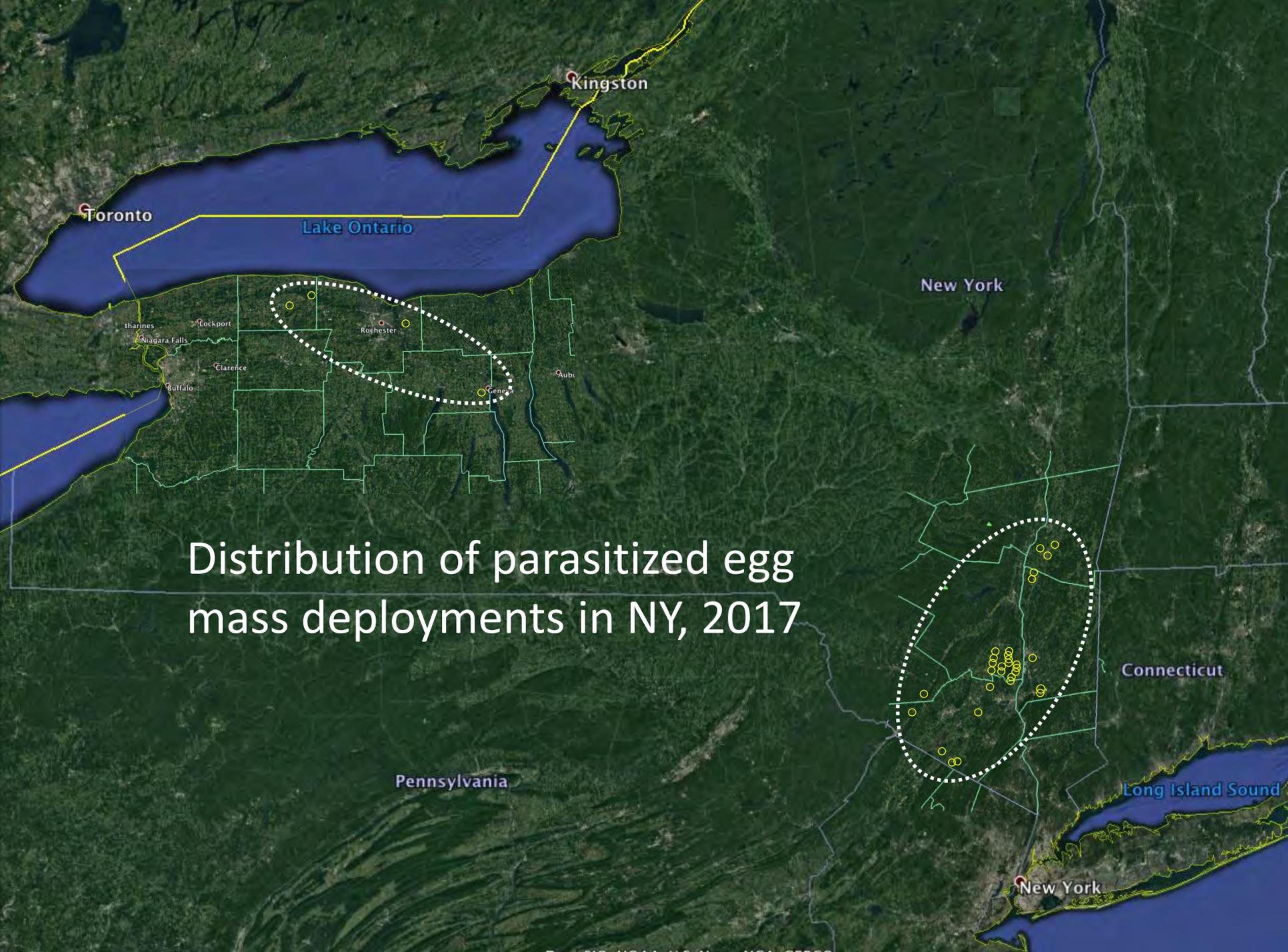


- Timing of release approval plus  $T_j$  and egg mass availability dictated release timings
- Deployed 15 Sep to 6 Oct
- Eggs for parasitizing held at  $-80^{\circ}\text{C}$  for a few days to a few months
- Citizen scientist volunteers sent parasitized eggs attached to Petri dish in mid-Sep

# Parasitized egg mass deployment: 2017



- PJ deployed parasitized eggs at other sites; stapled to BMSB host foliage
- 2-3 egg masses/site  
mean = 72 eggs/site  
range = 54 – 89 eggs/site
- Deployed at 32 sites on 25 farms  
(Hudson Valley, western NY)



# Distribution of parasitized egg mass deployments in NY, 2017

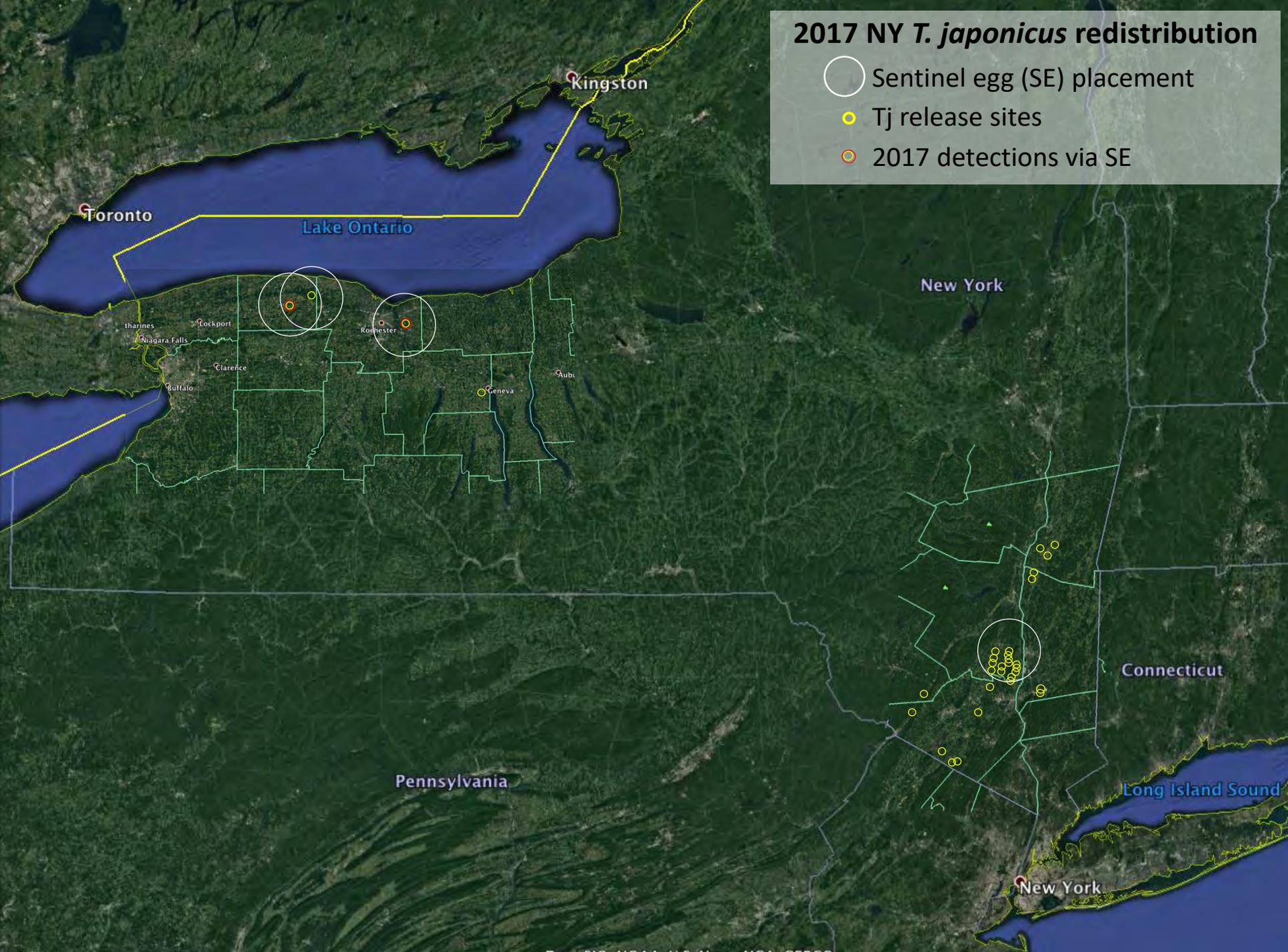
# Post-release egg inspection and sampling: 2017



- 23.4% emergence of adult *Tj*
- Majority were parasitized but unsuccessful development
- Sentinel eggs at 9 redistribution sites
- *Tj* detections from sentinel eggs at 2 release sites in western NY
- Sentinels ~30 m from release points

# 2017 NY *T. japonicus* redistribution

- Sentinel egg (SE) placement
- Tj release sites
- 2017 detections via SE



# Post-release sampling via sentinel eggs: 2018



- Sentinel eggs at 9 redistribution sites from 23 Jun to 15 Sep
- 2 egg masses/site/week
- No *Tj* recovered, including site where detected in 2016 and 2017

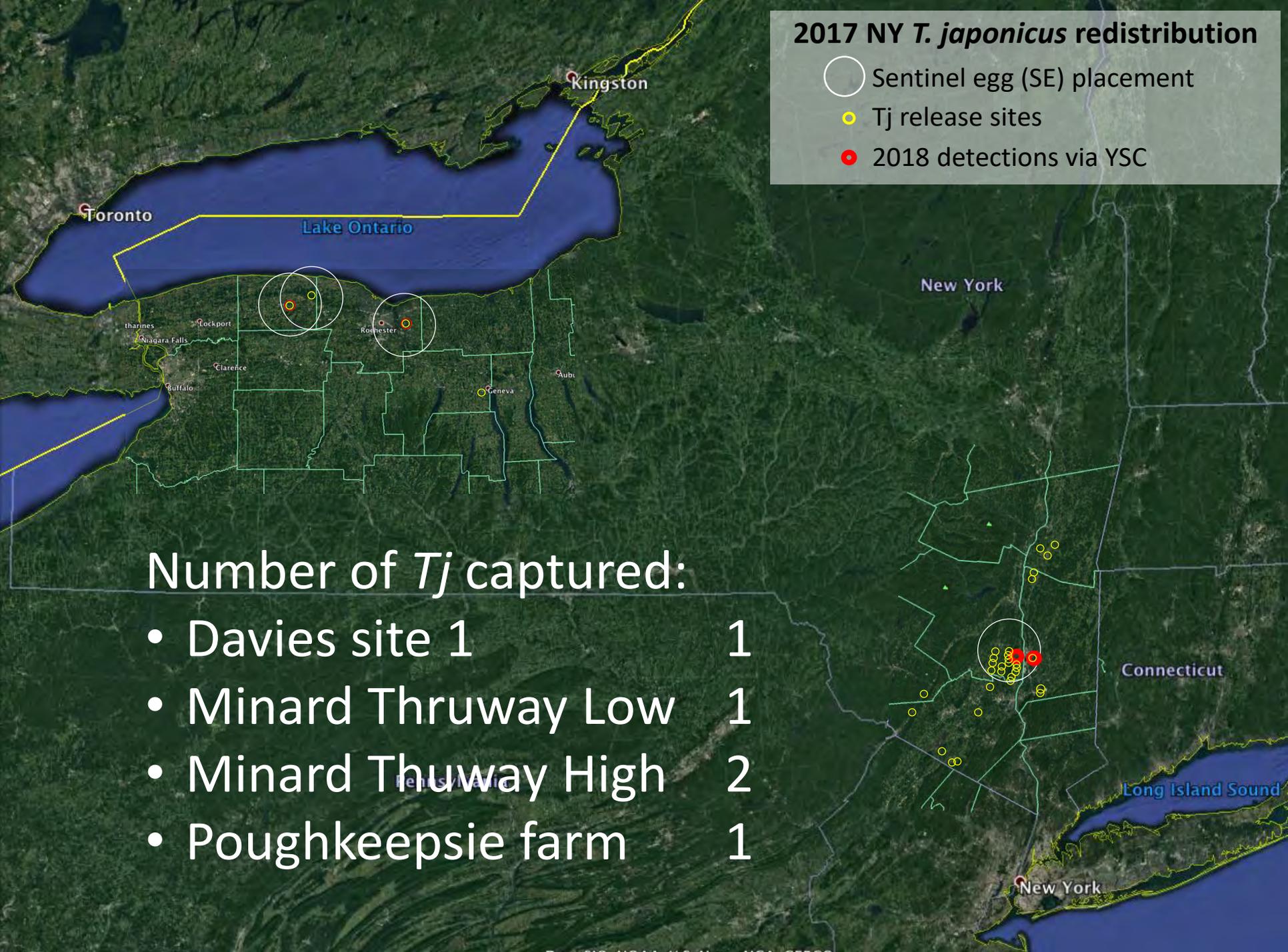
# Post-release sampling via YSC: 2018



- AlphaScents traps at same 9 sites
- 2 traps/site replaced bi-weekly
- Suspended in lower canopy or deployed in mid- canopy using bamboo poles

## 2017 NY *T. japonicus* redistribution

- Sentinel egg (SE) placement
- Tj release sites
- 2018 detections via YSC



### Number of *Tj* captured:

- Davies site 1 1
- Minard Thruway Low 1
- Minard Thruway High 2
- Poughkeepsie farm 1

# Baseline sampling in Ohio: 2017 - 2018

## 2017:

- 2 of 499 sentinel egg masses at the Columbus research farm yielded *Tj* in early Aug
- No detections at 3 commercial farms (119 egg masses)

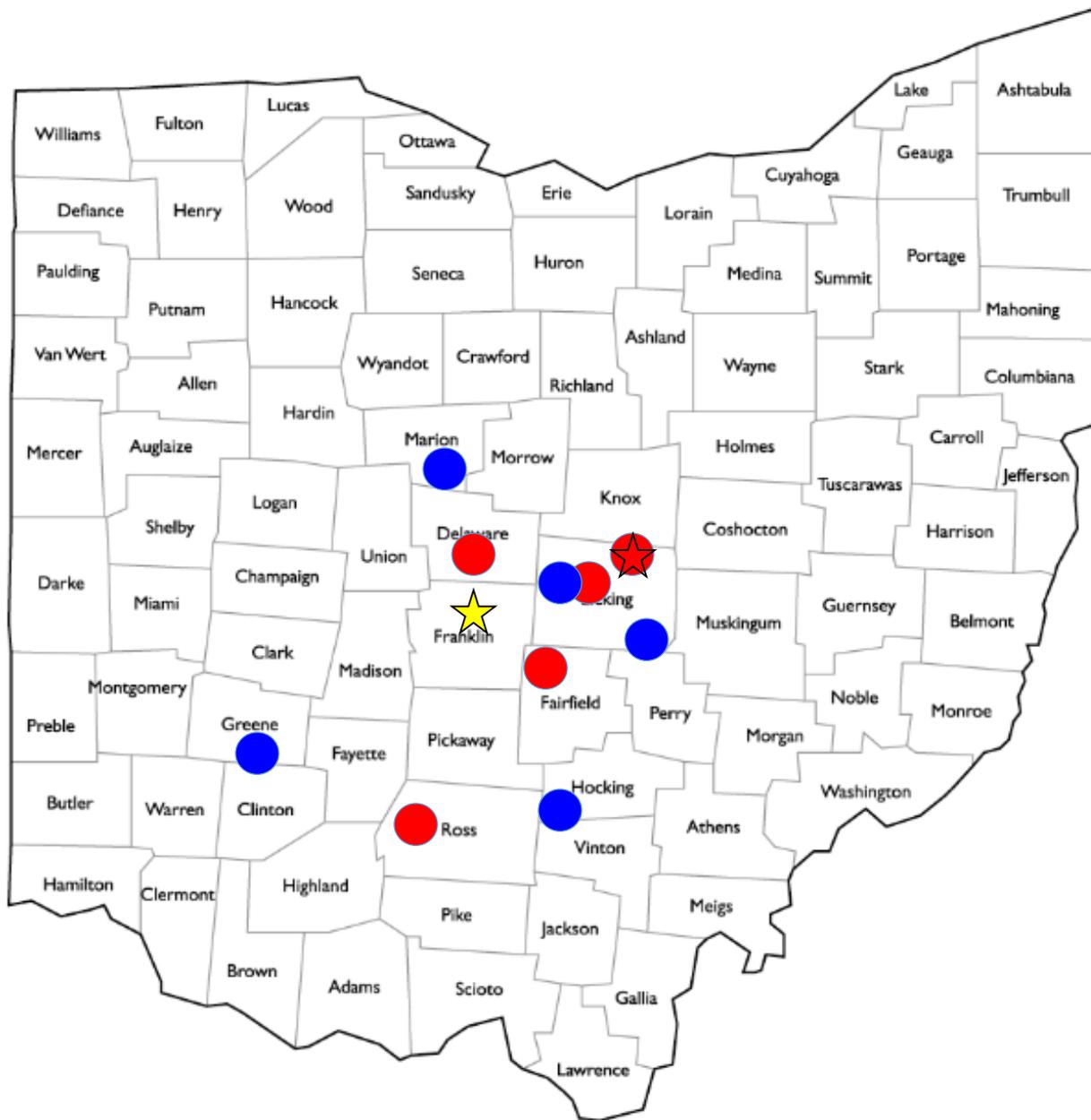
## 2018:

- 30 *Tj* detections (832 egg masses) at the Columbus research farm
- 1<sup>st</sup> detection in late May used to start lab colony



# Releases and pre- and post-release sampling in Ohio, 2018

Pre-release sampling at 12 farms (15 egg masses/farm)	Jun	No Tj detections
15 parasitized egg masses/farm in mesh bags at 5 commercial farms No release controls at 5 farms BMSB lure placed in release area at all 10 farms	Jul	
<b>Post-release</b> sampling at 10 farms (3-21 egg masses/farm)	Aug-Sep	Tj detected at 1 release farm



### Treatments:

**● = release**

**● = no release**

**★ = initial find in 2017**

**★ = post-release find**

# Future plans

## VIRGINIA

- Continue monitoring at release sites
- Use YSC in mid-canopy exclusively
- Additional releases uncertain
- May move toward releasing adults
- Issue with freezing NJ egg masses
- *Tj* monitoring will incorporate phenology and habitat effects data

# Future plans

## **NEW YORK**

- Continue monitoring at previous release sites
- May use YSC exclusively
- Additional releases planned for sites where releases deemed insufficient in 2017
- May move toward releasing adult

## **OHIO**

- Re-sample same 10 sites
- Additional releases
- Add new paired sites if egg supply adequate