

HWA Biological Control: Landscape scale implementation

Nicholas J. Dietschler,

Tonya D. Bittner, Elizabeth D'Auria, Henry Myers, Sophie Nasrallah,
Matthew J. Del Buono, Alannah McGarry, Keira Borello, Mark C. Whitmore
and many collaborators

Cornell
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College of Agriculture
and Life Sciences

**Forest Ecosystem Monitoring
Cooperative Conference**

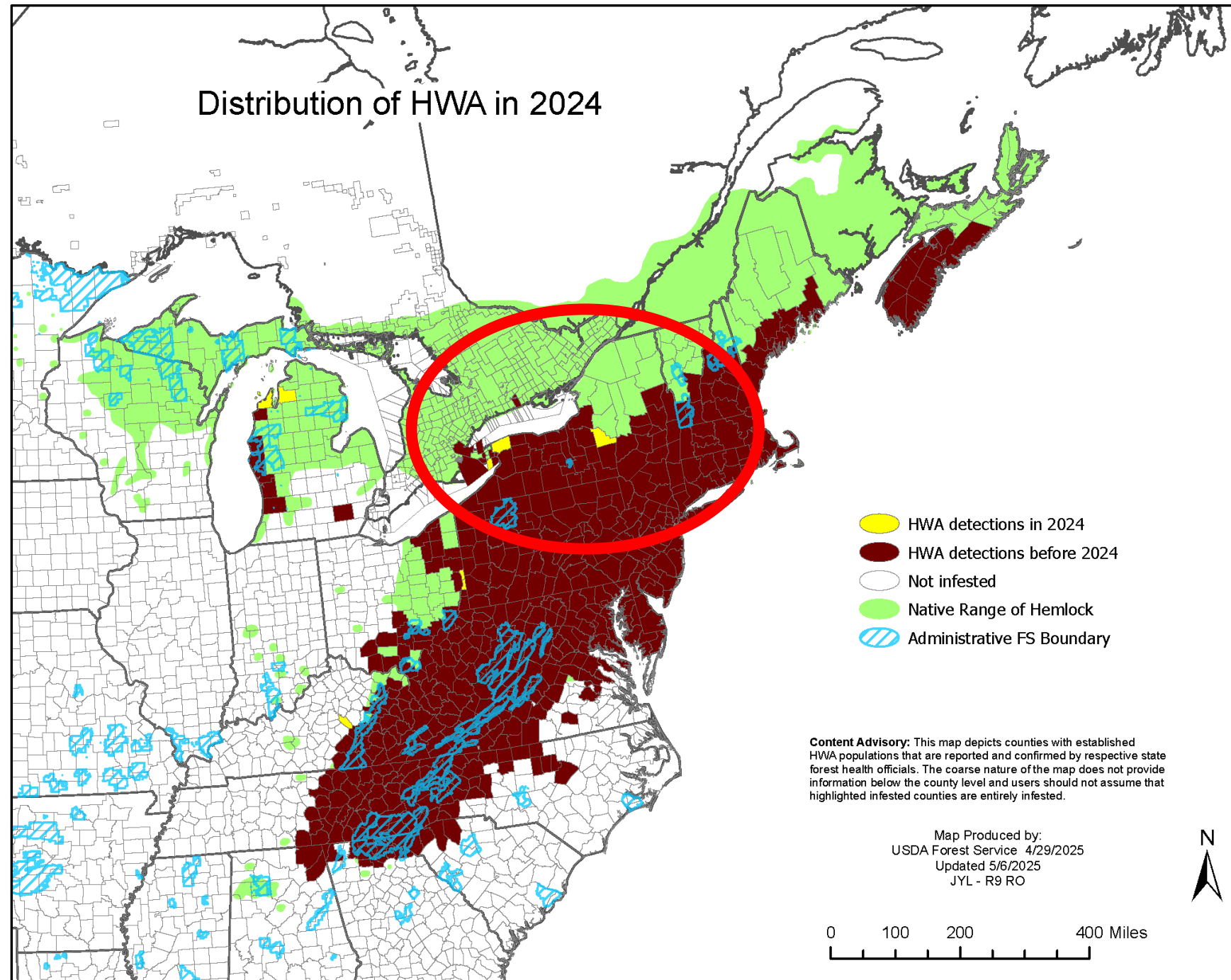
November 20, 2025

University of Vermont, Burlington VT

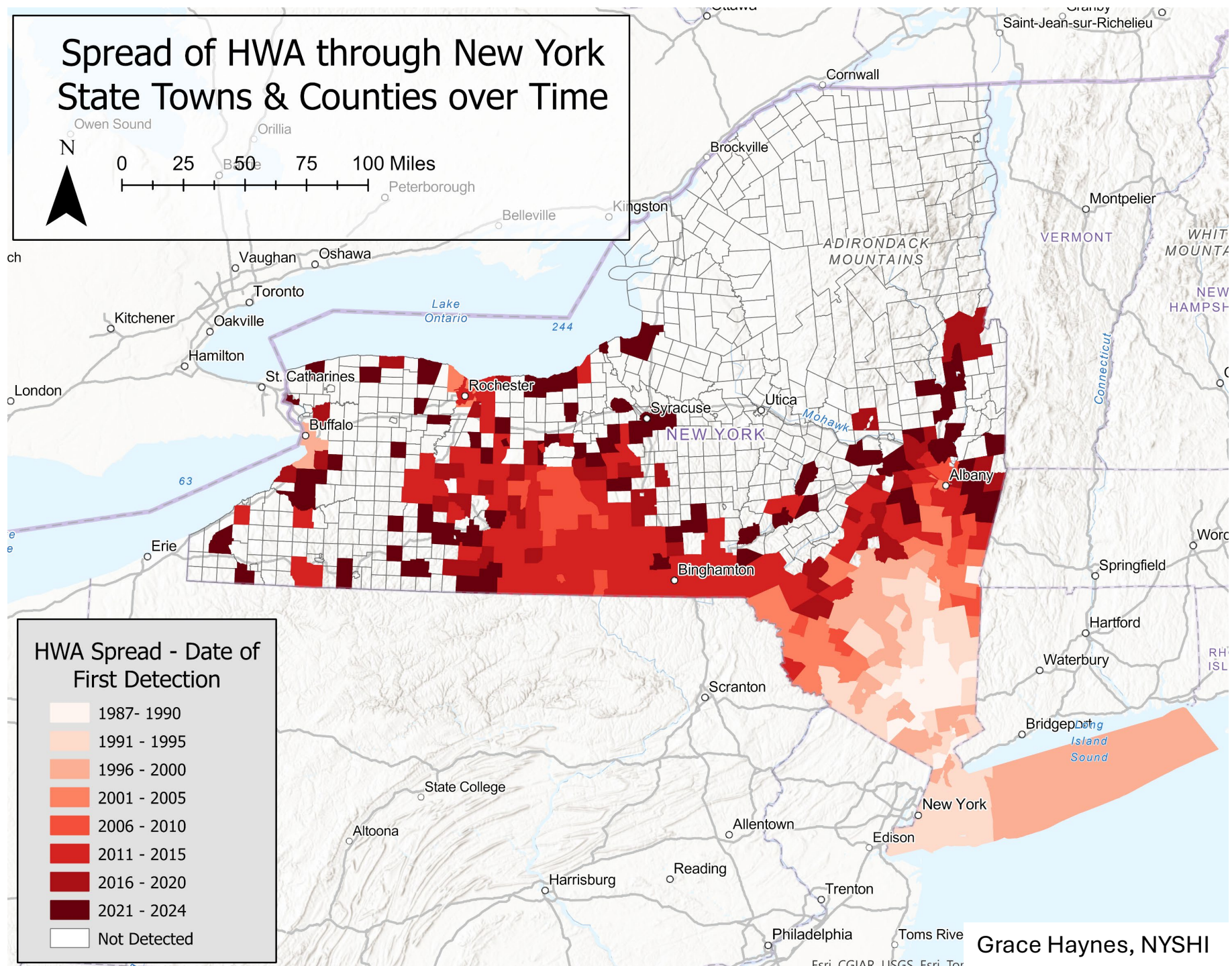
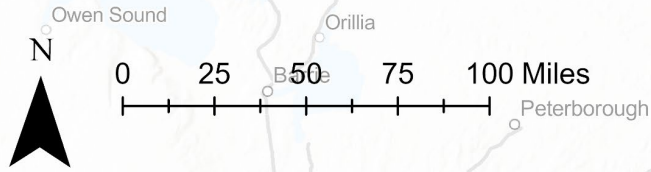


Hemlock woolly adelgid

Adelges tsugae



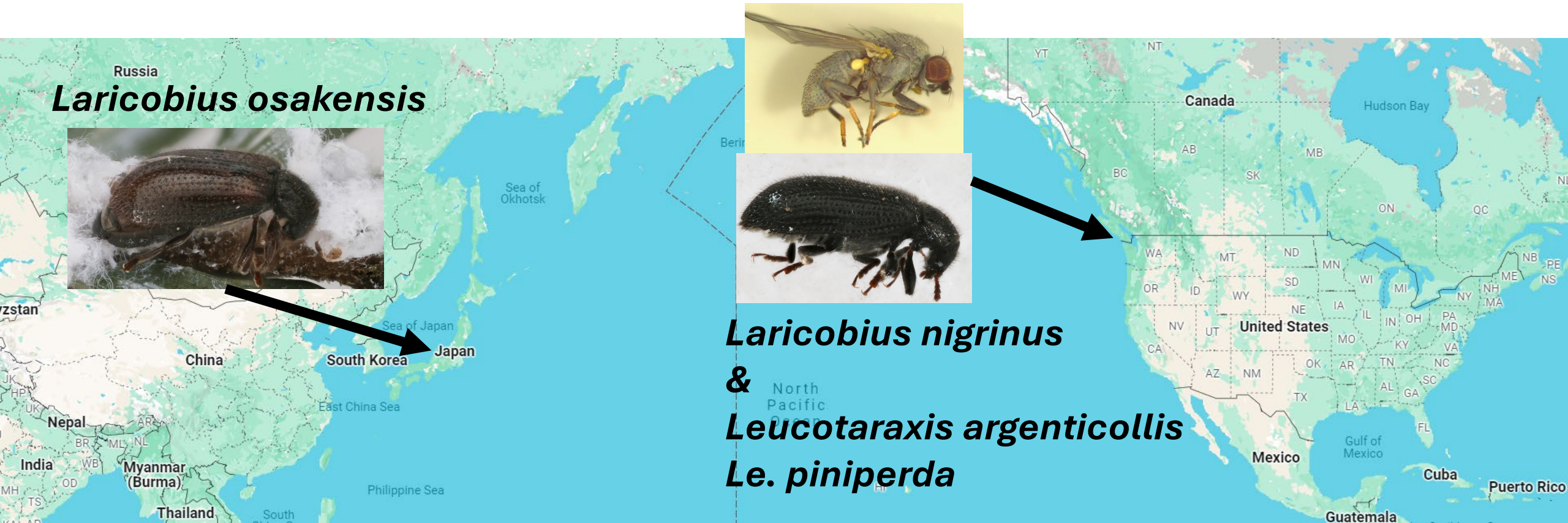
Spread of HWA through New York State Towns & Counties over Time

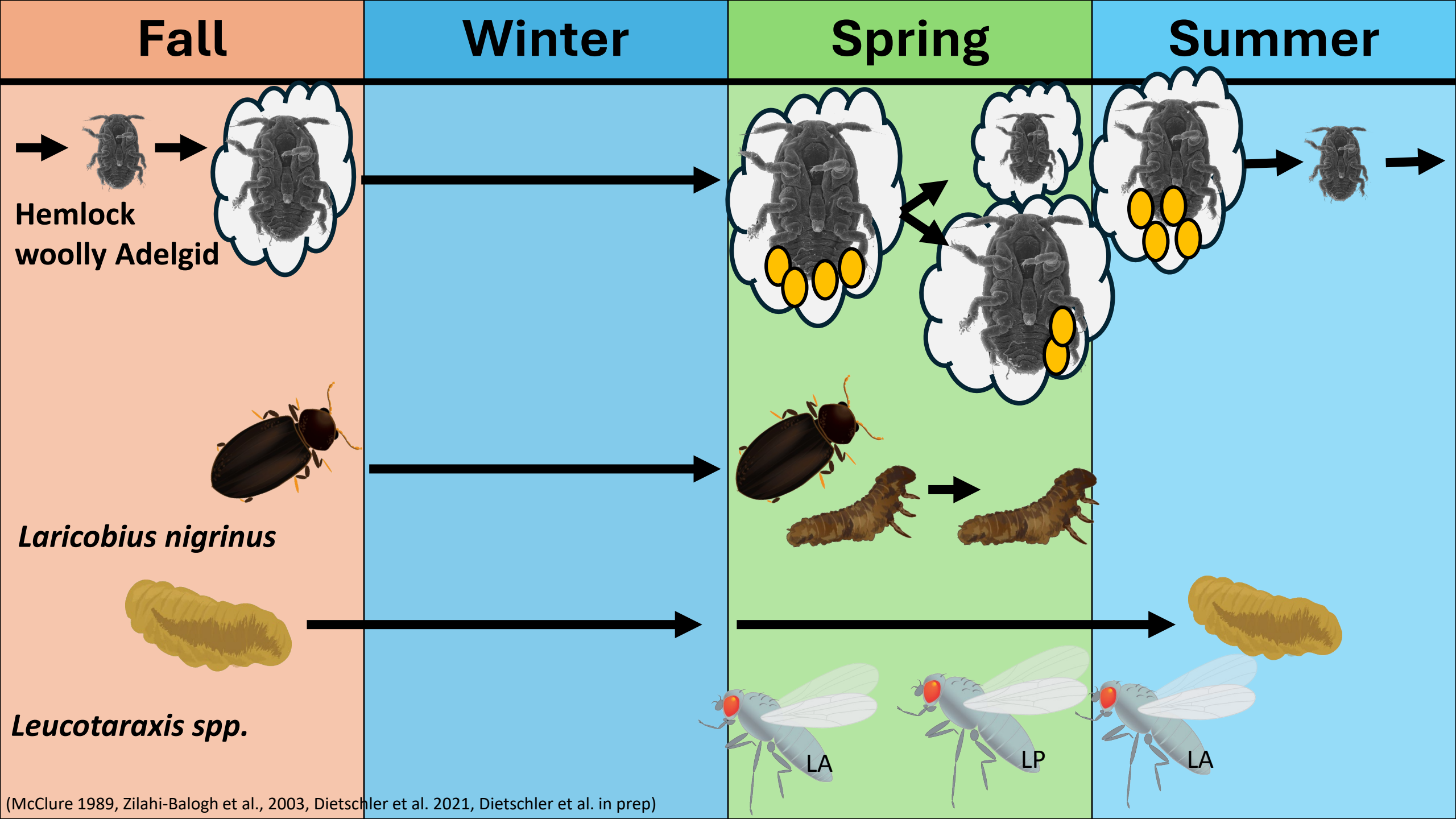


HWA Spread - Date of First Detection

- 1987 - 1990
- 1991 - 1995
- 1996 - 2000
- 2001 - 2005
- 2006 - 2010
- 2011 - 2015
- 2016 - 2020
- 2021 - 2024
- Not Detected

Biological Control Predators



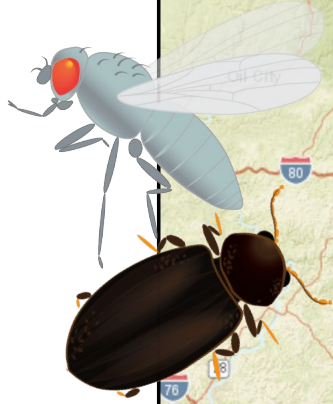
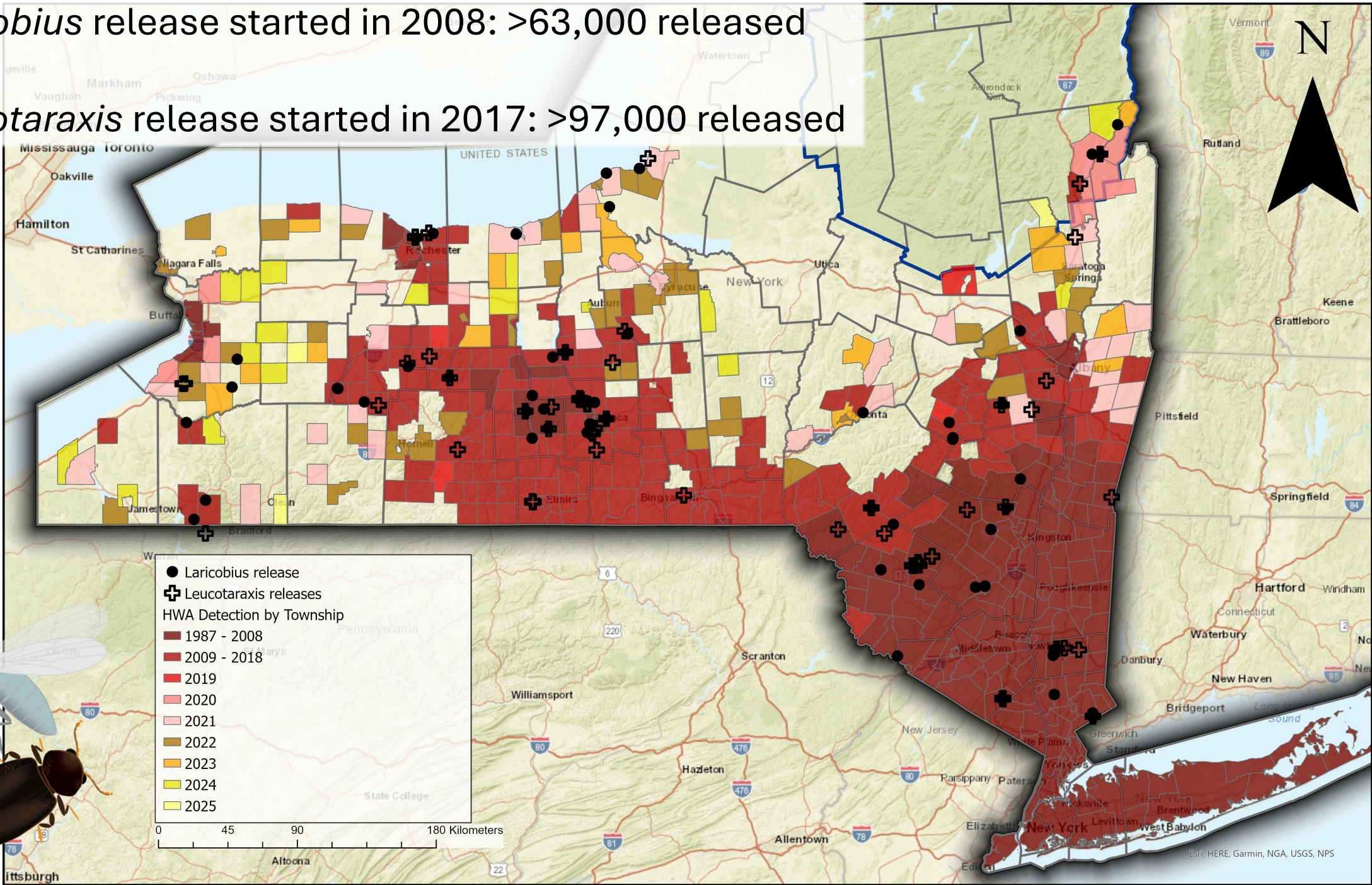


Landscape-scale Bio Control Strategy



Laricobius release started in 2008: >63,000 released

Leucotaraxis release started in 2017: >97,000 released



***Laricobius* Beetle Success**





Establishment, hybridization and impact of *Laricobius* predators on insecticide-treated hemlocks: Exploring integrated management of the hemlock woolly adelgid

Albert E. Mayfield III^{a,*}, Barbara C. Reynolds^b, Carla I. Coots^c, Nathan P. Havill^d, Cavell Brownie^e, Andrew R. Tait^b, James L. Hanula^f, Shimat V. Joseph^{g,1}, Ashley B. Galloway^{c,2}



Establishment and Distribution of *Laricobius* spp. (Coleoptera: Derodontidae), a Predator of Hemlock Woolly Adelgid, Within the Urban Environment in Two Localities in Southwest Virginia

Jeremiah R. Foley,¹ Thomas J. McAvoy, Seth Dorman, Kyle Bekelja, Timothy J. Kring, and Scott M. Salom



Agricultural and Forest Entomology (2012), 14, 408–4

What about the North?

Spatiotemporal distribution of the hemlock woolly adelgid predator *Laricobius nigrinus* after release in eastern hemlock forests

Gina A. Davis*, Scott M. Salom*, Carlyle C. Brewster*, Bradley P. Onken[†] and Loke T. Kok*

*Department of Entomology, Virginia Polytechnic Institute and State University, 216A Price Hall MC 0319, Blacksburg, VA 24061, U.S.A. and

[†]USDA Forest Service, Northeastern Area State and Private Forestry, 180 Canfield Street, Morgantown, WV 26505, U.S.A.

Establishment of the predator *Laricobius nigrinus*, introduced as a biological control agent for hemlock woolly adelgid in Virginia, USA

Carrie S. Jubb^{id} · Thomas J. McAvoy^{id} · Kari E. Stanley^{id} · Ariel R. Heminger^{id} · Scott M. Salom^{id}

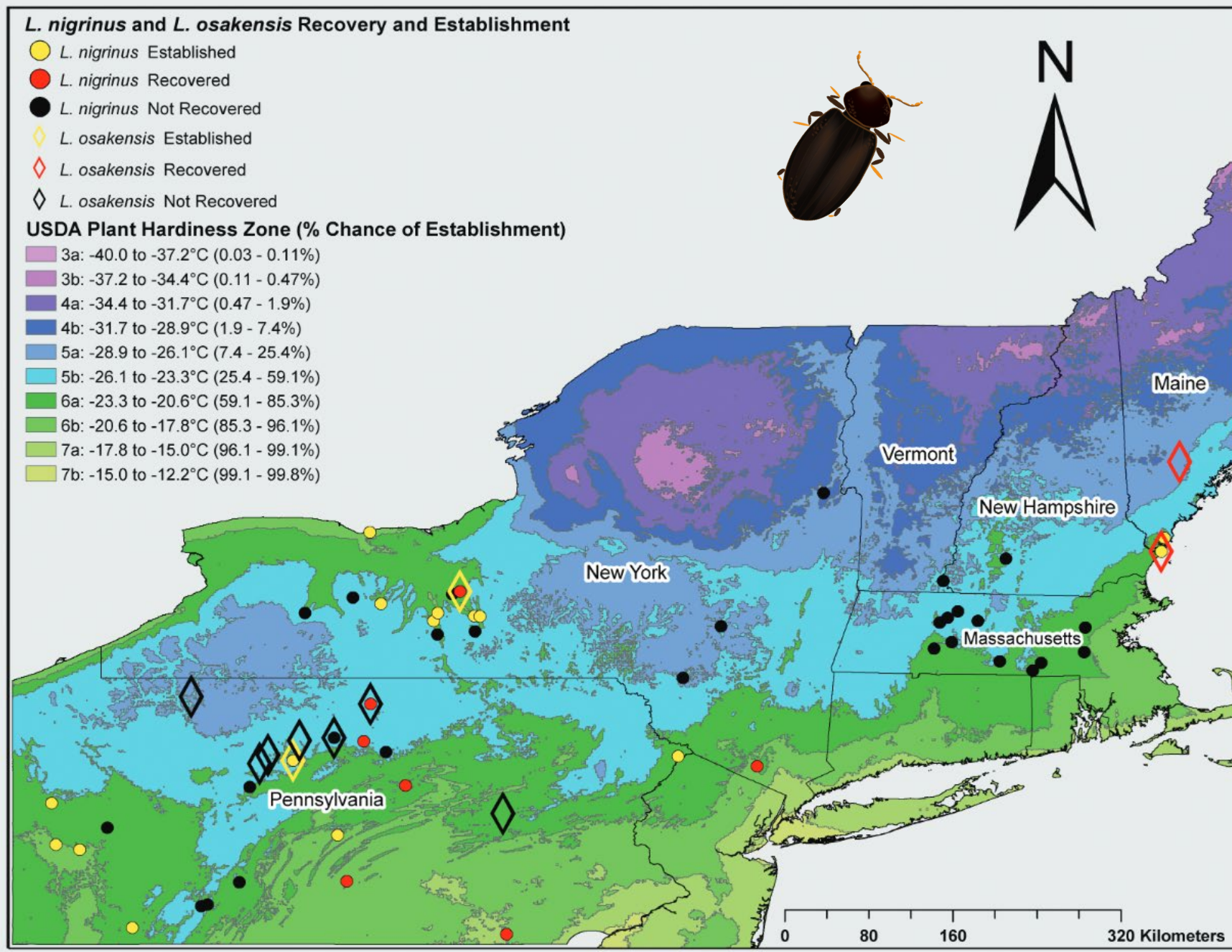
BIOLOGICAL CONTROL-PARASITOIDS AND PREDATORS

Establishment of the Hemlock Woolly Adelgid Predator, *Laricobius nigrinus* (Coleoptera: Derodontidae), in the Eastern United States

D. L. MAUSEL,¹ S. M. SALOM, L. T. KOK, AND G. A. DAVIS

Department of Entomology, Virginia Tech, 216A Price Hall MC 0319, Blacksburg, VA 24061-0002





Sites sampled between 2020 and 2022

L. nigrinus: 21 of 49
L. osakensis: 4 of 11

Establishment in:
 NY, PA, and ME

Evidence that winter temperatures impact establishment

Evolution in release strategy

Increased release size in colder regions



Laricobius nigrinus release

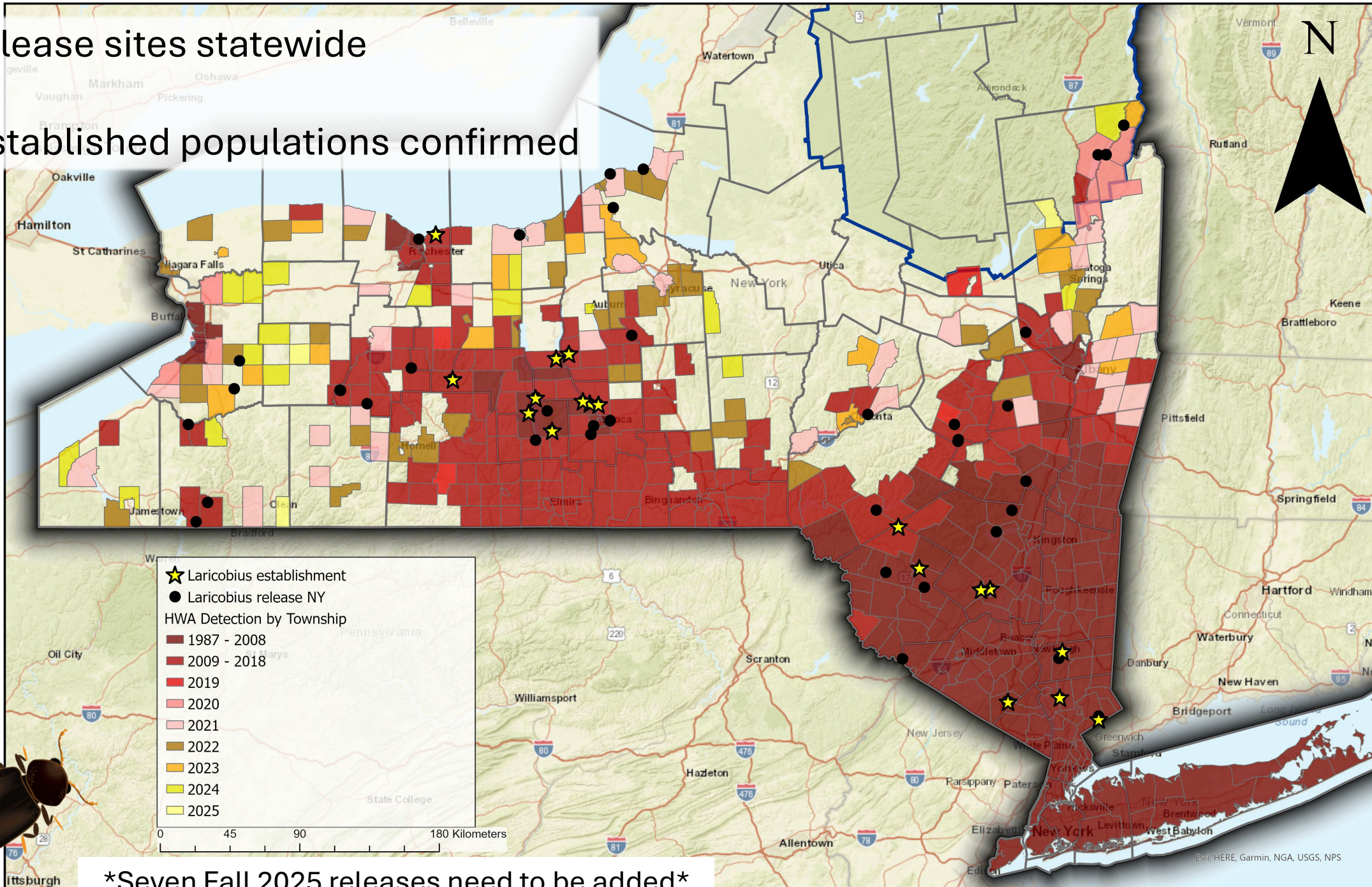
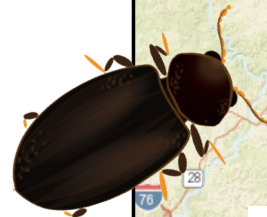
| Sites | Min | Max | Average |
|-----------|-----|------|------------|
| 2008-2021 | | | |
| 34 | 55 | 1193 | 525 |



Photo credit: M. Serviss (NYS Parks)

53 release sites statewide

18 established populations confirmed



★ Laricobius establishment
● Laricobius release NY

HWA Detection by Township

- 1987 - 2008
- 2009 - 2018
- 2019
- 2020
- 2021
- 2022
- 2023
- 2024
- 2025

0 45 90 180 Kilometers

Seven Fall 2025 releases need to be added

Esri, HERE, Garmin, NGA, USGS, NPS

Laricobius Dispersal

- Selected 9 populations across three regions
- Monitored sites at three distances to evaluate spread



Melanie Halko and Keira Borello

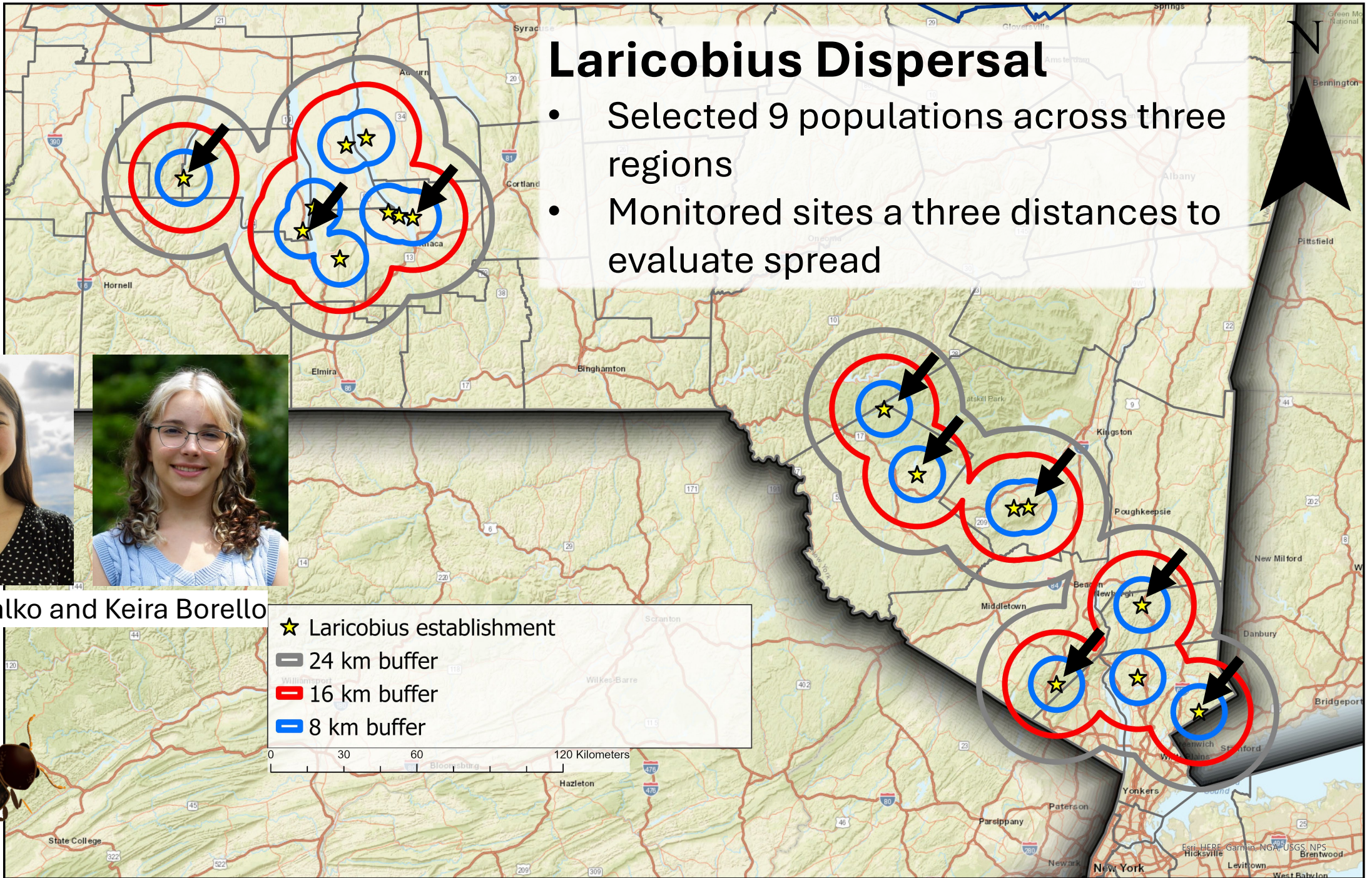
★ Laricobius establishment

— 24 km buffer

— 16 km buffer

— 8 km buffer

0 30 60 120 Kilometers



Laricobius Dispersal

- Confirmed spread at to 39 of 55 sites
- Finger Lakes, Catskills, Lower Hudson Valley, and Connecticut

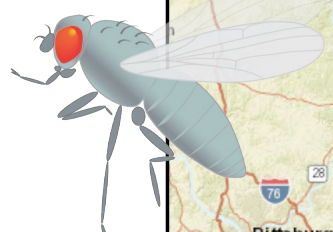
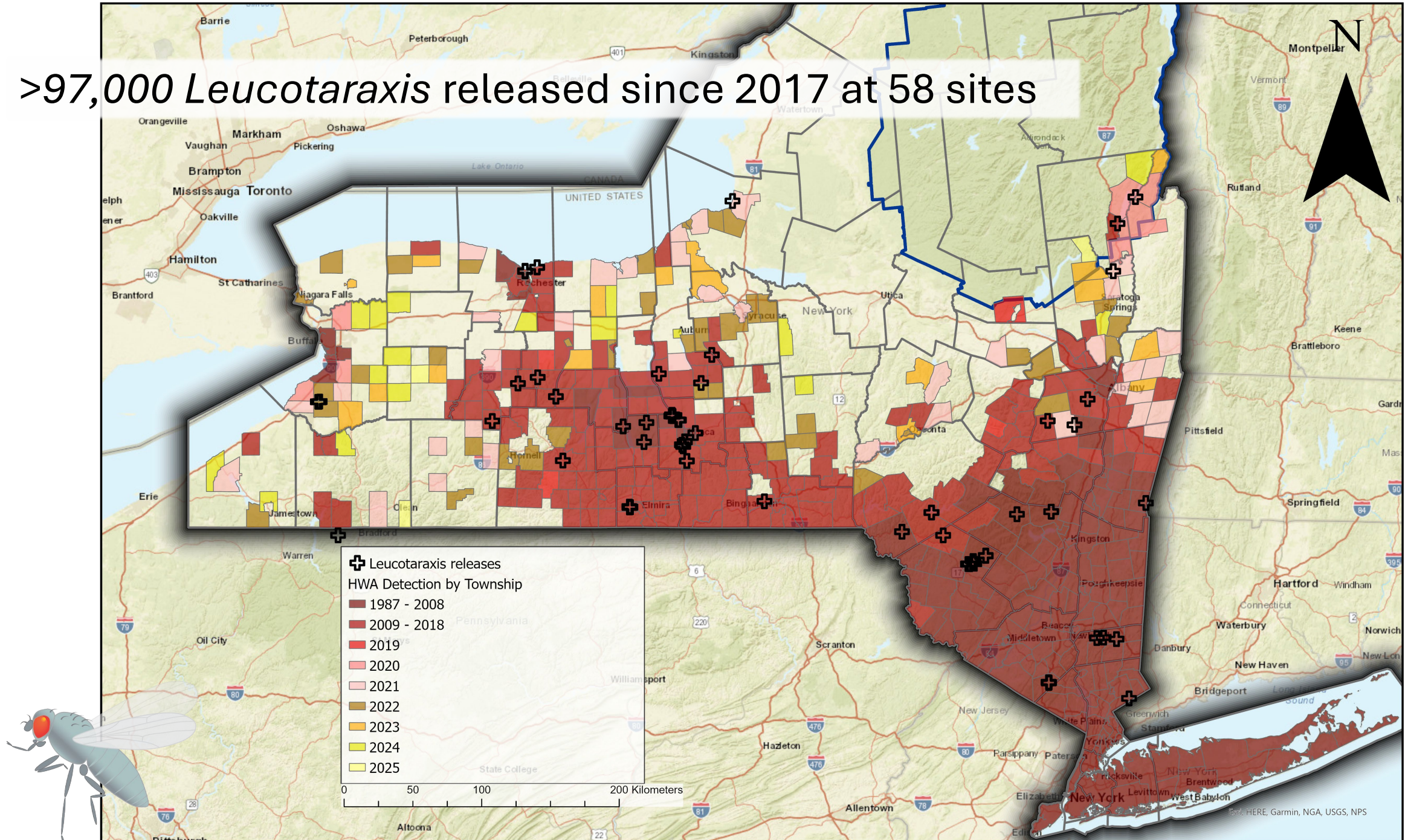
★ Laricobius establishment
— 24 km buffer
— 16 km buffer
— 8 km buffer
Lari Dispersal Survey sites & Detection method
◆ Larval sampling (Lari-Leuco container)
▲ Prism trap (yellow)
■ Both methods
○ None detected

0 30 60 120 Kilometers

Leucotaraxis Fly Success



>97,000 *Leucotaraxis* released since 2017 at 58 sites



Base: HERE, Garmin, NGA, USGS, NPS

What have we learned since 2017?

- *Le. argenticollis* can overwinter throughout the eastern range
- *Le. argenticollis* can complete an entire life cycle in the field in NY and VA
- Found evidence of two established populations in VA



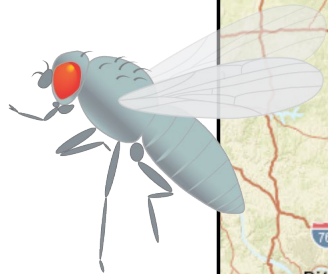
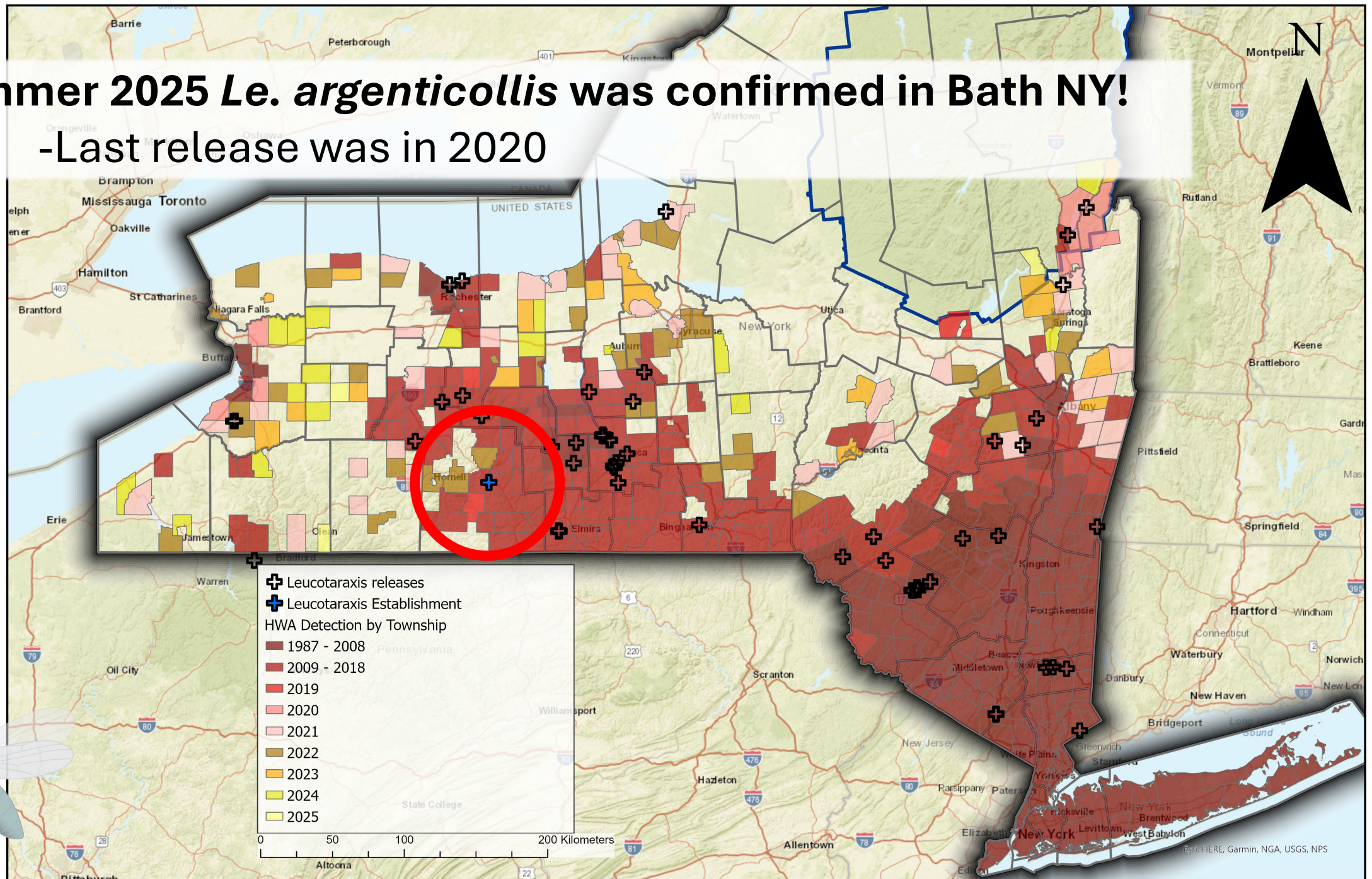
Dietschler et al. 2023, Biological Control. 182:105233

Preston et al. 2023, Environ Ent 52:6

Dietschler et al. unpublished data

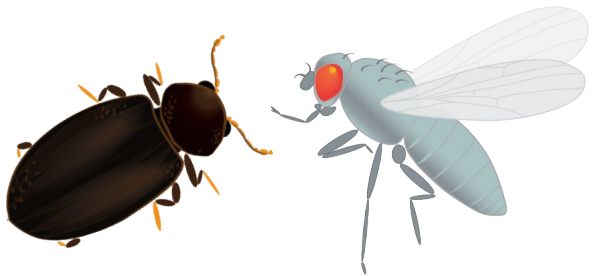
Summer 2025 *Le. argenticollis* was confirmed in Bath NY!

-Last release was in 2020



Take home messages

- *Laricobius nigrinus* has been released across HWA invaded range, is widely established, and rapidly dispersing.
- *Leucotaraxis* is highly suitable for NY and has been released widely.
- We are seeing the first signs of confirmed *Leucotaraxis* establishment!

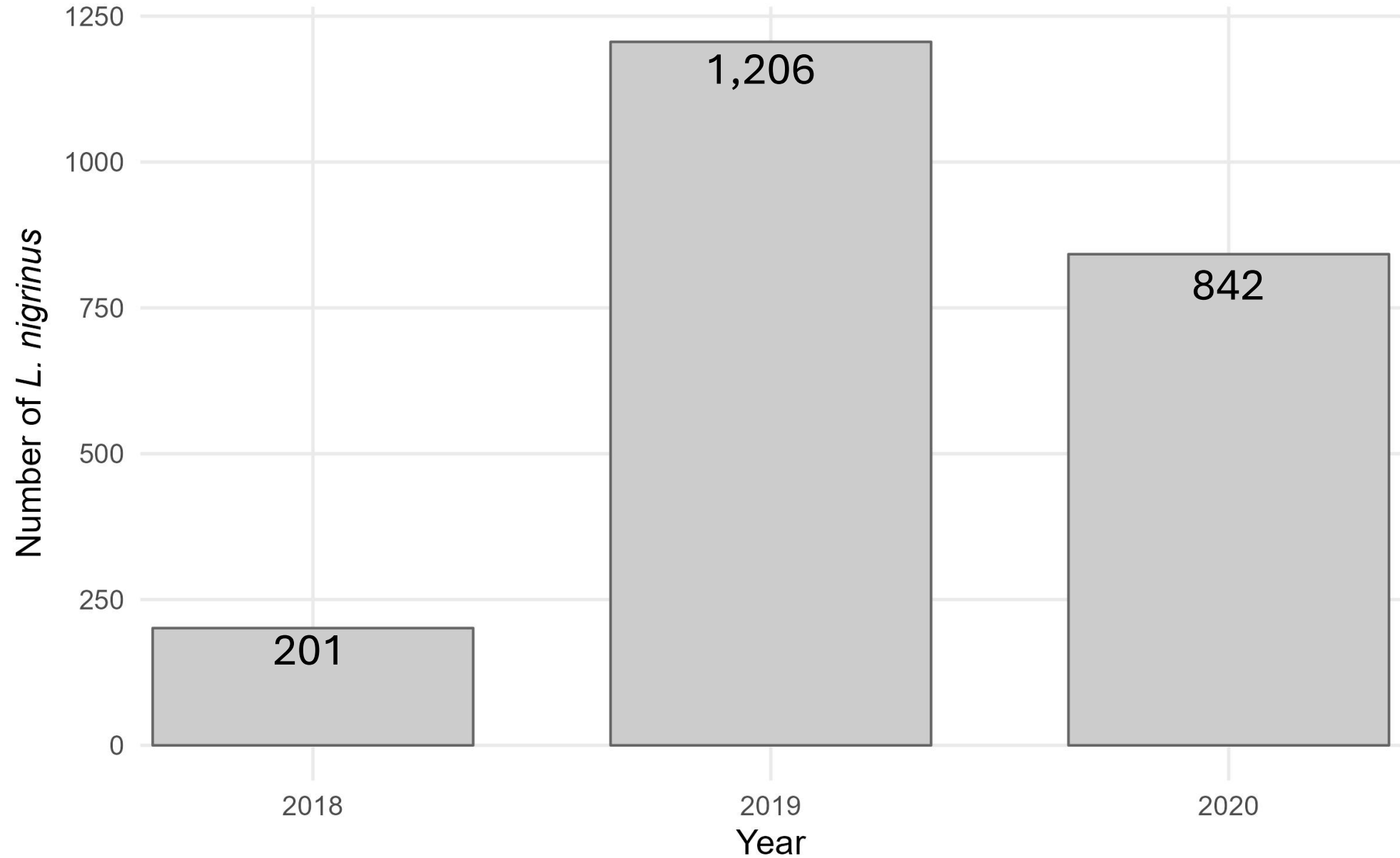


Harriman State Park NY, Field Insectary

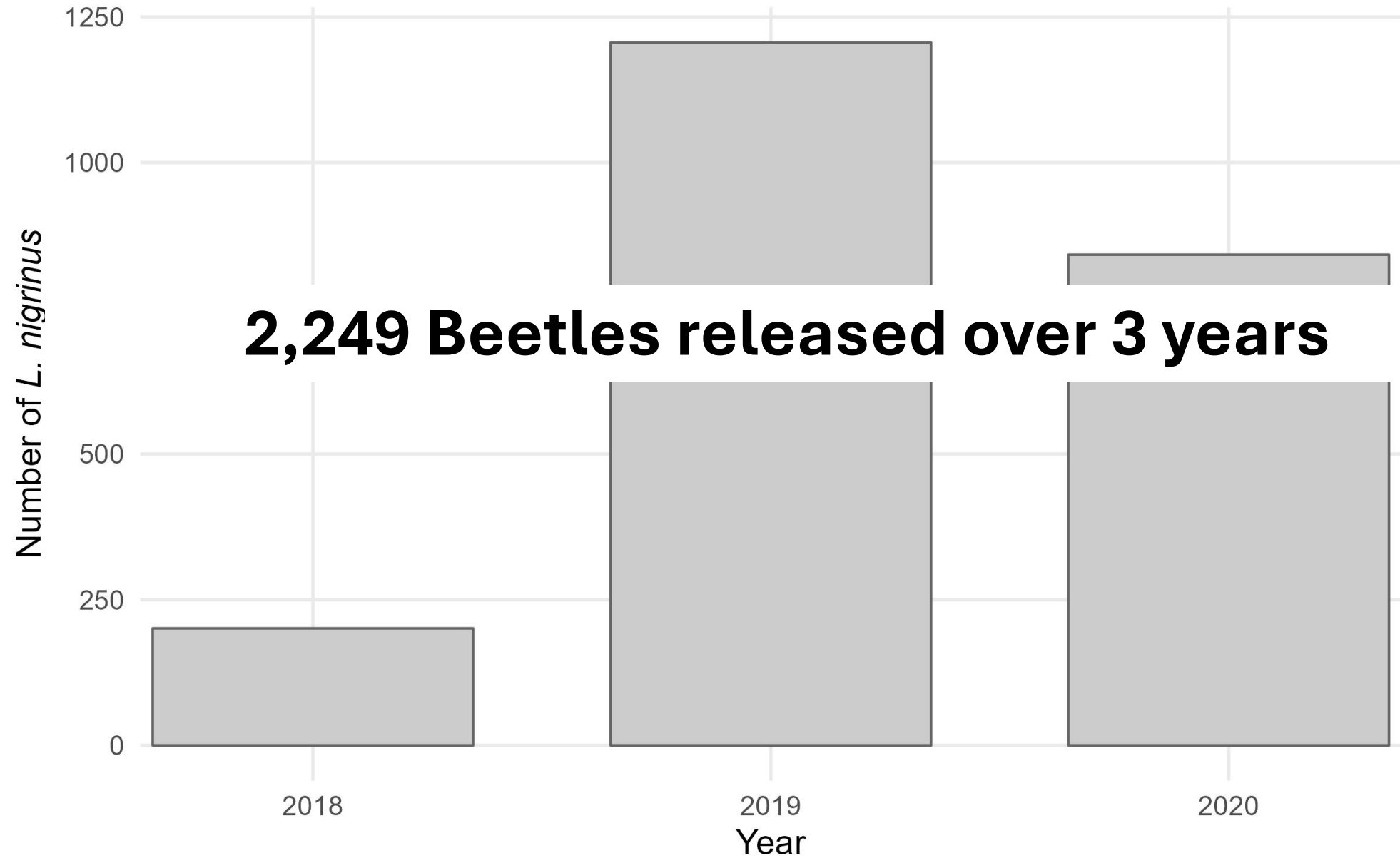


Photo credit: NYS OPRHP and N. Dietschler

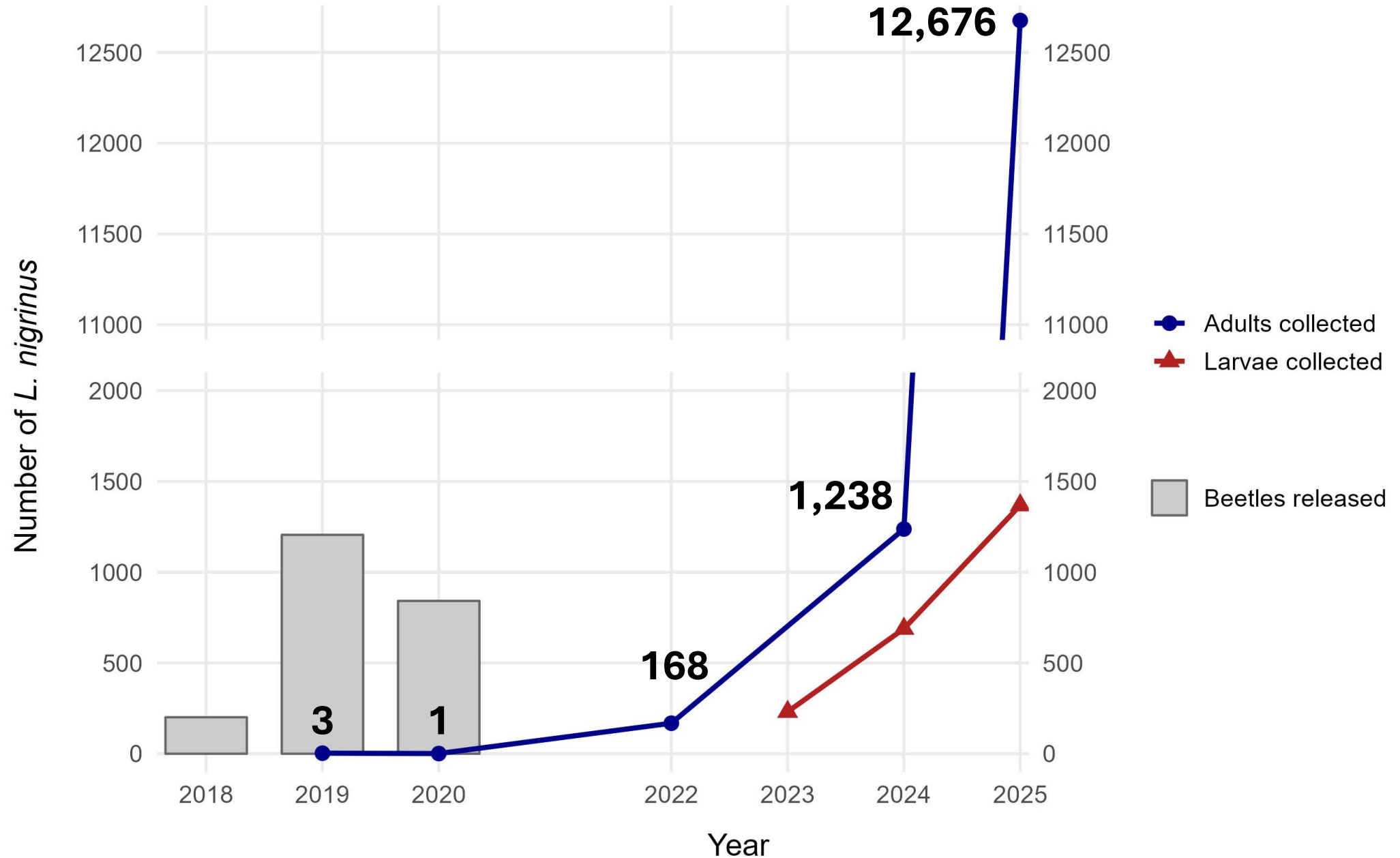
L. nigrinus release at Harriman State Park



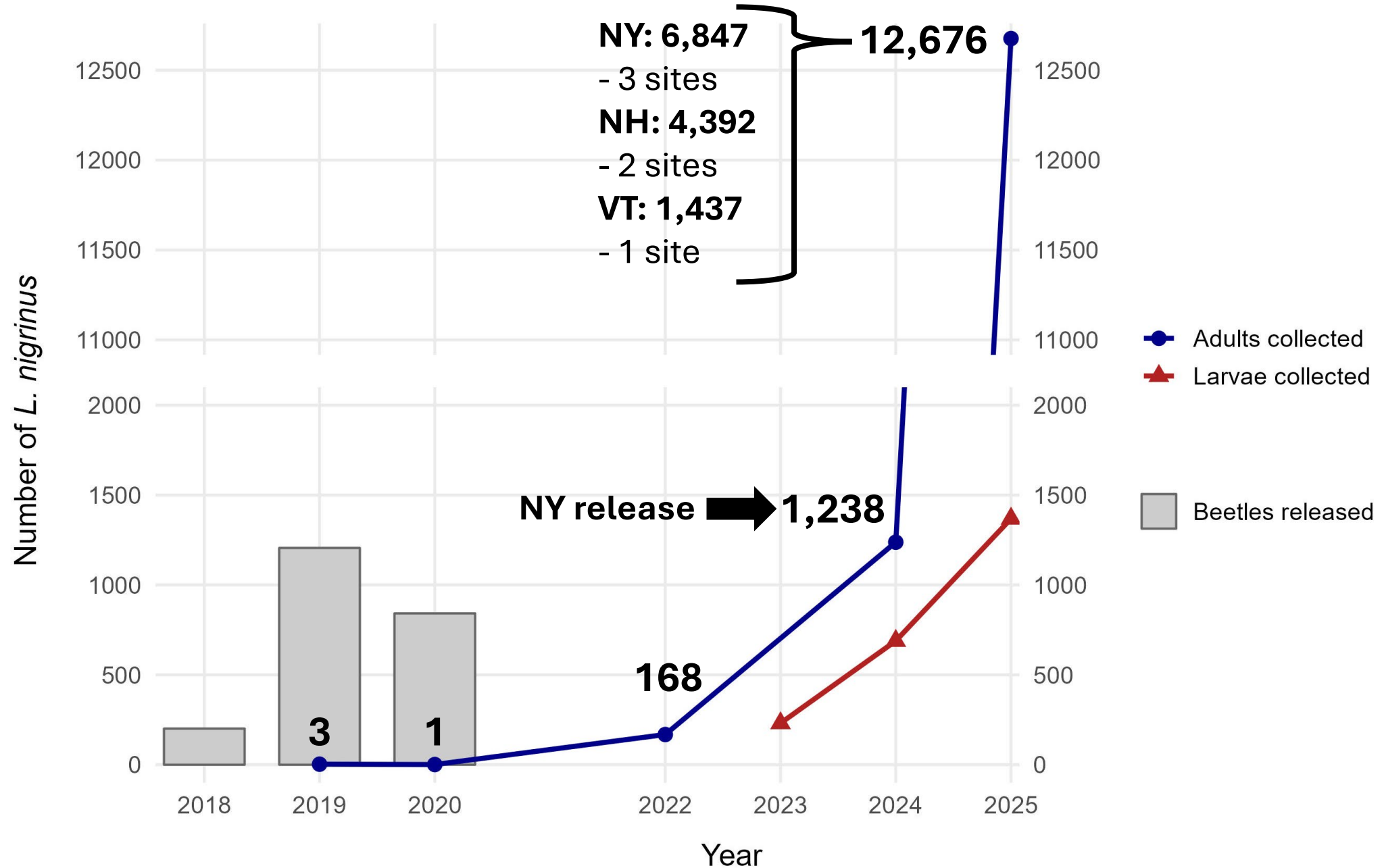
L. nigrinus release at Harriman State Park



L. nigrinus post-release recoveries



L. nigrinus post-release recoveries



UNH Durham NH, Field Insectary



Photo credit: Ryan Grandall NH DNCR

John's Brook, High Peaks Region Adirondacks



Beaver Kill Valley, Catskills





Acknowledgments

nd283@cornell.edu

www.nyshemlockinitiative.info



College of Agriculture
and Life Sciences

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UMASS

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And many more!

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Lab

Mark Whitmore

Tonya Bittner, PhD

Elizabeth D'Auria

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