2018 orchard survey for invasive & exotic pests in New York

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yearly Farm Bill (CAP) survey

- Summer fruit tortrix moth, *Adoxophyes orana* (pheromone traps)
- Variegated golden tortrix, *Archips xylosteanus* (pheromone traps)
- Velvet longhorned beetle, *Trichoferus campestris* (kairomone traps)
- Spotted lanternfly, *Lycorma delicatula* (sentinel species visual survey for *Ailanthus altissima*)
- Apple proliferation phytoplasma, *Candidatus* Phytoplasma mali (visual survey)
- Latent viruses of apple – ACLSV, ASGV, ASPV, AMV, ToRSV, TRSV (quadrat sampling)

scope of the orchard survey

- 14 to 20 orchards.
- 7 to 10 counties in western NY, central NY and the Finger Lakes regions.
- Insect species vary, diseases included have also varied.
  - 3 to 6 insects
  - 1 to 3 diseases
- Typically 2 to 4 traps per species per orchard block.

Summer fruit tortrix moth, *Adoxophyes orana*

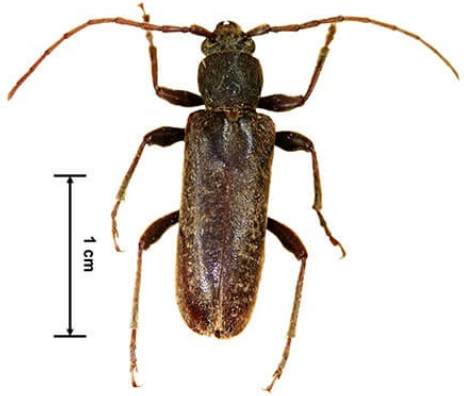
- Feeds on ~50 host plants, apple, cherry and pear.
- Native of Europe and Asia. Not found in NA.
- Fairly large - male wingspan 1.5-1.9 cm, female wingspan of 1.9-2.2 cm
- Two generations per year. First generation of adults fly in June-July, second generation August-September.
- Fruit damage caused by large caterpillars feeding through July and August.
- To date, none found in NY.

Variegated golden tortrix, *Archips xylosteanus*

- Feeds on the buds, foliage, flowers, and fruit of many plants. Of concern on Rosaceous fruit crops.
- Native of Europe and Asia. Not found in US, but spotted in St. John's, Newfoundland, Canada.
- Fairly large - male wingspan 1.2-1.9 cm, female wingspan of 1.8-2.1 cm
- One generation per year. Adult moths are present from late June to mid-August.
- Late instar larvae have a distinctive white line on the black head capsule. Defoliators.
- To date, none found in NY.

Velvet longhorned beetle, *Trichoferus campestris*

- Borers on woody hosts, showing a preference for apple, cherry and peach.
- Native of Asia and Russia. Found in Quebec in 2002 and Washington in 1997, since in NY, MN, NJ, PA, UT, OH, RI, CO and IL. Established in UT and IL.
- Strong fliers. Dark brown, to brownish-orange beetles range from 1.1-2.0 cm in length.
- Emergence holes as well as frass deposits are sign of velvet longhorned beetle damage.
- Potential injury to apple not well understood.
- Not found in 2018.



Spotted lanternfly, *Lycorma delicatula*

- Also known as Chinese blistering cicada.
- Numerous hosts including grapes, apples, stone fruits, blueberries, and hops. May prefer tree of heaven.
- Adults very colorful when wings displayed during hopping.
- Piercing sucking insects, copious honeydew & sooty mold, weaken hosts they feed on.

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SLF – visual surveys

- Surveying for the sentinel host, *Ailanthus altissima*, tree of heaven
- In 2016 and 2017, no tree of heaven were found on any farms in the orchard survey.
- In 2018, a NYS response team was formed in NYS IPM Program coordinated with NYS DEC and DAM.
- More intensive surveys on apple farms identified tree of heaven on two farms in Wayne County.
- The tree was also mapped along the roadways traveled for the survey.

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life cycle

- Overwinters as egg masses
- 4 nymph instars (May-Sep)
  - First three are black with white dots (1/8”-3/4” long)
  - 4th instar is red and black with white dots
- Adults show up in summer, mate, disperse and lay eggs through early autumn.
  - 1 inch long and ½ inch wide.
  - wingspan is over two inches.
  - striking in appearance.
  - forewings are pink-gray with black dots. In flight or while hopping, the black, white, and red with black dots wings distinguish the insect.

Photo: Tea Kesting-Handly

Spotted lanternfly nymphs
Photos: L Barringer

Spotted lanternfly adults
Photos: R. Parker

New egg masses
Photo: R. Parker

Old egg masses
Photo: E. Swackhamer

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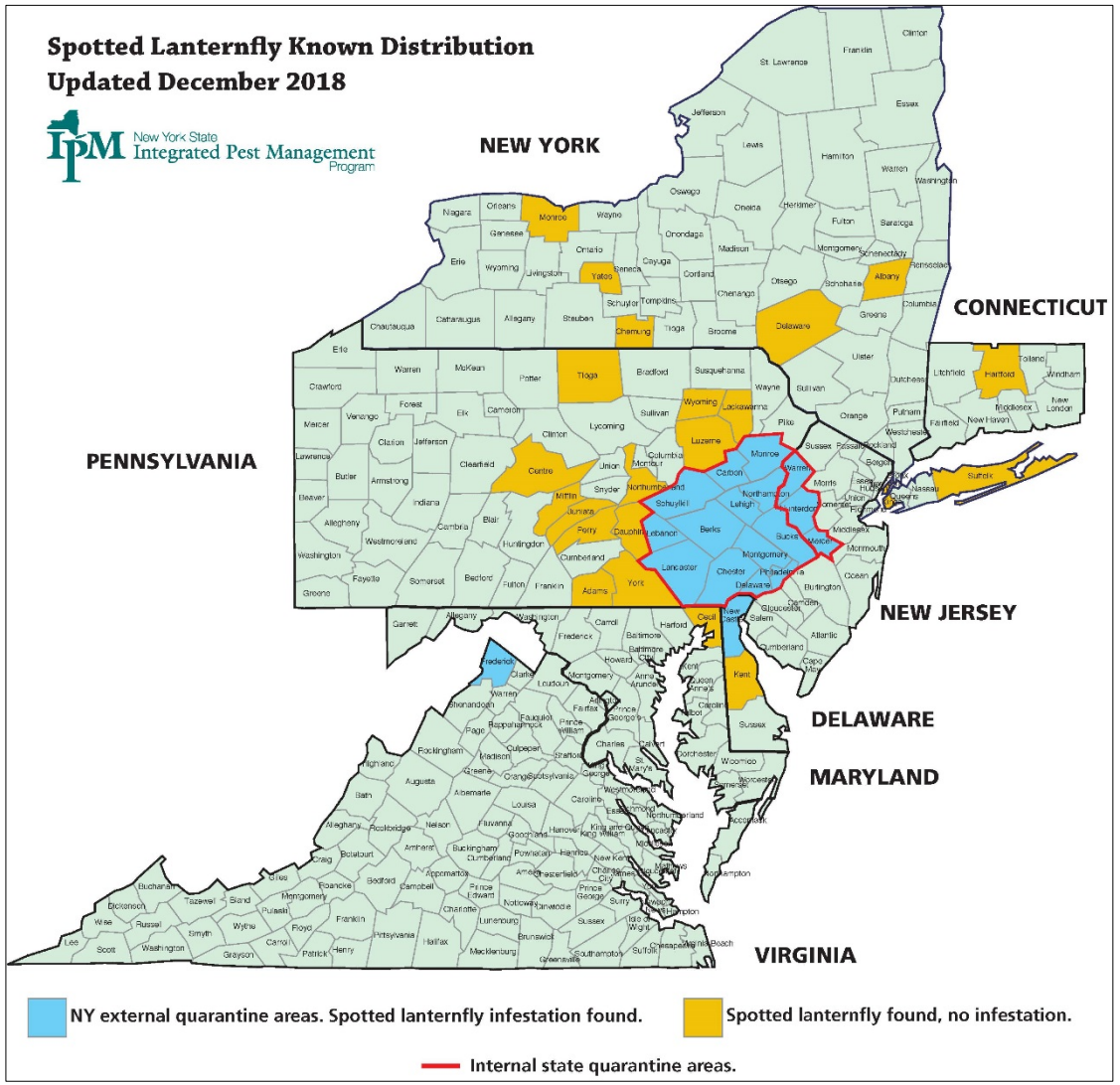
known distribution in the US



Map of counties within PA, NJ, and VA with ***known*** populations of SLF (blue) and probable hitchhikers (orange) in MD, NY, DE, and CT.

- PA, VA, NJ, DE, NY, MD, CT
- 8 NY Counties:
  - Albany
  - Chemung
  - Delaware
  - Kings (Brooklyn)
  - Monroe
  - New York (Manhattan)
  - Suffolk
  - Yates

As of December, 2018

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Spotted Lanternfly Basics

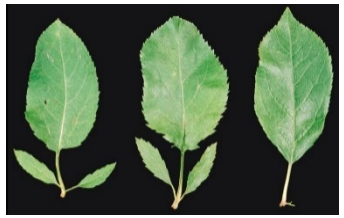
- *Webinars on SLF:*
  - biology
  - identification
  - hosts
  - monitoring strategies
  - regulatory update
- Hosted by the Northeastern IPM Center
- Presented by the NYS IPM Program and the NYS Department of Agriculture and Markets
- For more information and **registration links**, go to:

neipmc.org/go/mYey

What?	When?
Hops, Berries, & Vegetables	Tues, Feb. 26, 2019, 10:00 AM
Grapes & Apples	Tues, Feb. 26, 2019, 1:00 PM
Christmas Trees	Mon, Mar. 4, 2019, 10:00 AM
Nursery, Greenhouse, & Landscape	Mon, Mar. 4, 2019, 1:00 PM

apple proliferation phytoplasma, *Candidatus Phytoplasma mali*

- One of the most economically important threats to apple production in Europe.
- Fruit stunting, low productivity, apple tree decline and death. Yield reduction of up to 80%.
- Spread via infected propagation material, leafhoppers and psyllids. Rate of spread can reach 18% per year.
- Witches brooms, loss of apical dominance, death of terminal buds, off flavor and off-color fruit, enlarged stipules.
- To date, none found in NY.



latent viruses of apple

- Only apple stem pitting found in 2018.
- Rootstocks all with comparable 10% to 20% of quadrat samples with ASPV in the leaf samples.
- The scion samples of Empire, Ginger Gold, Ida Red, Ruby Mac and SnapDragon have >30% of quadrats with ASPV.
- These trees were established, ~5-10 years old.

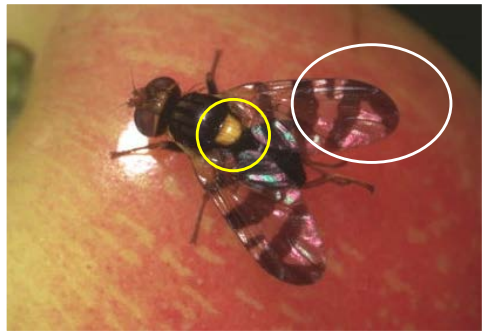
rootstock	proportion with ASPV	N	n ASPV
on G16	0.20	65	13
on Nic29	0.07	30	2
on M9	0.25	110	27
on G935	0.11	18	2
total	0.20	223	44

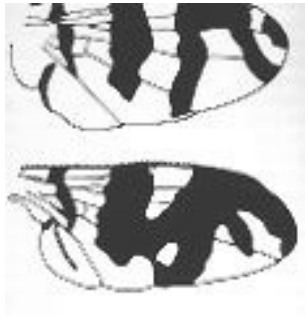
variety	proportion with ASPV	n	n ASPV
Gala	0.13	40	5
Cortland	0.00	5	0
Empire	0.34	65	22
Ginger Gold	0.50	10	5
Honeycrisp	0.02	50	1
Ida Red	0.40	5	2
Kingston Black	0.00	3	0
Linda Mac	0.00	20	0
Ruby Mac	0.35	20	7
SnapDragon	0.40	5	2
total	0.20	223	44

European cherry fruit fly *Rhagoletis cerasi*

- Feeds on Prunus (especially sweet cherry) and honeysuckle.
- Native of Europe. Found in Ontario, Canada in 2015, confirmed in 2016.
- Similar to other Tephritid fruit flies – eastern cherry fruit fly, black cherry fruit fly, apple maggot, blueberry maggot.
- One generation per year. Adults fly in June-July.
- Concern is infestation of fruit that may be shipped to other sweet cherry growing regions.
- In 2017, 51 caught in 26/438 traps placed in NY along the Niagara River.

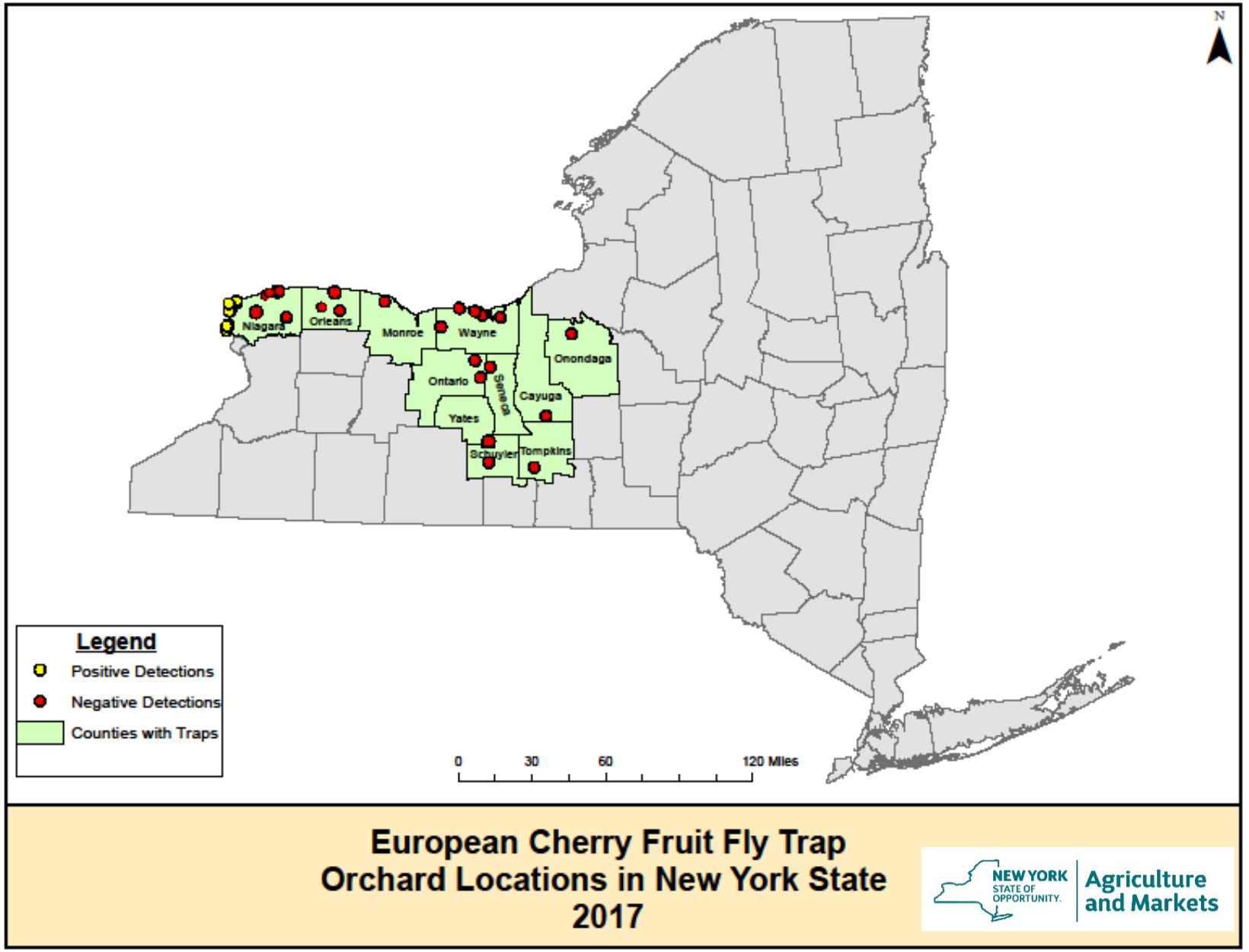
Photos: R. Coutin





ECFF

BCFF



European Cherry Fruit Fly Trap Orchard Locations in New York State 2017

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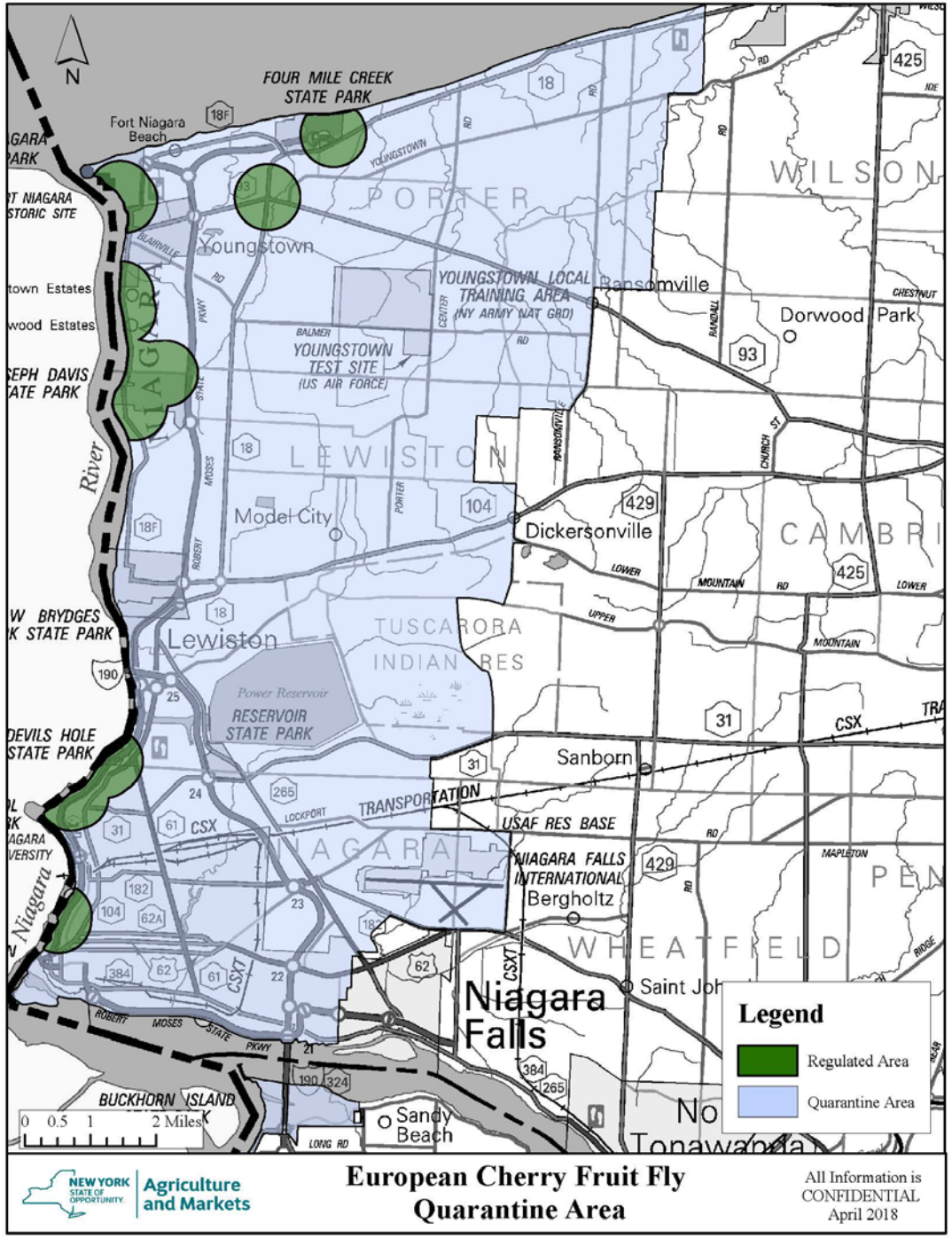
2018 regulated and quarantine areas

The Regulated Area is a 0.5 mile buffer around the 2017 positive ECFF detections

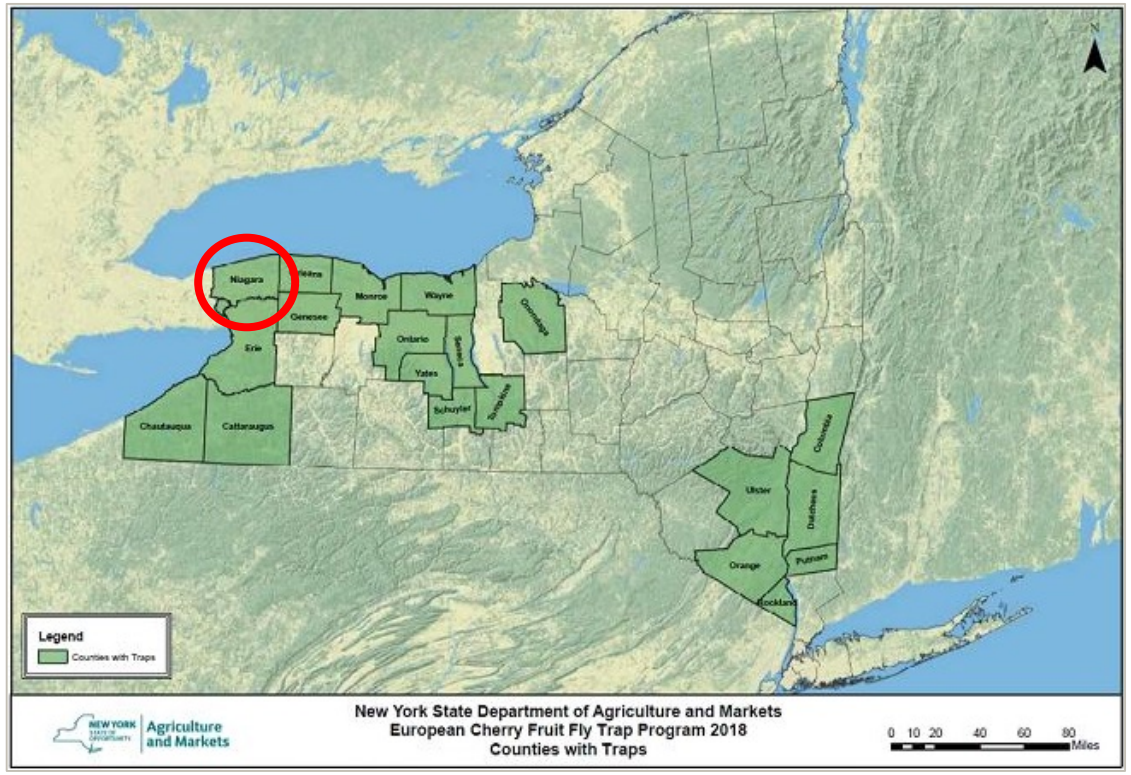
The Quarantine Area is a 4.5 mile buffer around the 2017 positive ECFF detections

Growers within these areas entered into a compliance agreement



ECFF in 2018 in New York

- Found <u>only in Niagara County</u>
  - Farthest East is in Golden Hill State Park
- Monitored trap sites
  - 6876 by USDA in the quarantine area
  - 672 by NYSDAM in 20 counties
- ECFF caught
  - 4939 USDA sites
    - parks and residential areas in Niagara County
  - 4 NYSDAM sites
    - 3 in state park
    - 1 in a tart cherry orchard, after harvest (July 17)



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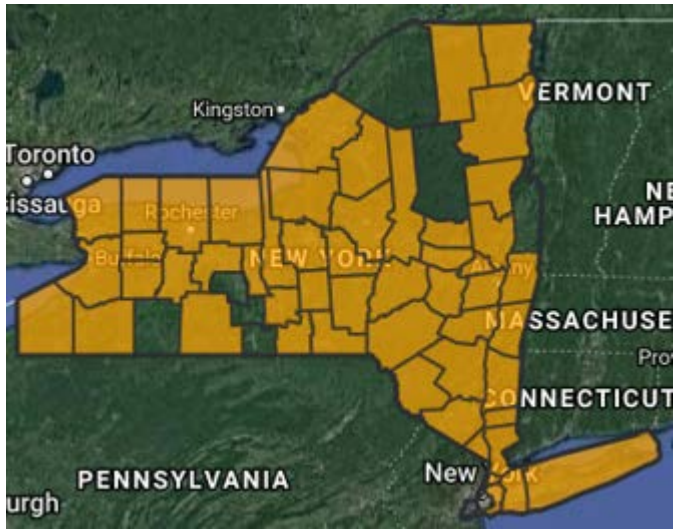
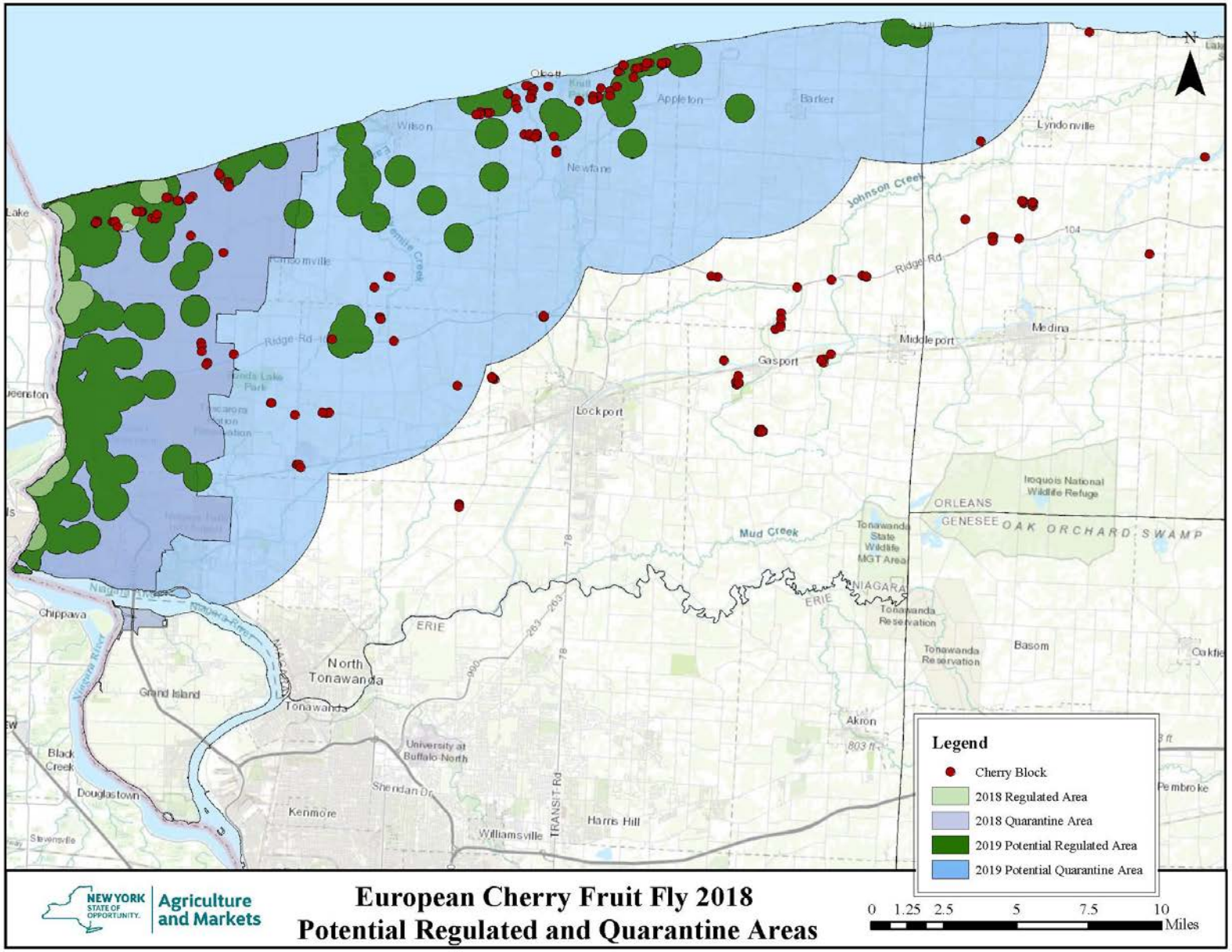
2019 ECFF

potential regulated & quarantine areas, into Orleans County

iMap Invasives – distribution map of invasive honeysuckle in NYS





Perhaps the greatest challenge… ECFF uses honeysuckle as a host plant.

Pollinator protection

- Pesticide decision-making guide for tree fruit, 2018
  - New knowledge about pesticide toxicity
  - Synergists and toxicity rankings
  - 117 research papers reviewed
  - Fungicides, antibiotics, and inert ingredients;
  - Insecticides, miticides, and adjuvants
  - Mixtures of fungicides and insecticides
- Pollinator Network @ Cornell, pollinator.cals.cornell.edu/
- Native Bee Smartphone App, https://app.northeastpollinatorpartnership.org/#!/
- Northeast Pollinator Partnership, www.northeastpollinatorpartnership.org

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- 18 apple farms in central and western NY

Thank you!

Contact me?

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