

SALT LAKE CITY MOSQUITO ABATEMENT DISTRICT

Executive Director's Report

October 2023

1. Personnel:

Personnel	
Staff	Seasonal
12	15

Type of Work	2023	3 - Year Average
Adulticiding	24.00	23.75
Wetlands / Rural	86.75	113.00
Fish Culture	93.00	23.50
Catch Basins / Gutters	4.00	13.75
Tree Holes	0.00	0.00
Prison	39.75	0.00
Service Request	4.00	21.33
Traps	296.00	185.25
Laboratory	594.25	199.75
Office / Administration	845.00	578.83
Equipment Maintenance	339.00	255.58
Facility Maintenance	244.50	254.25
Training	30.75	97.00
Education	75.75	29.25
Unmanned Aerial System	79.50	3.50
CSU Grant	10.00	0.00
Other / Errands	248.00	47.17
Comp. Time Used	157.50	87.92
Vacation	65.75	146.58
Additional Hours/Overtime	0.00	16.33
Holiday	92.00	82.67
Sick Leave	101.00	61.25
Total	3,430.50	2,240.66

2. Office Activities:

- Urban Field Supervisor/Drone Pilot Sorensen and Education Specialist Rehbein attended the Utah State University Aviation Career Fair on 3 October 2023.

- Executive Director Faraji attended a weekly call with Colorado State University on the Rocky and High Plains Vectorborne Disease Center on 4 October 2023.
- Executive Director Faraji and members of staff attended the weekly Owners/Architects/Engineers meeting on 4 October 2023.
- Biologist Byers attended the biweekly conference call for the UT WNV/Arbovirus updates on 5 October 2023.
- Education Specialist Rehbein and members of staff (Sorensen, Amy, Gavin) attended and set up a table at the LatinX event at the Tracy Aviary-Jordan River Nature Center on 5 October 2023.
- Executive Director Faraji and member of staff attended a bi-weekly conference call regarding the Mali Mosquito Control Project on 5 October 2023.
- Executive Director Faraji attended a virtual video call with Dr. Roxanne Connelly from the CDC regarding development of a taxonomy workshop on 5 October 2023.
- Biologist Byers provided a tour and trap overview of our surveillance traps to Dan Miller from UT County MAD on 6 October 2023.
- Executive Director Faraji attended the monthly managers meeting of the Utah Mosquito Abatement Association on 11 October 2023.
- Executive Director Faraji attended a weekly call with Colorado State University on the Rocky and High Plains Vectorborne Disease Center on 11 October 2023.
- Executive Director Faraji and members of staff attended the weekly Owners/Architects/Engineers meeting on 11 October 2023.
- Laboratory Director Bibbs conducted testing calls with Kvin Welzel from Central Life Sciences on 13 October 2023.
- Laboratory Director Bibbs and members of staff attended a URS benefit webinar on 13 October 2023.
- Laboratory Director Bibbs presented at the Public Health Department of the University of Utah on 16 October 2023.
- Education Specialist Rehbein attended a ULGT Loss Prevention webinar on 16 October 2023.
- Executive Director Faraji attended a virtual video call for Kirsten Meredith, PhD student at the University of Utah on 17 October 2023.
- Biologist Byers attended a conference call with Kristy Burkhalter from the CDC regarding routine testing of primer sets and honey cards on 17 October 2023.
- Executive Director Faraji attended a seminar for Sajja Khan, PhD student at the University of Indiana on 18 October 2023.
- Executive Director Faraji attended a weekly call with Colorado State University on the Rocky and High Plains Vectorborne Disease Center on 18 October 2023.
- Executive Director Faraji and members of staff attended the weekly Owners/Architects/Engineers meeting on 18 October 2023.
- Education Specialist Rehbein was interviewed by PhD student Emily Calhoun from USU for Utah Public Radio on 19 October 2023.
- Executive Director Faraji and members of staff attended a bi-weekly conference call regarding the Mali Mosquito Control Project on 19 October 2023.
- Biologist Byers attended the biweekly conference call for the UT WNV/Arbovirus updates on 19 October 2023.
- Education Specialist Rehbein met with Trustee Barth to discuss outreach and native pollinator ideas on 19 October 2023.
- Laboratory Director Bibbs conducted a conference call with Dr. Brad Willenberg from the University of Central Florida regarding an AMCARF proposal on 19 October 2023.
- Laboratory Director Bibbs attended a Science Research Initiative Stream Leader recruitment event at the University of Utah on 20 October 2023.

- Executive Director Faraji attended and presented at the Northwest Mosquito and Vector Control Association on 23-24 October 2023.
- Executive Director Faraji and members of staff attended the weekly Owners/Architects/Engineers meeting on 25 October 2023.
- Education Specialist Rehbein drafted a response in regards to the “helicopter” opinion piece in the Salt Lake Tribune on 25 October 2023.
- Biologist Byers attended a VectorSurv/R interface training on 25 October 2023.
- Laboratory Director Bibbs attended a conference call with Sean McKay from the US Navy regarding manuscripts on 25 October 2023.
- Education Specialist Rehbein participated in a Mosquito and Vector Control Education Group through the AMCA on 26 October 2023.
- Members of staff and present/past Board Members attended the staff appreciation luncheon on 27 October 2023.
- Executive Director Faraji provided a tour of the facility to Dr. Kirsten Healy, Dr. Larry Reeves, and Mikenna Smith on 28 October 2023.
- Members of staff and Board attended the annual conference of the Utah Mosquito Abatement Association on 29-31 October 2023. Presentations were conducted by Nate Byers (Biologist), Ella Branham (seasonal), and Amanda Barth (Trustee). Executive Director Faraji presented the first Dickson-Nielsen Scholarship to seasonal Amy Jamison for her work on tree hole mosquitoes.
- Laboratory Director Bibbs and members of staff provided a tour of the facility to MGK staff on 31 October 2023.
- Executive Director Faraji provided a tour of the facility to Dr. Kevin Caillouette, Dr. Roy Faiman, Dr. Brian, Foy, Elmer and Susan Gray on 31 October 2023.

3. Sho/Field/Lab Activities:

- Surveillance activities have discontinued for the season.
- Winter maintenance of all equipment, tools, and facility continues.
- Work on the native pollinator habitat continues (several volunteers came in over the weekends to assist).
- Education Specialist Rehbein continues her excellent work on social media and updates. She is also continuing revamping of the education and outreach programs.

4. Field Data:

Control:

ACRES TREATED

	Adulticide		Larvicide		Total
	Ground	Aerial	Ground	Aerial	
October's Total	0.00	0.00	16.80	0.00	16.80
October's 3 Year Avg.	745.46	13,653.33	13.17	0.00	14,411.96

Service Requests:

MOSQUITO SERVICE OPPORTUNITIES RECEIVED BY MONTH

	March	April	May	June	July	Aug.	Sept.	Oct.	Total
2023	1	14	35	50	48	21	7	3	179
3-Year Avg.	3.33	10.00	30.00	41.33	29.00	25.33	17.33	26.67	183.00

Inspection and Surveillance:

Larval Collections		
Species	October	5-Year Average
<i>Ae. campestris</i>	0	0.0
<i>Ae. dorsalis</i>	0	0.0
<i>Ae. fitchii</i>	0	0.0
<i>Ae. increpitus</i>	0	0.0
<i>Ae. nigromaculis</i>	0	0.0
<i>Ae. niphadopsis</i>	0	0.0
<i>Ae. sierrensis</i>	0	0.0
<i>Ae. varipalpus</i>	0	0.0
<i>Ae. vexans</i>	0	0.0
<i>Cx. erythrothorax</i>	0	0.0
<i>Cx. pipiens</i>	0	1.8
<i>Cx. tarsalis</i>	0	5.2
<i>Cs. incidens</i>	0	0.8
<i>Cs. inornata</i>	0	0.8
<i>An. freeborni</i>	0	0.0
Total	0	8.6

5. Weather:

October's weather was warmer (by 1.3°) and wetter (by 0.71") than normal.

Temperature:

	Monthly Avg.	Normal	High	Low	
September	70.8°	68.4°	92°	45 °	
October	55.9°	54.6°	83°	28 °	

<https://w2.weather.gov/climate/index.php?wfo=slc>

Precipitation:

	Total for Month	Normal	Most in 24 hours
September	0.91"	1.06"	0.50" on 4 th
October	1.97"	1.26"	0.56" on 26 th

<https://w2.weather.gov/climate/index.php?wfo=slc>

Great Salt Lake (elevation in feet above sea level):

	September 1	October 1	November 1
2022	4,189.3	4,188.9	4,188.7
2023	4,192.6	4,192.3	4,192.1

<https://waterdata.usgs.gov/monitoring-location/10010024/#parameterCode=6214&period=P7D>

November 16, 2023 Surveillance Update



Christopher S. Bibbs, PhD
Laboratory Director
Salt Lake City
Mosquito Abatement District

UTAH'S MOST ACCURATE FORECAST

UTAH SNOWPACK

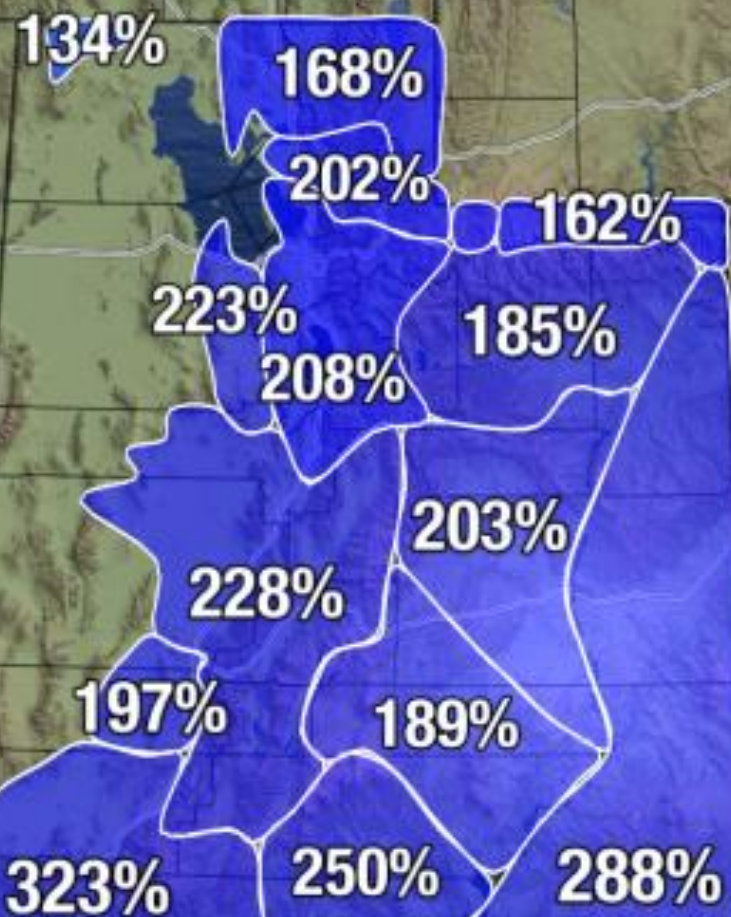
AS OF APRIL 3, 2023

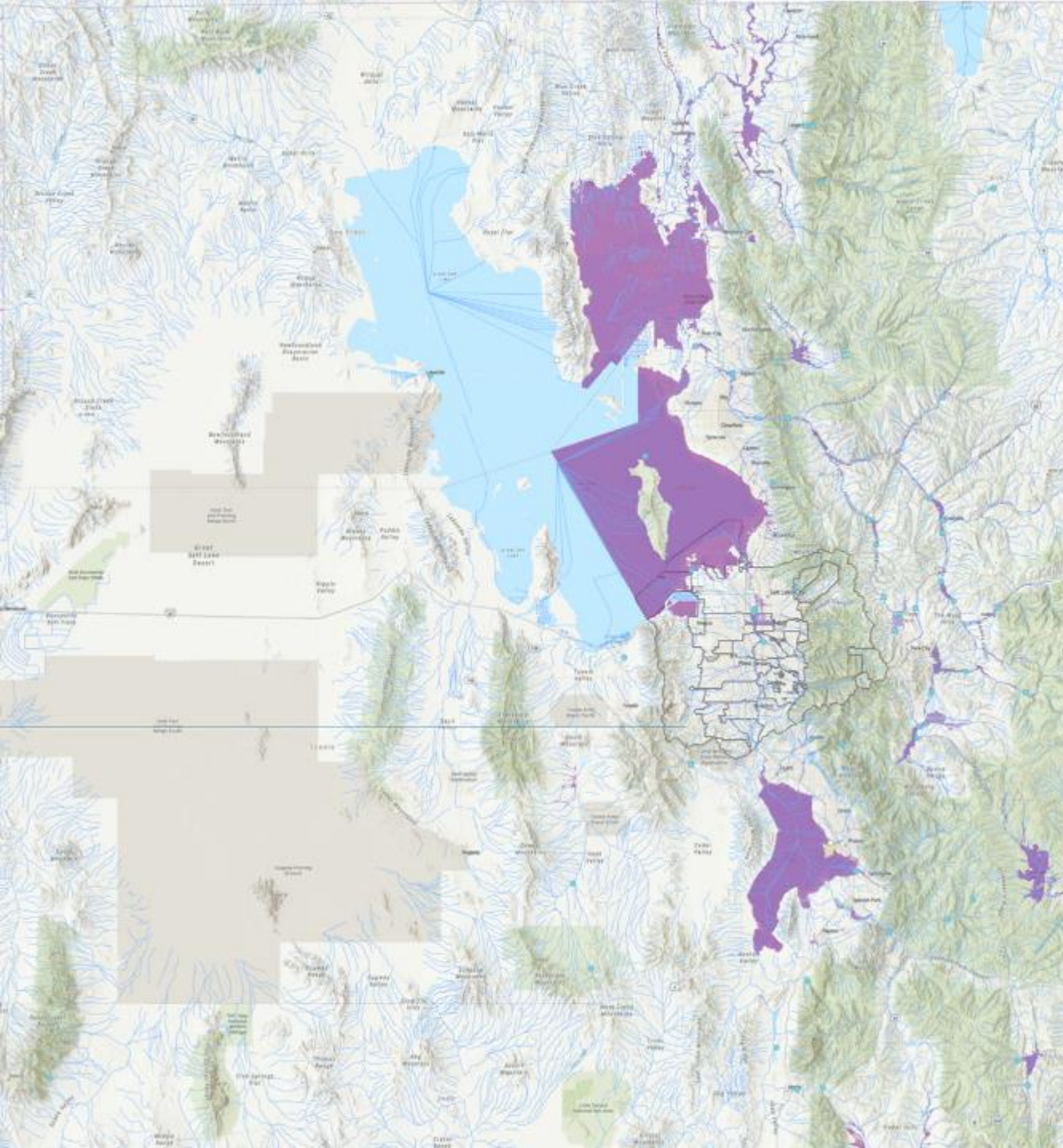
% OF NORMAL

- <70%
- 70-90%
- 91-110%
- 111-130%
- >130%

STATEWIDE

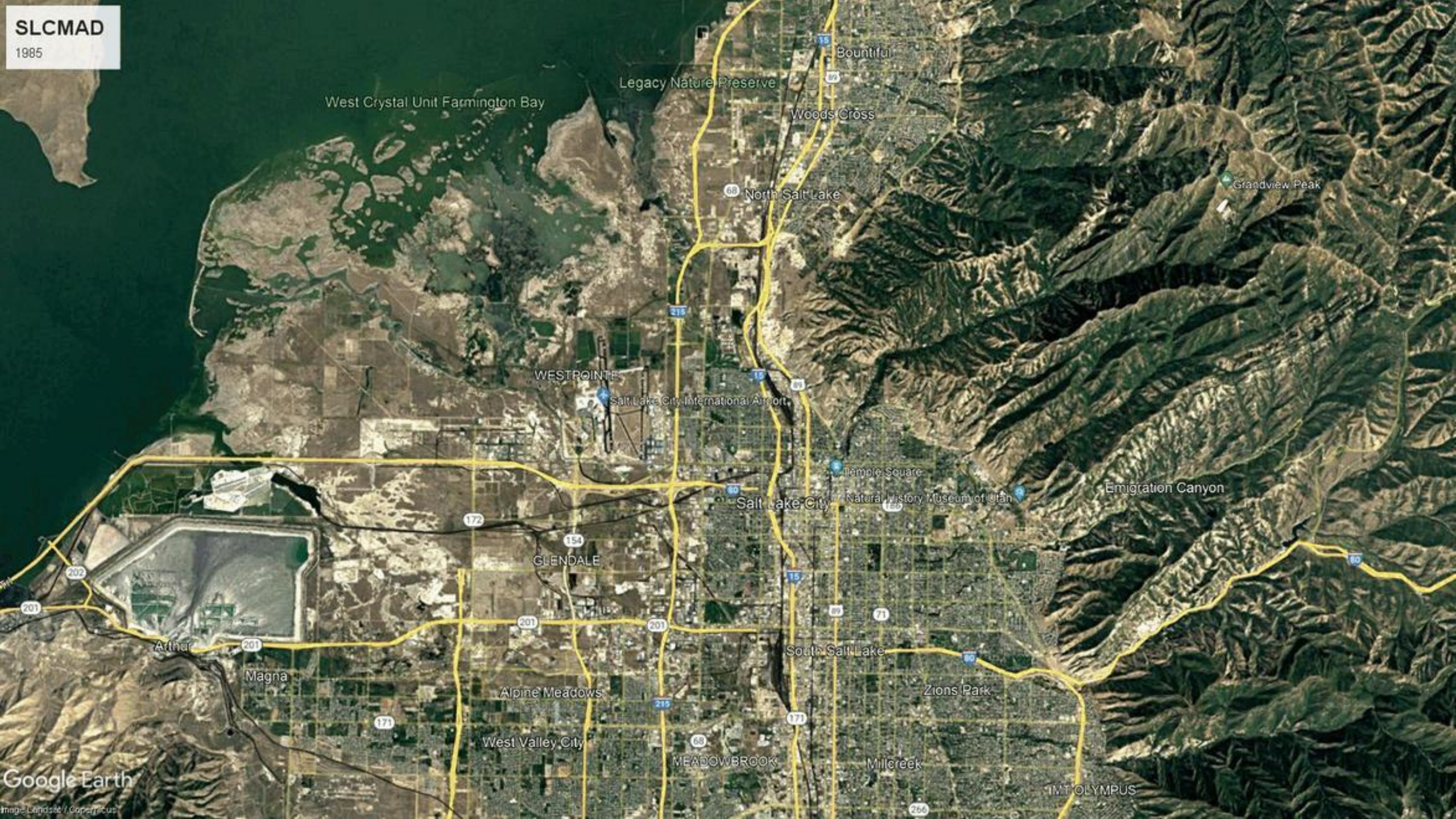
201%



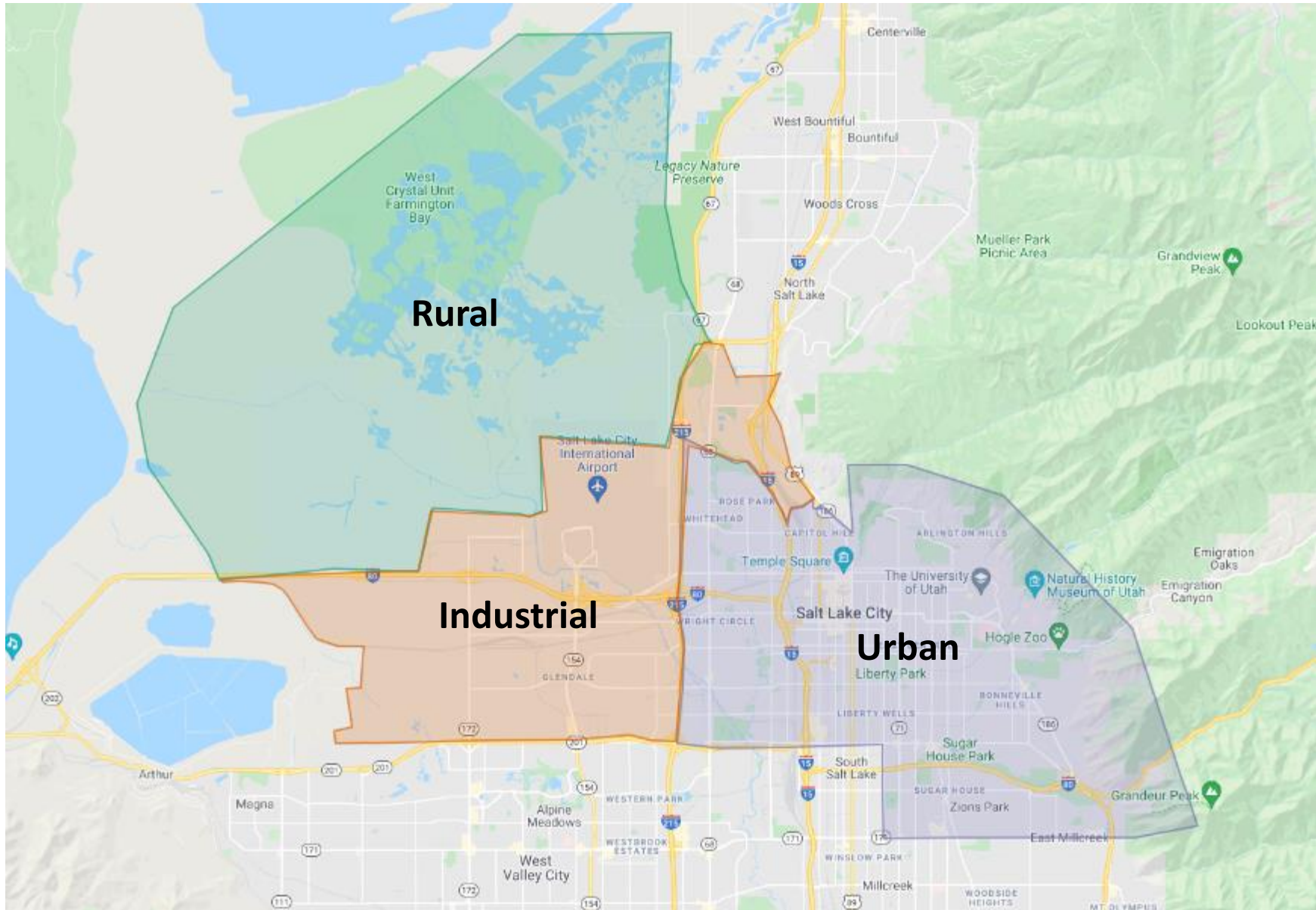


100 year flood expected, 2023



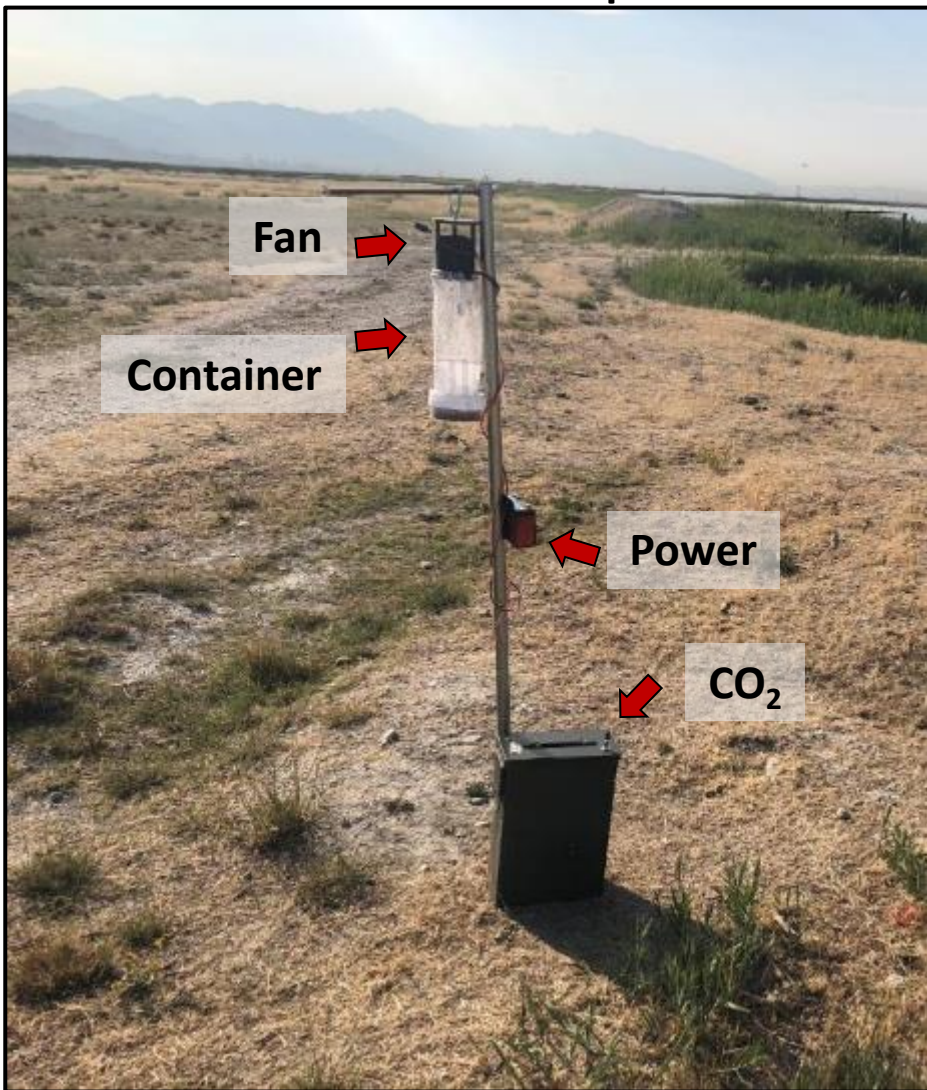


Surveillance Zones



Surveillance

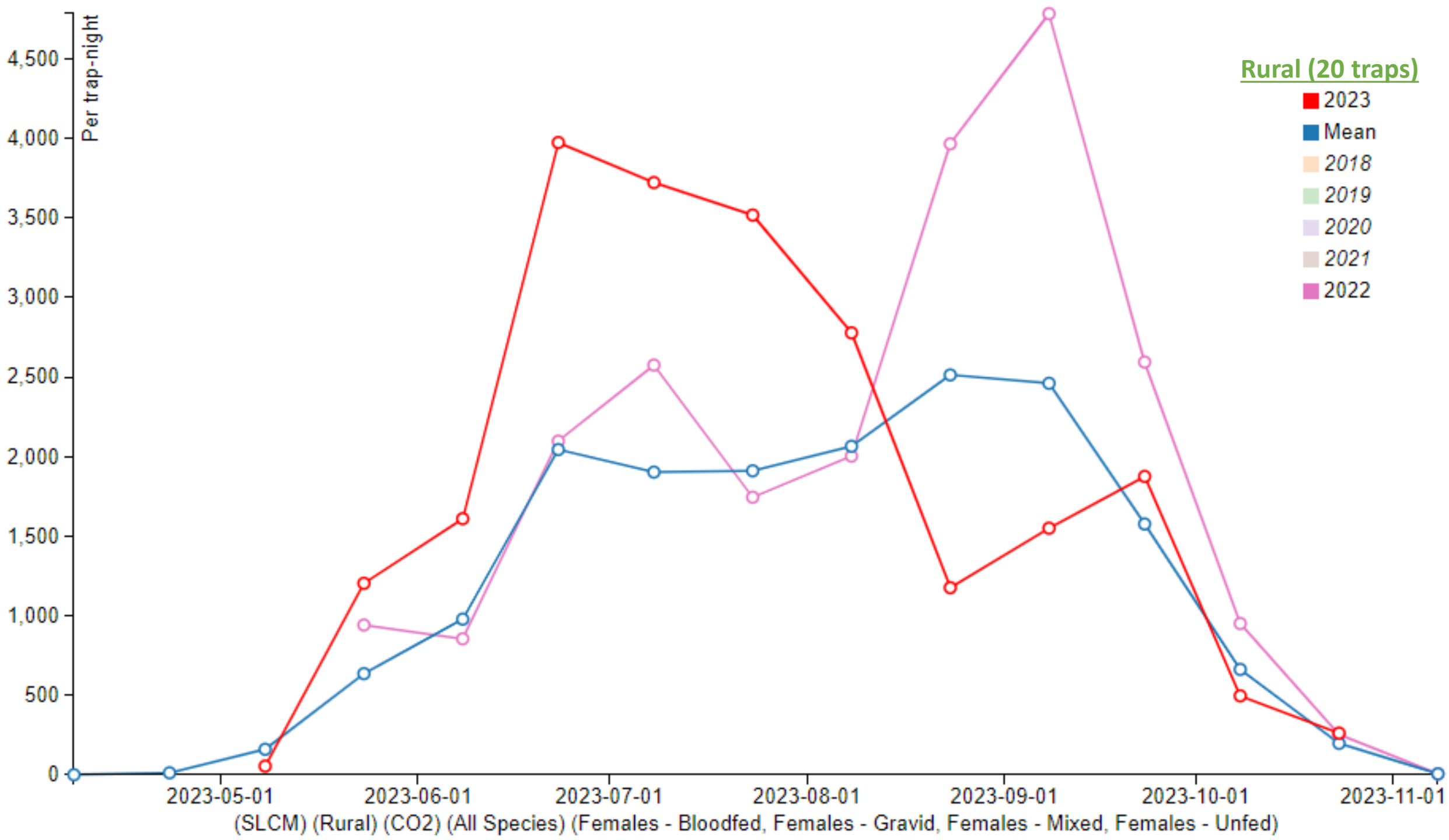
Mini-CDC Trap

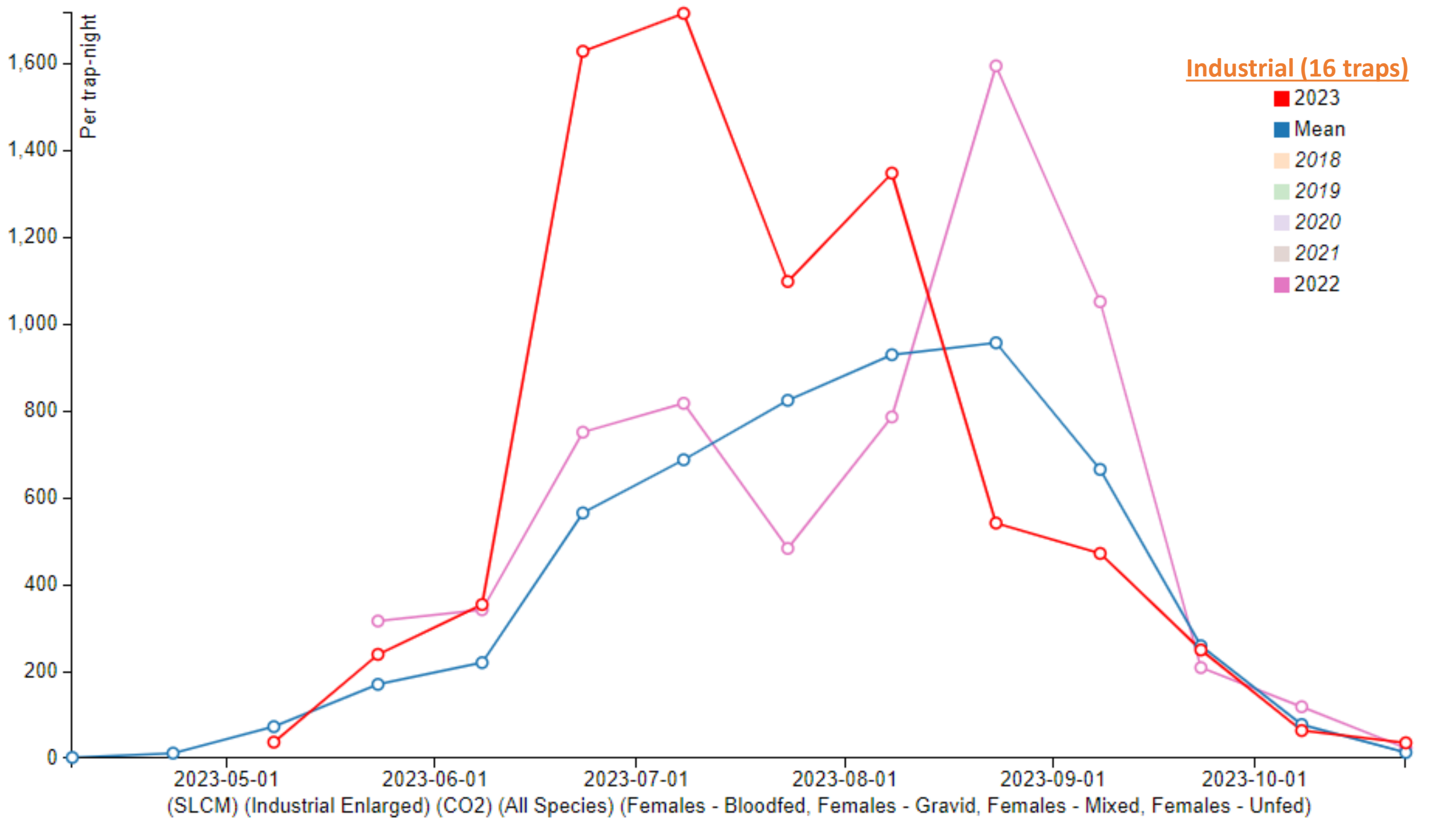


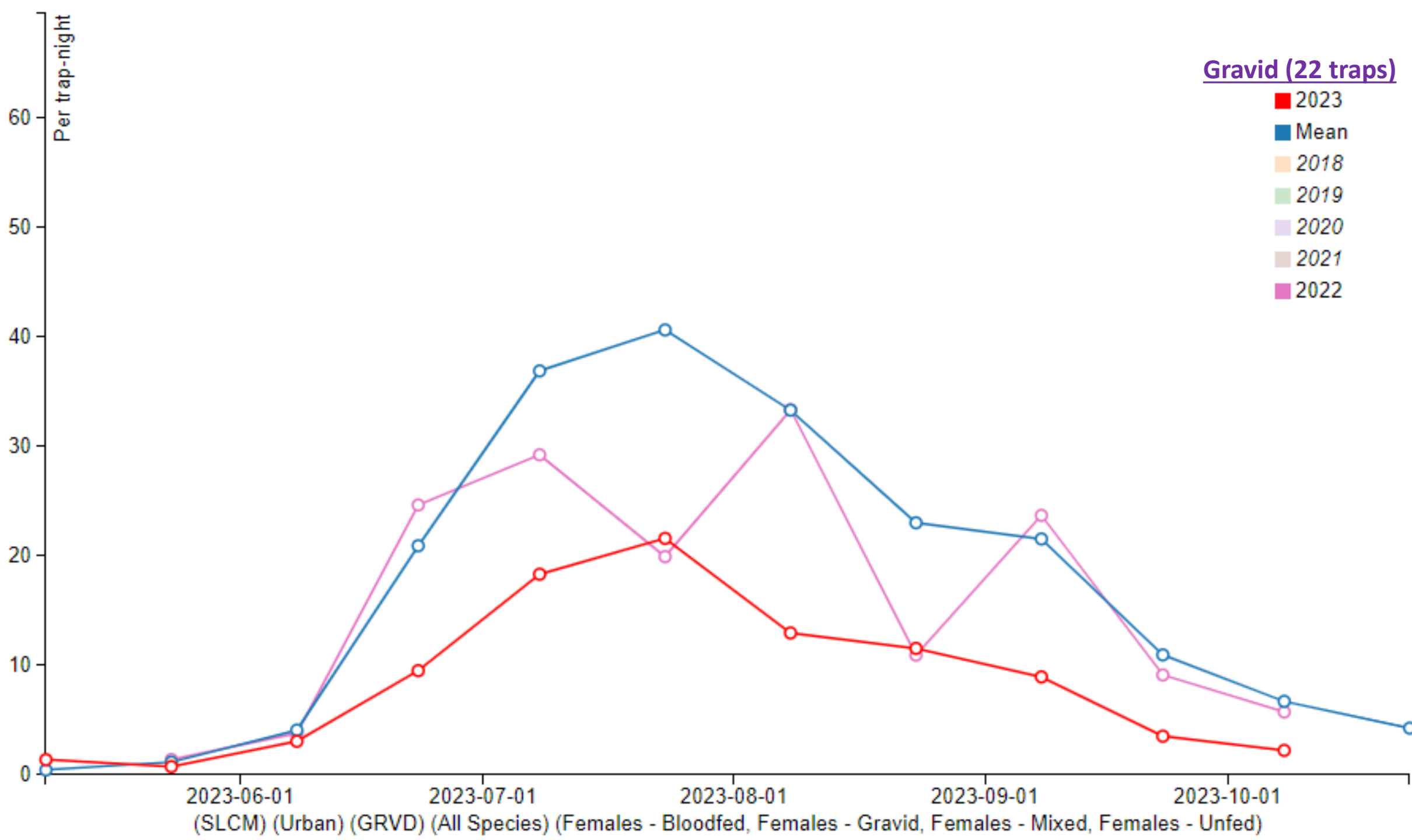
Most of UT
splitting
surveillance
between CO₂
(rural) and gravid
(urban)

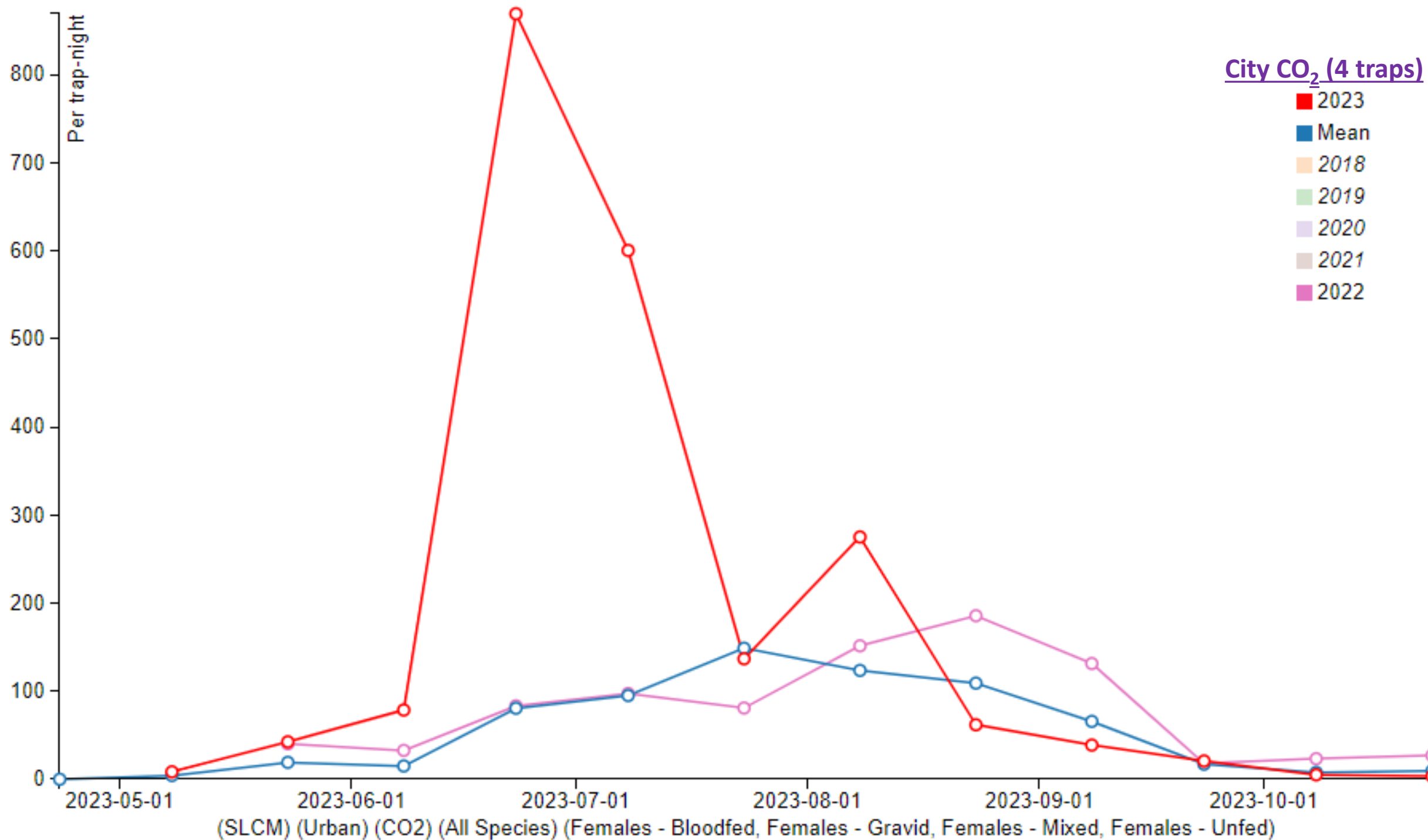
Gravid Trap



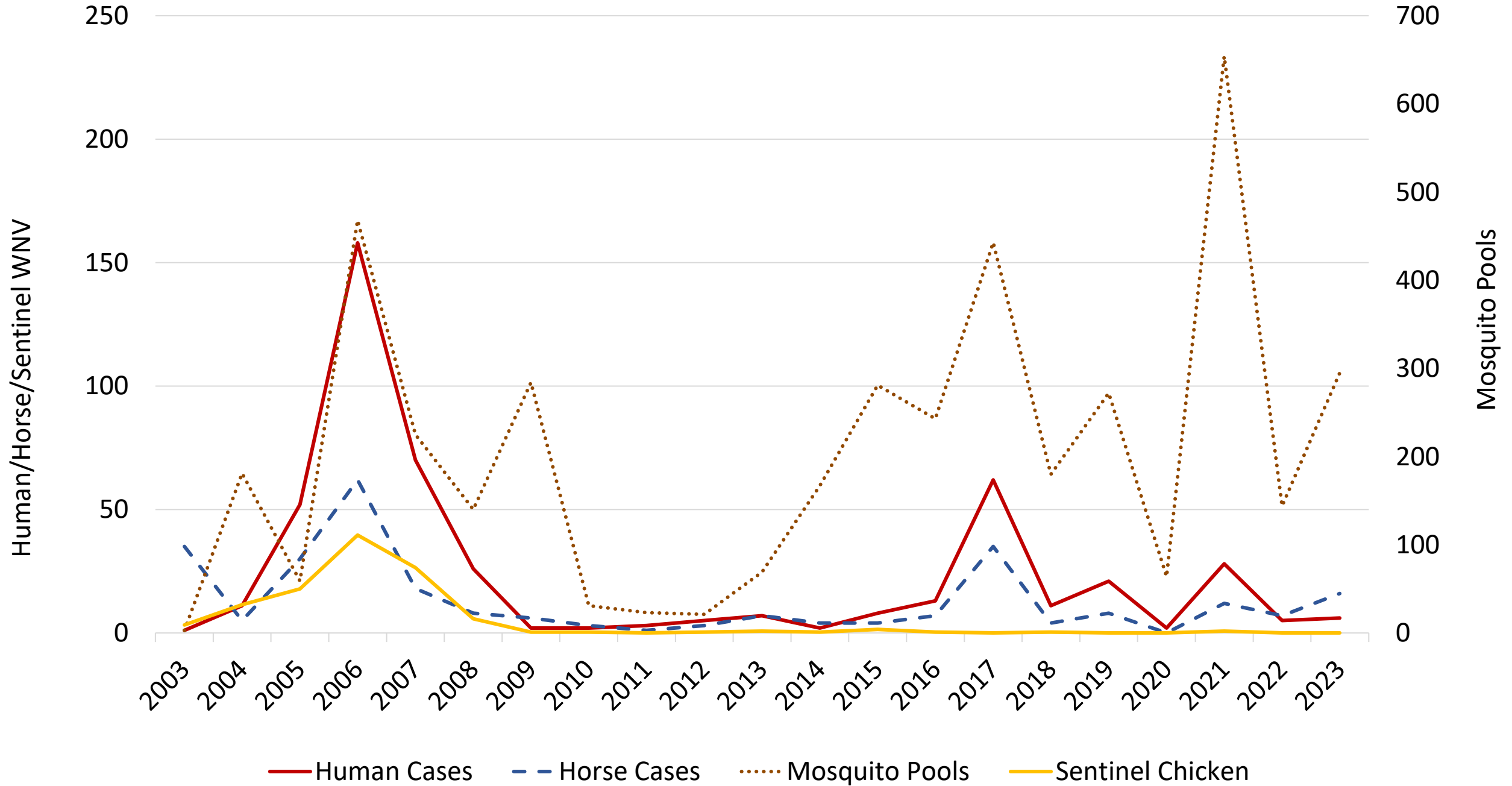




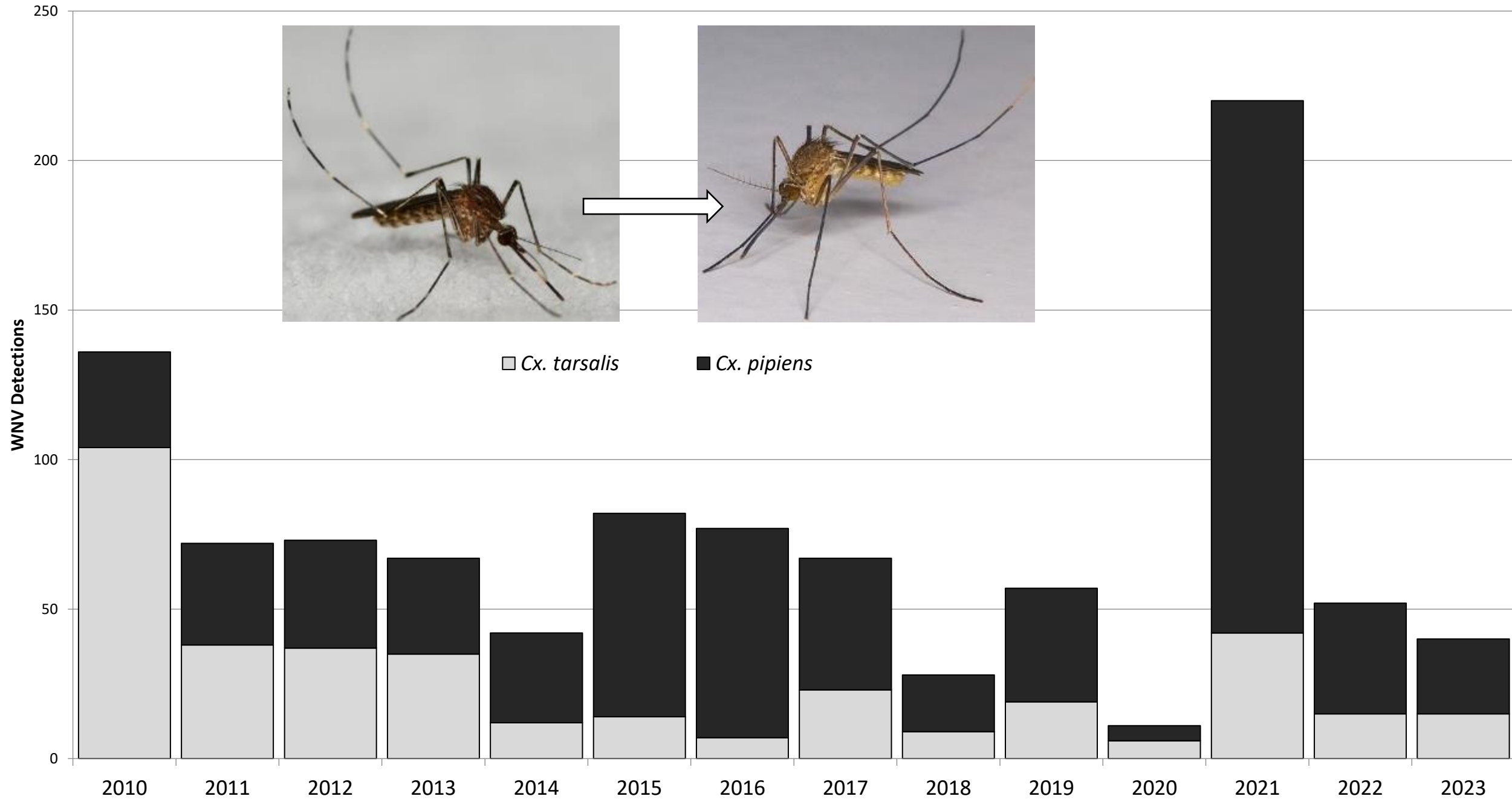




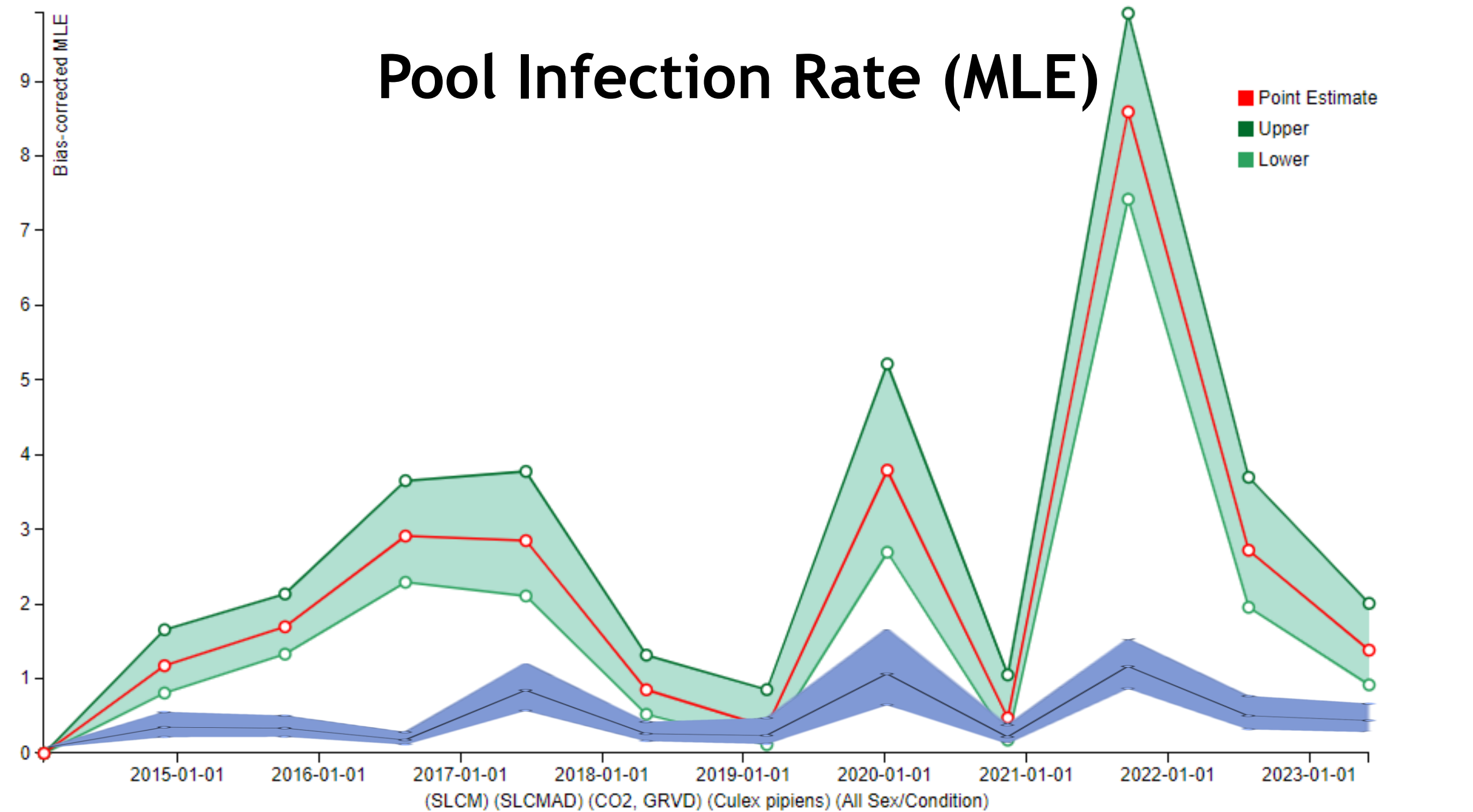
WNV Detection in Utah Since 2003



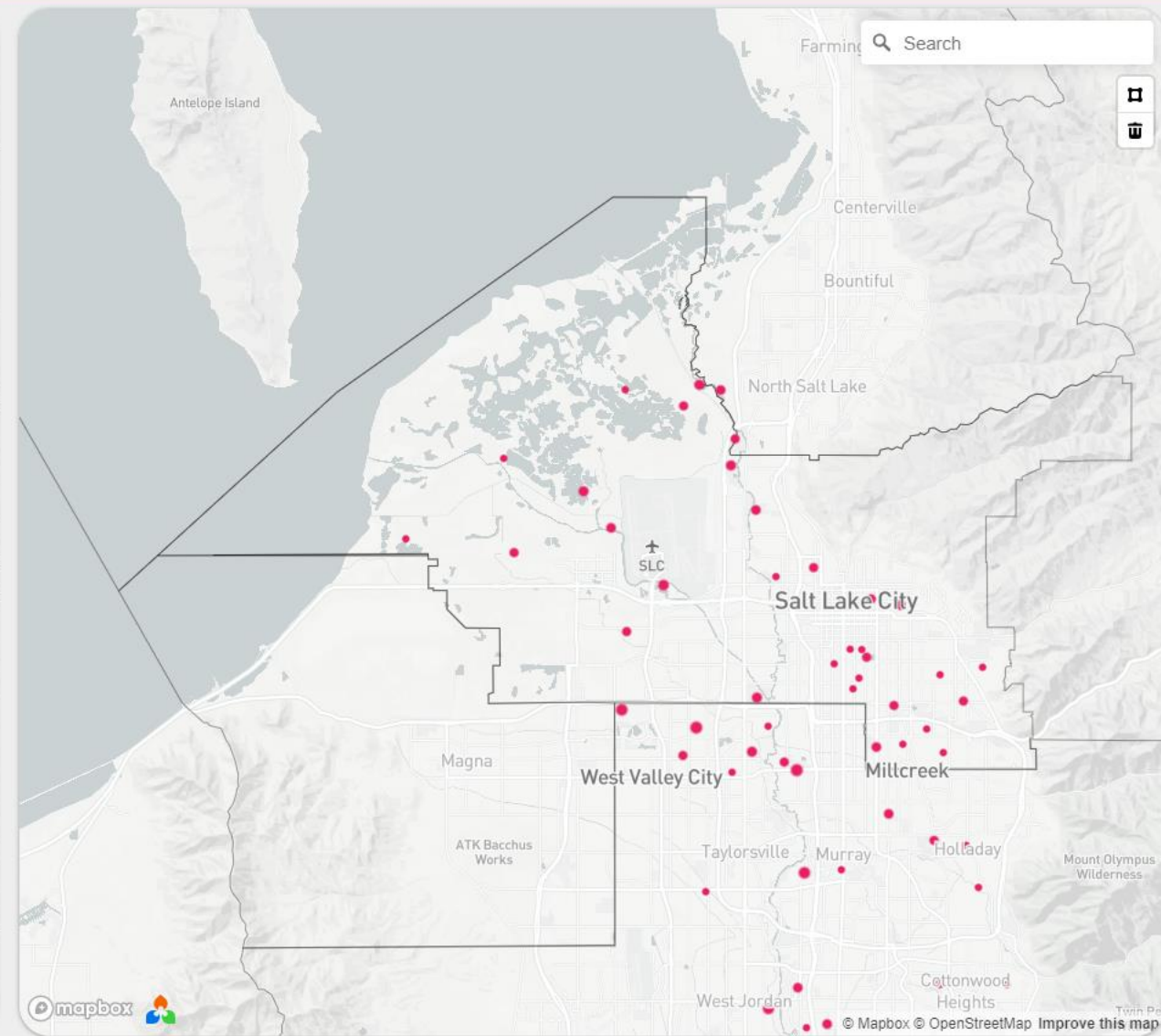
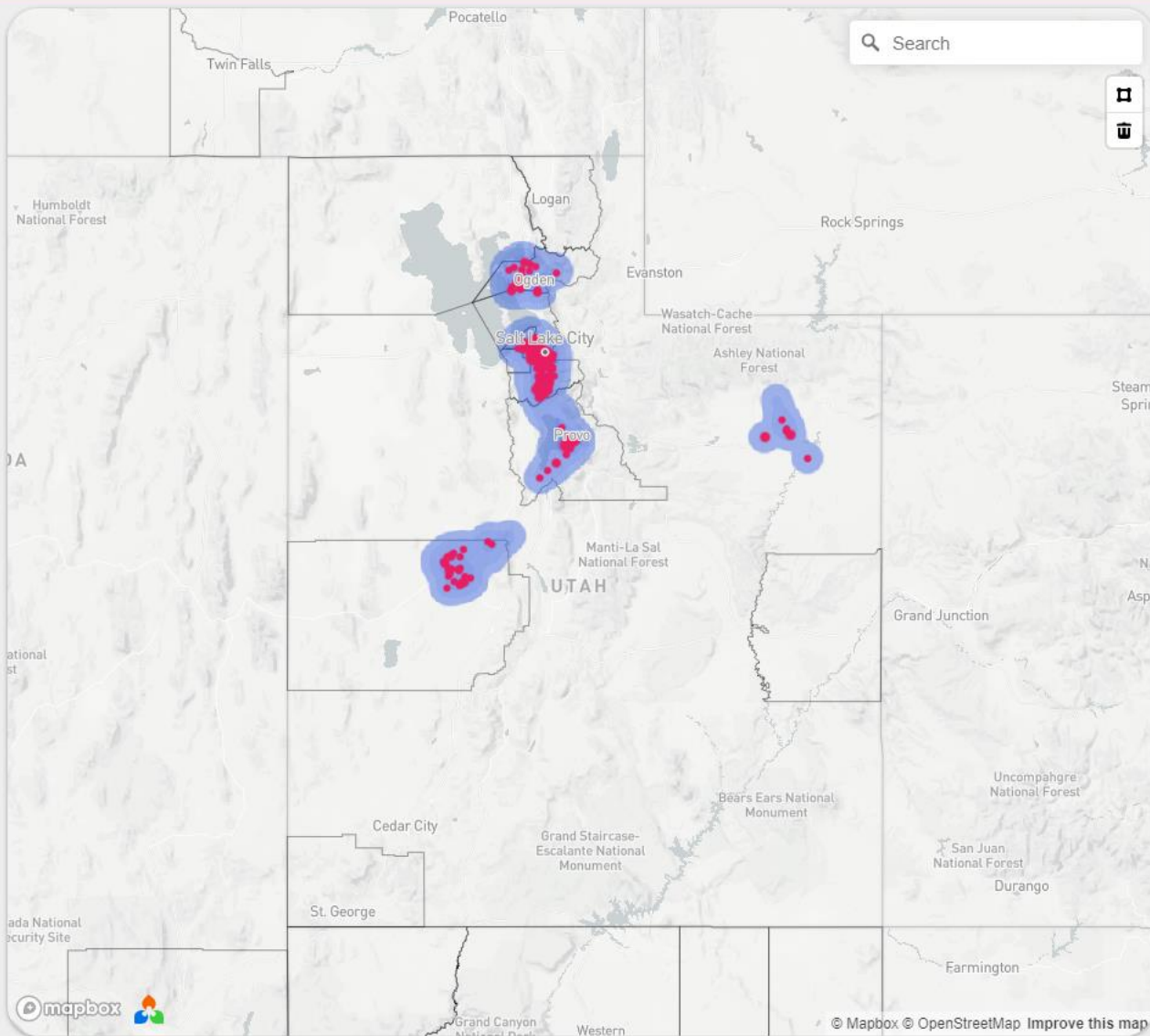
WNV Detection in *Culex* Mosquitoes - SLCMAD



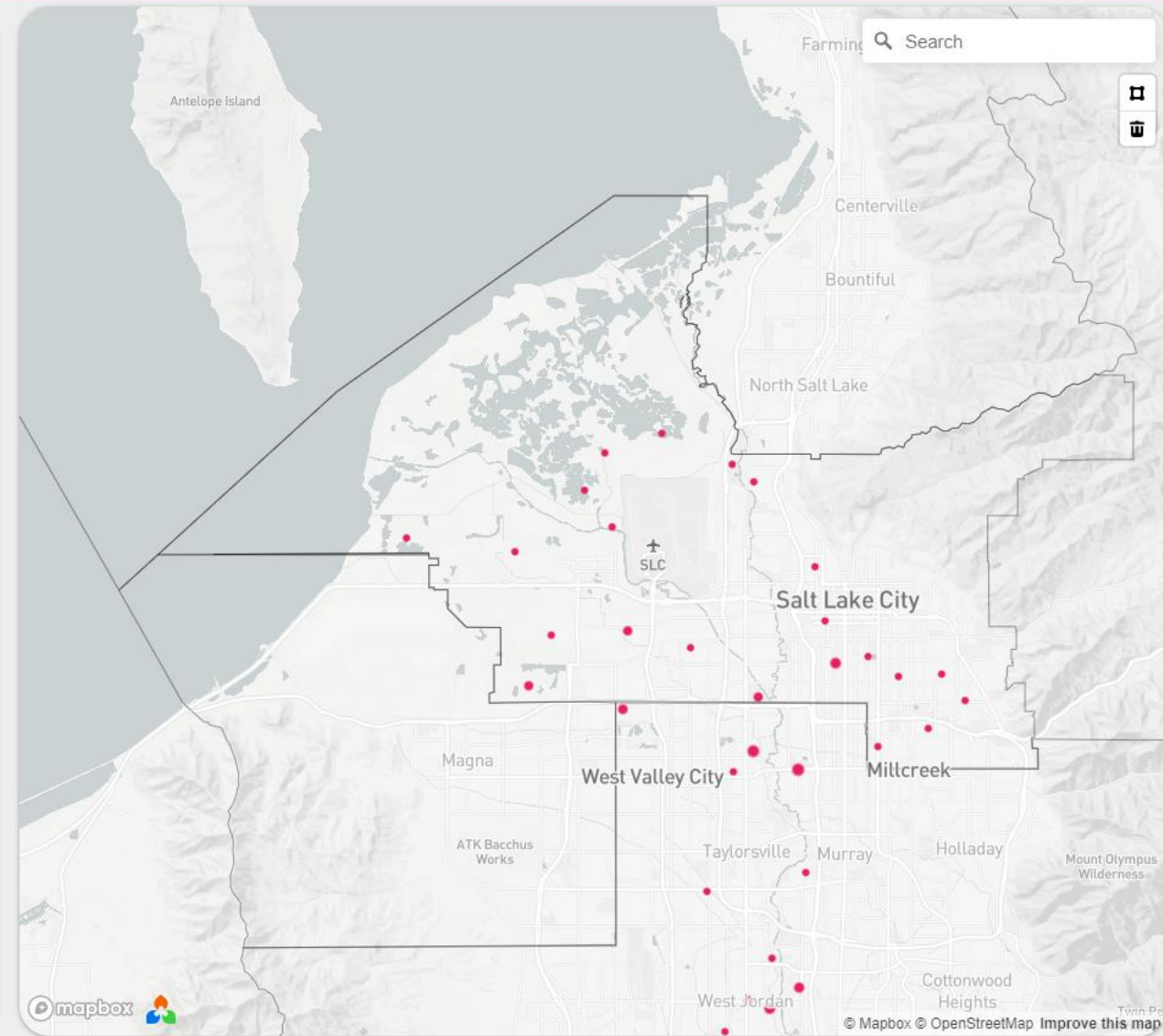
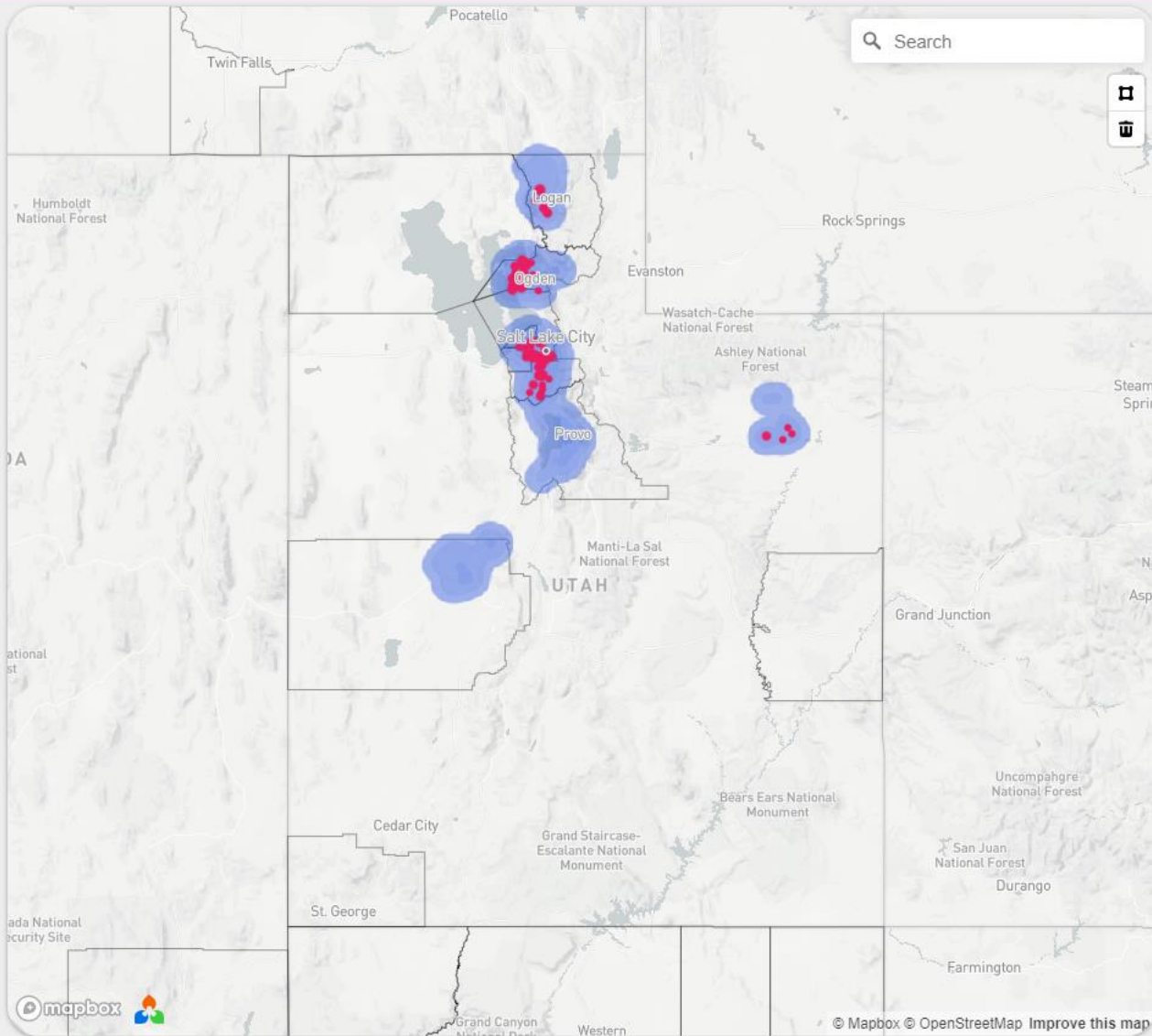
Pool Infection Rate (MLE)



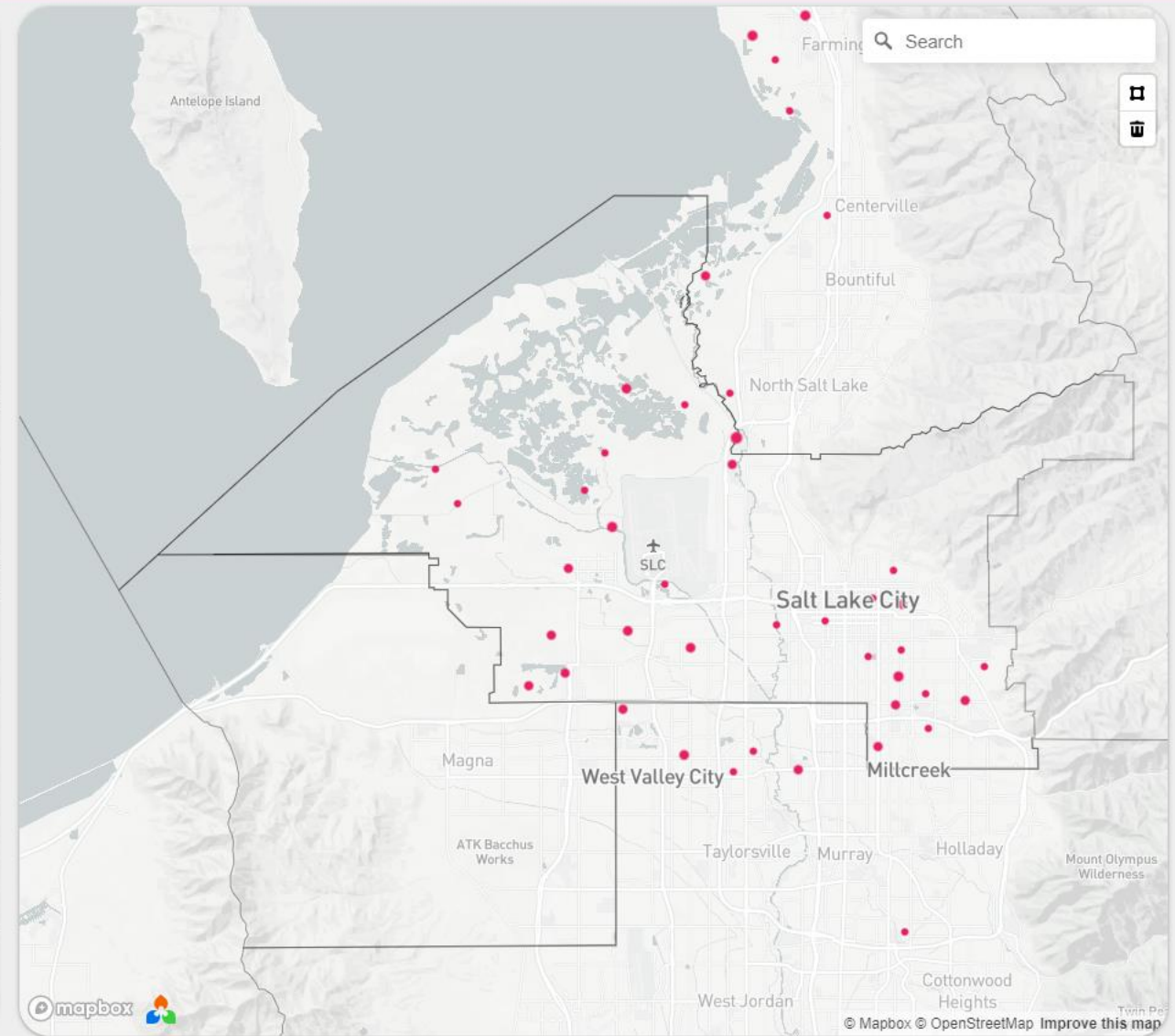
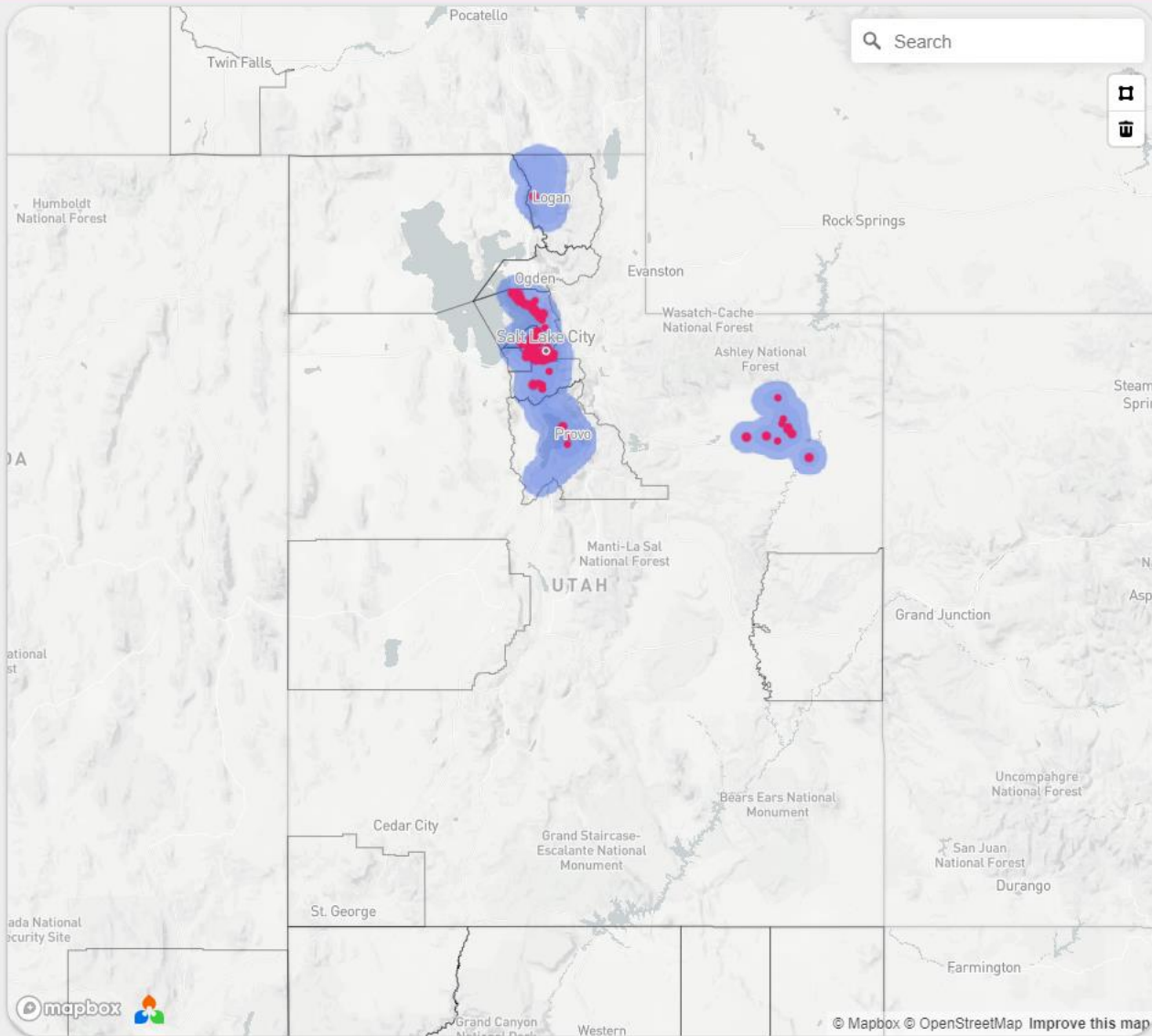
2017



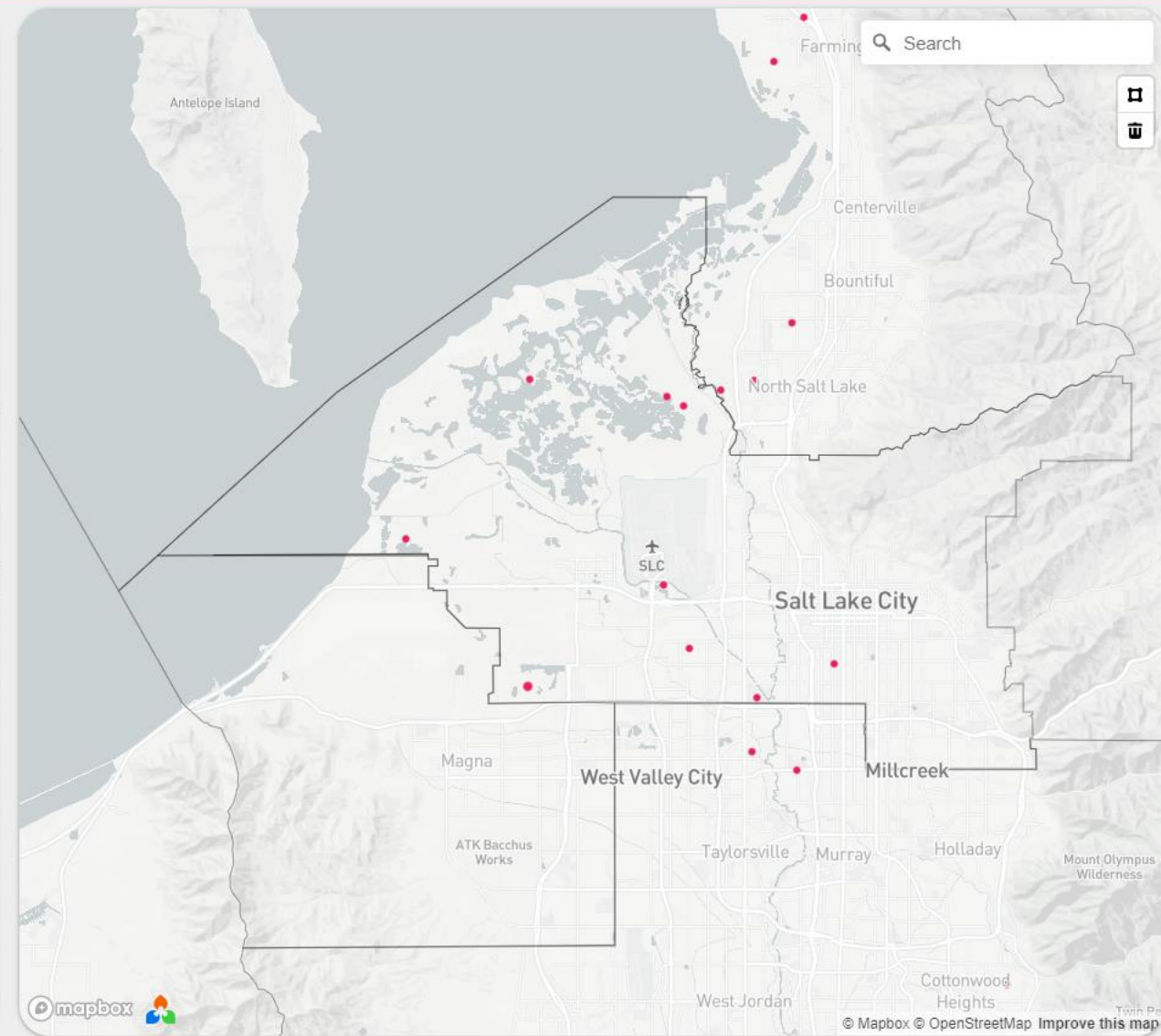
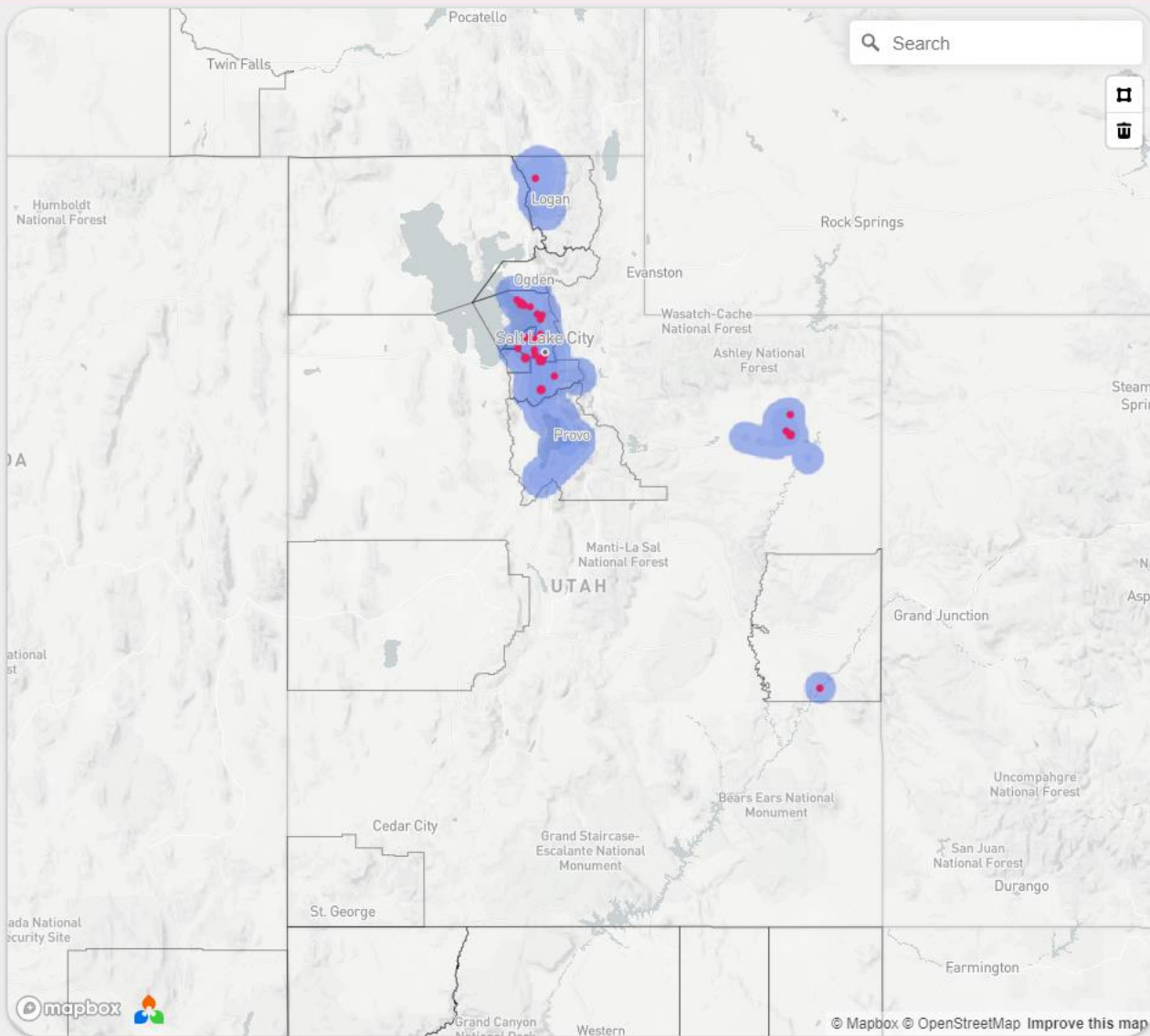
2018



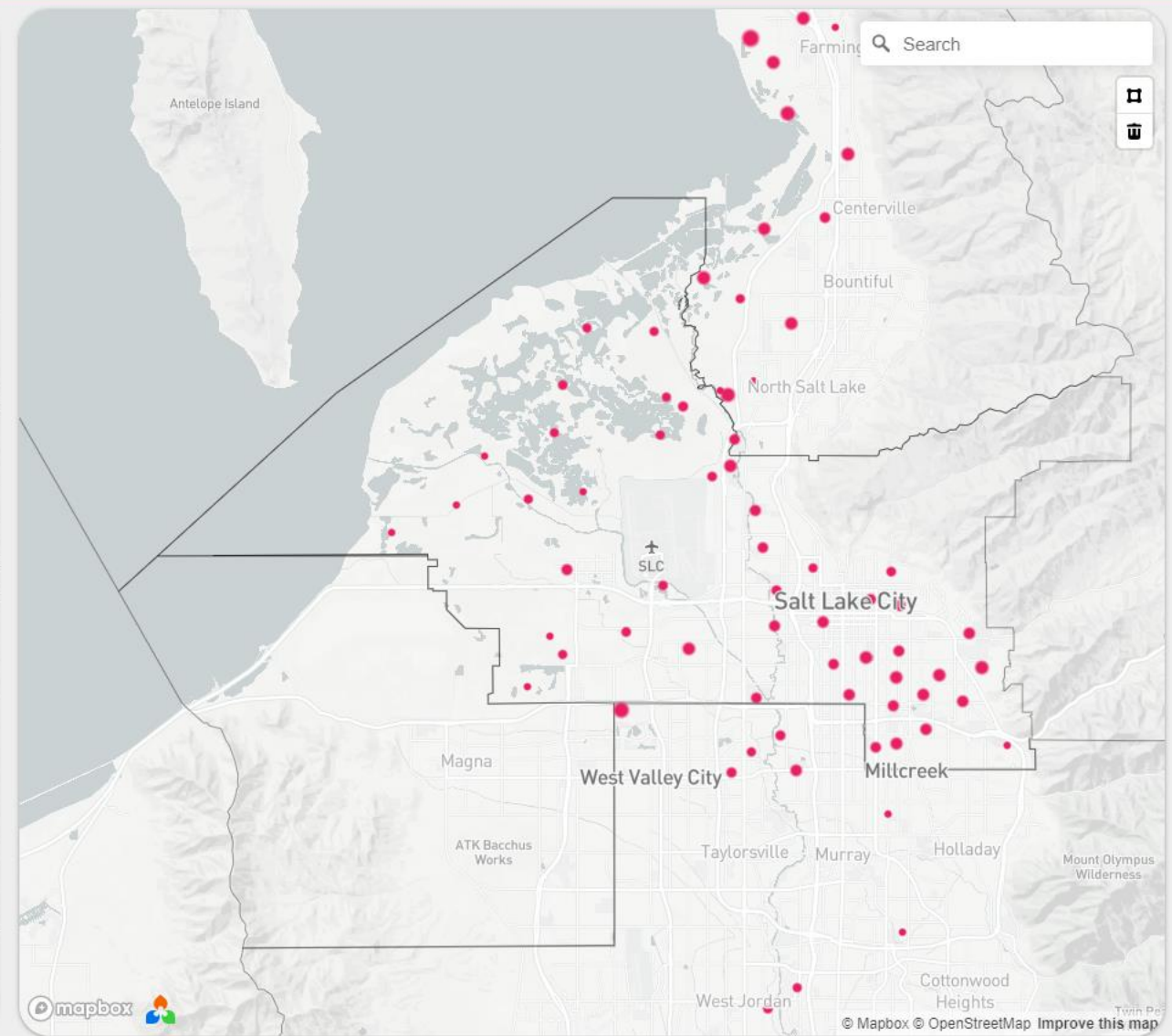
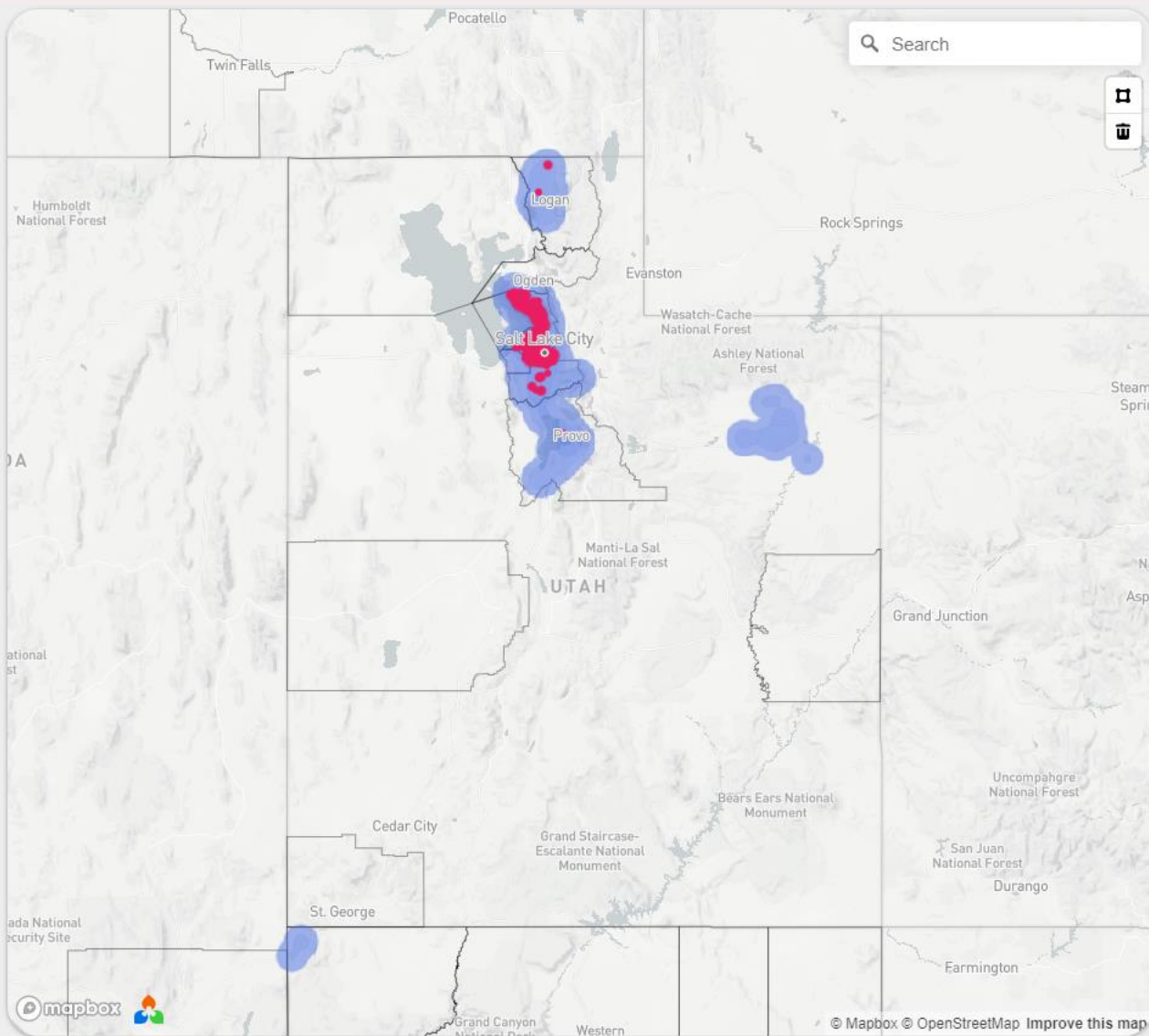
2019



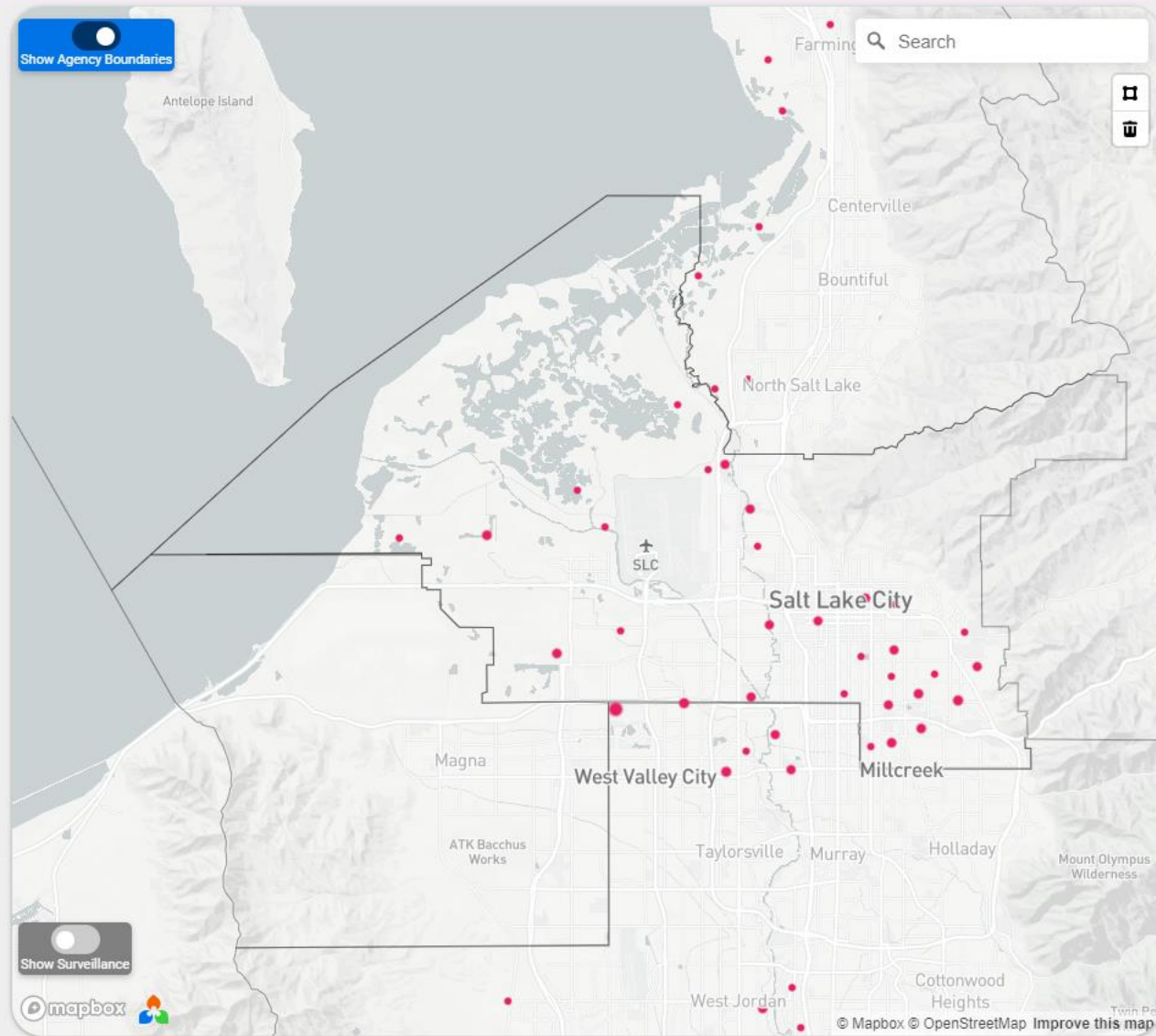
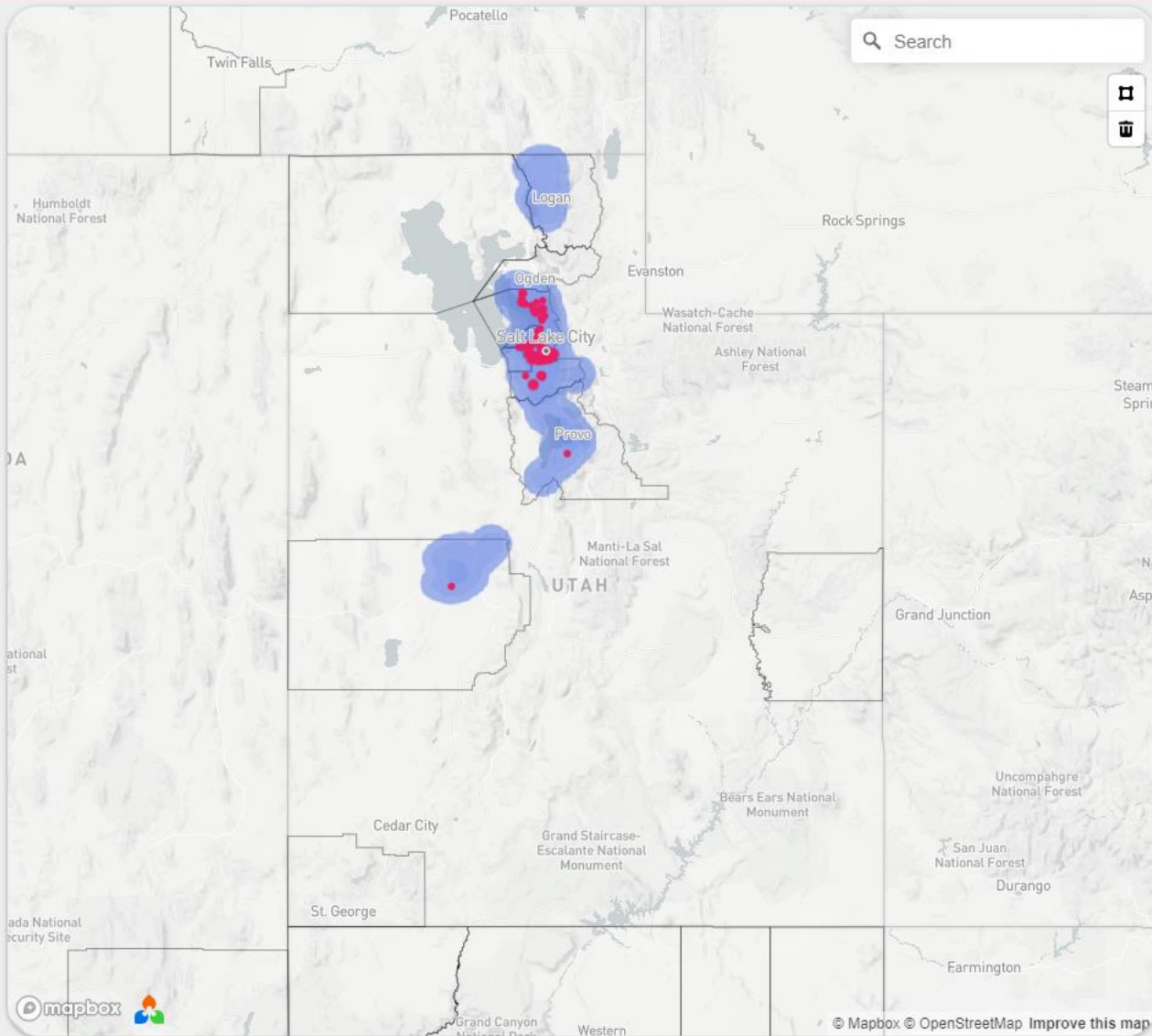
2020



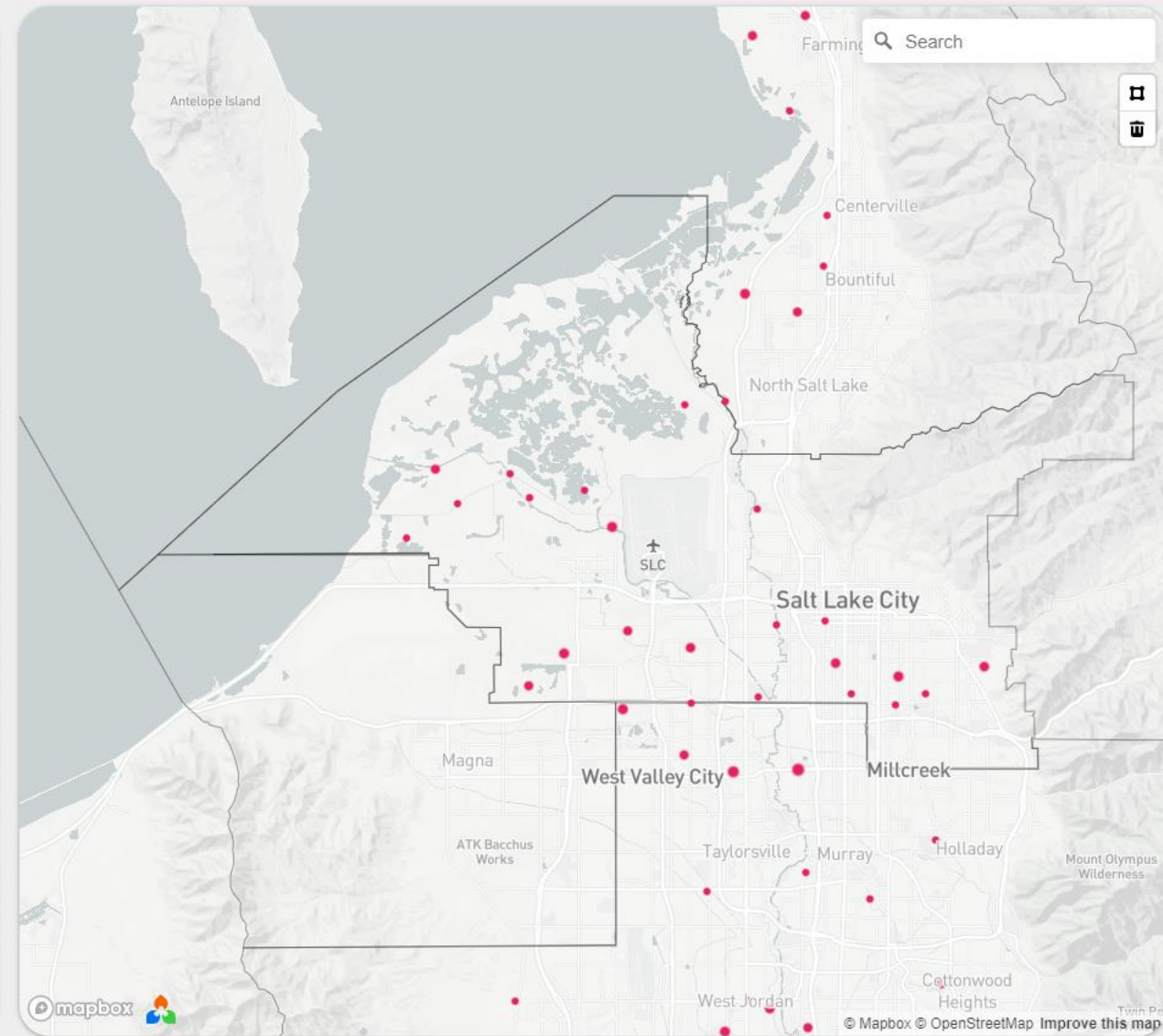
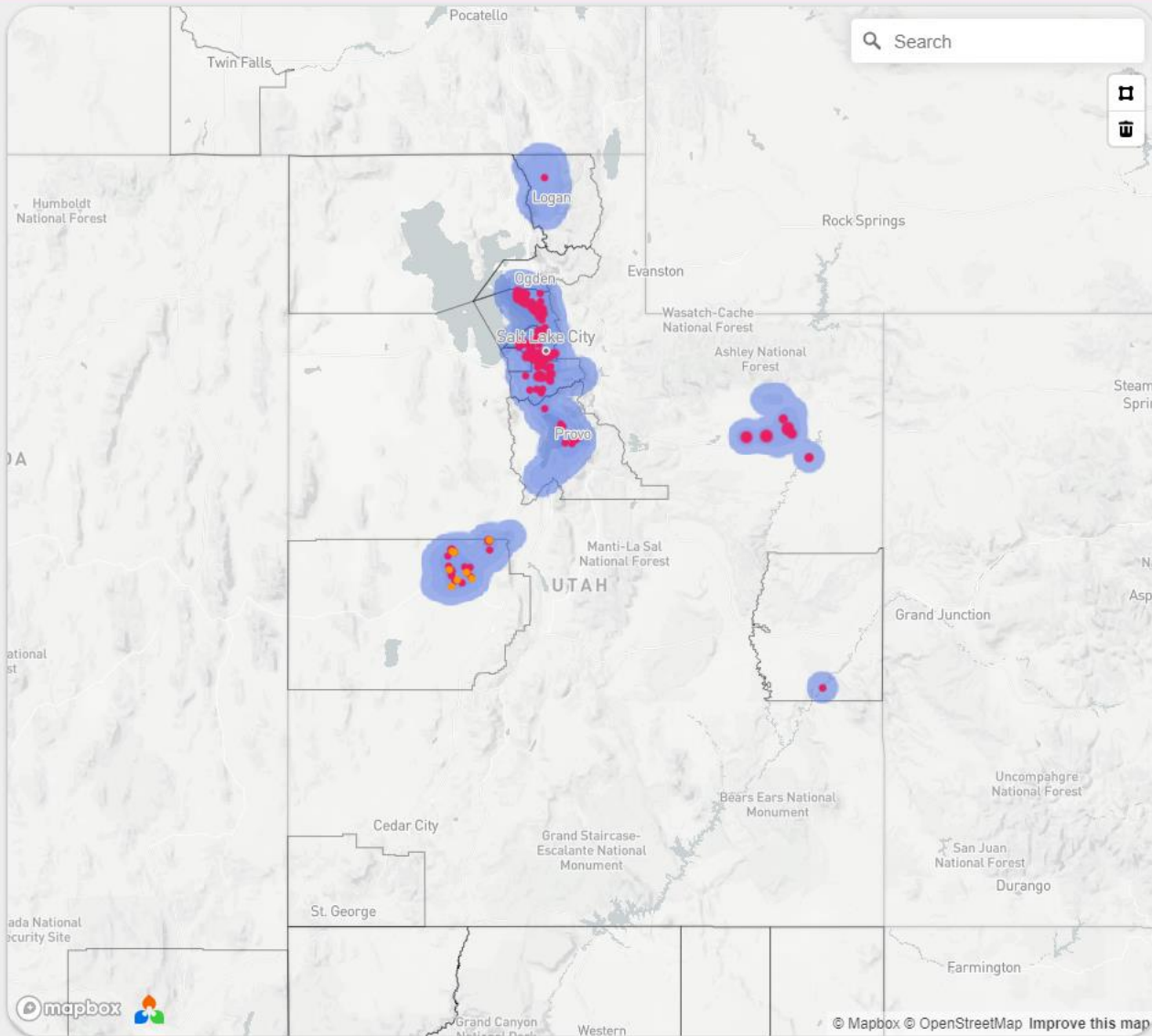
2021

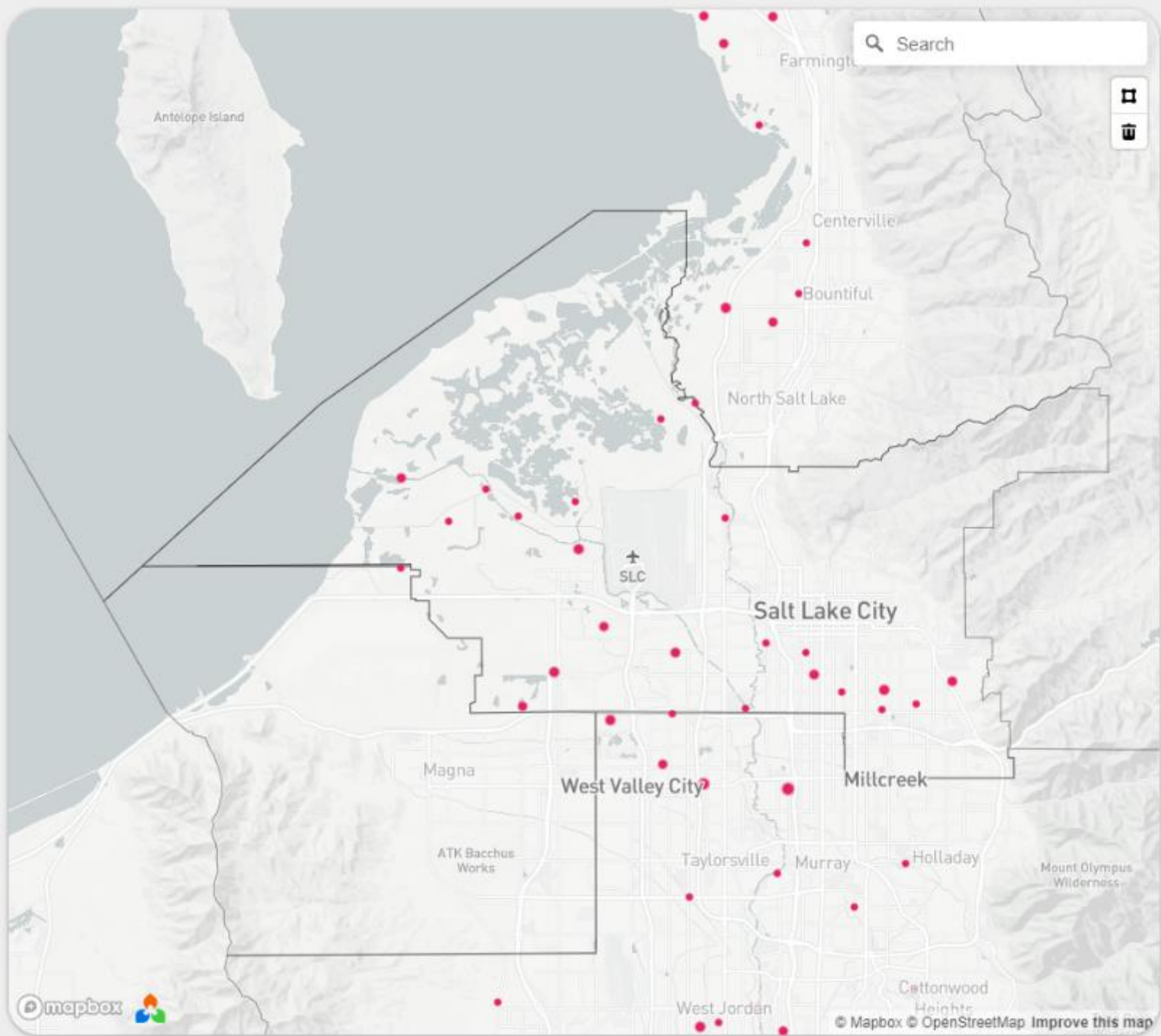


2022

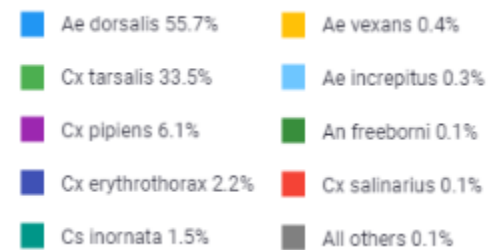
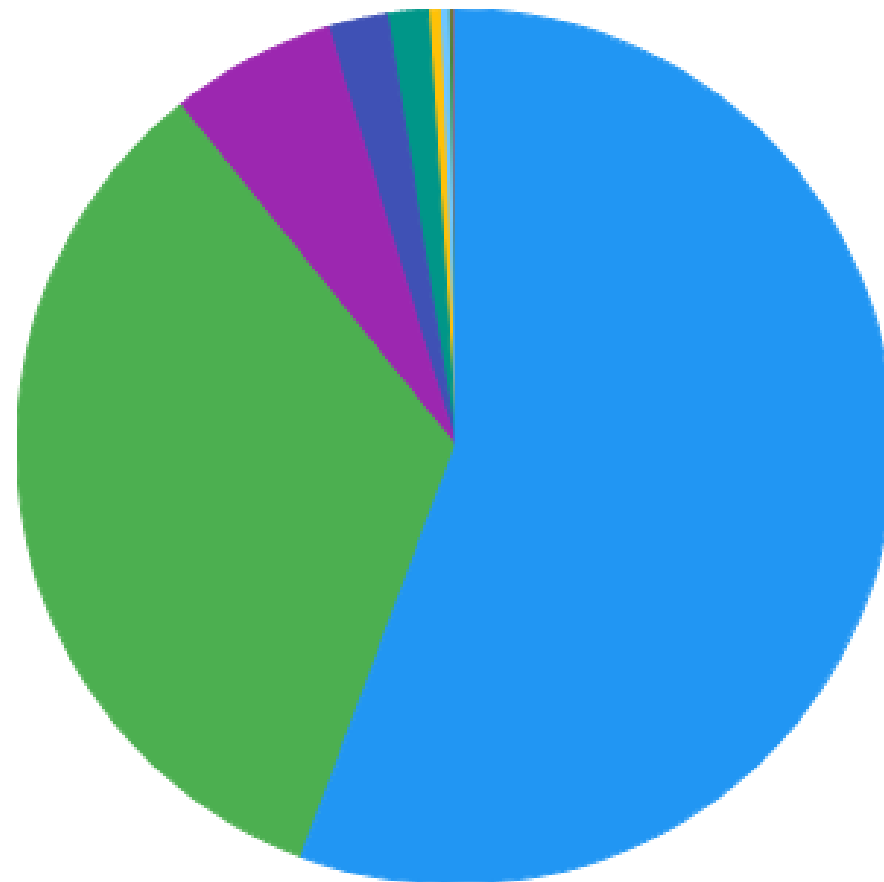


2023

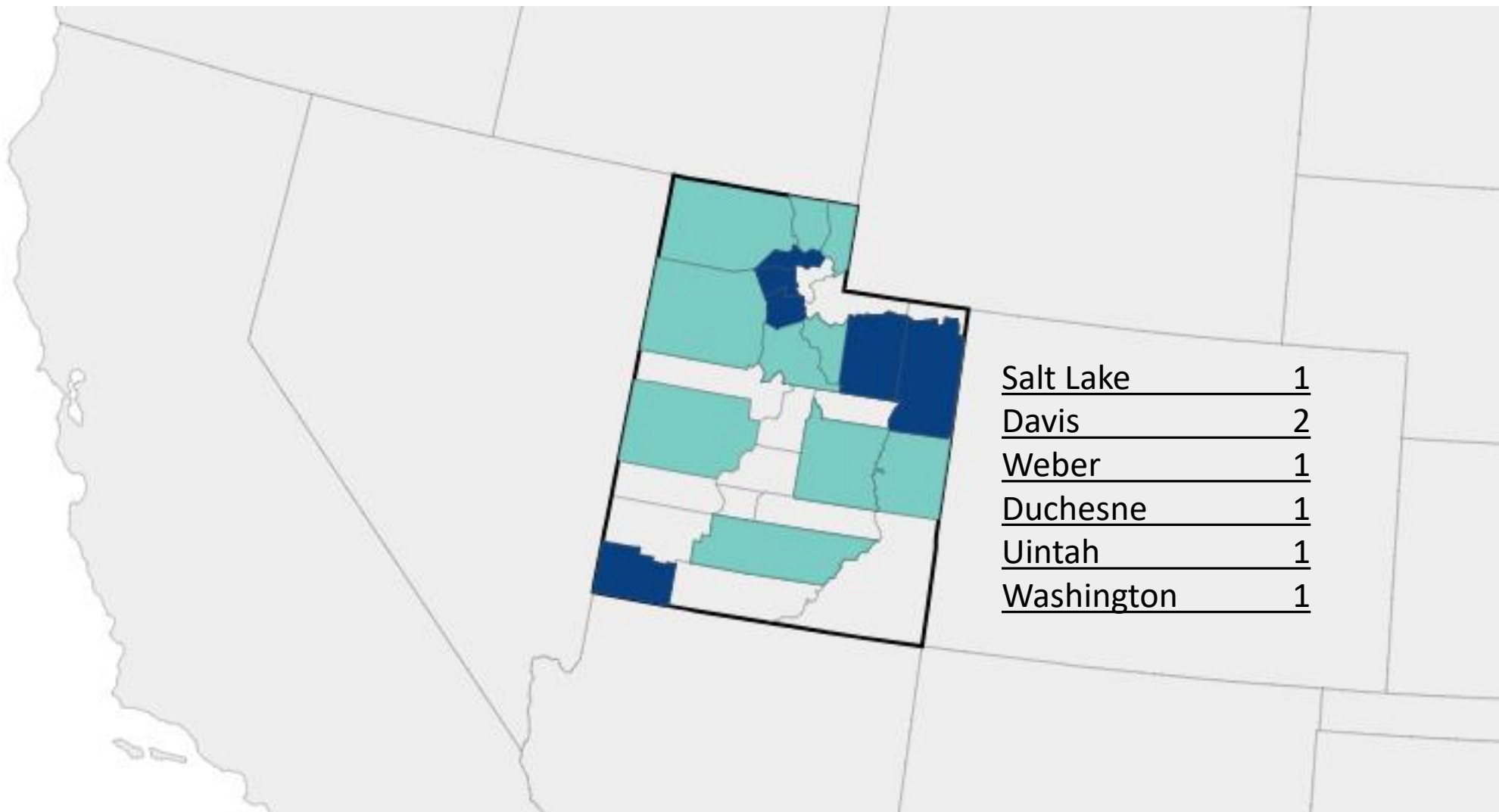




2023 Species Summation



WNV Human Cases in UT (2023)

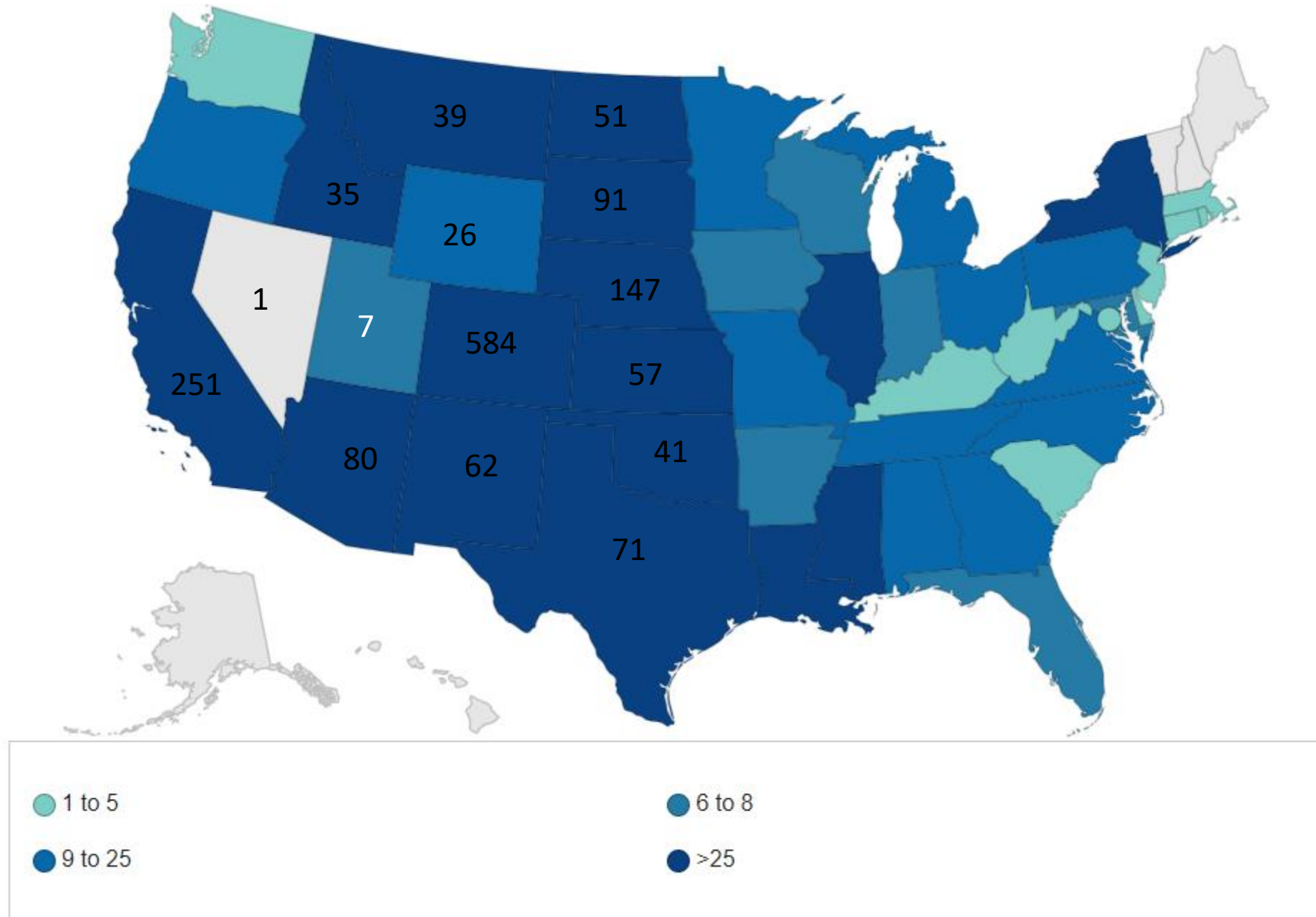


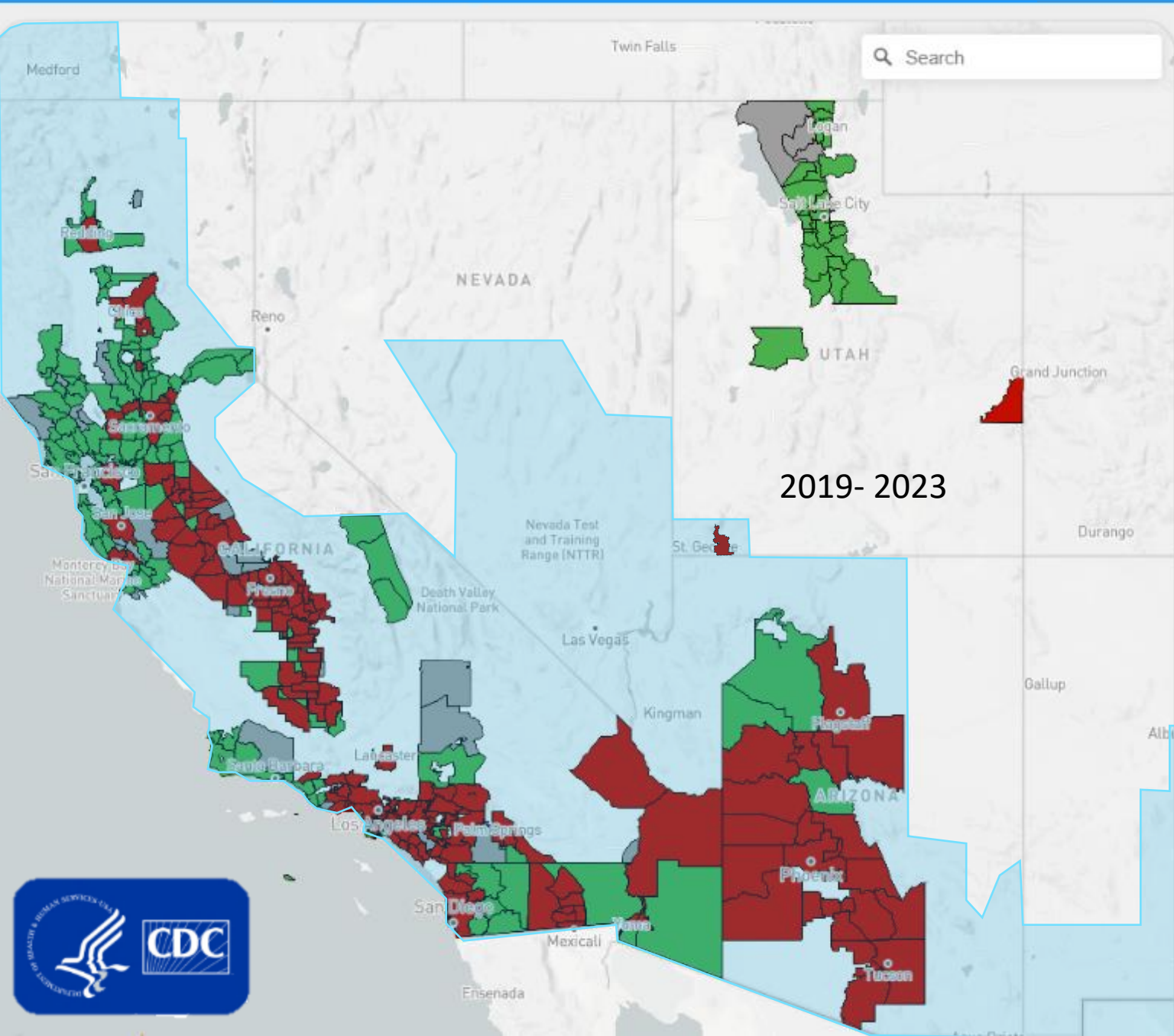
● Non-human activity

● Human infections

● Human infections and non-human activity

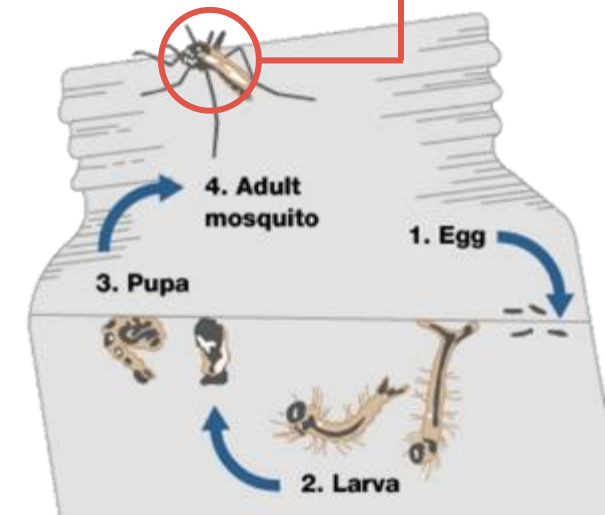
WNV Human Cases by State (2023)





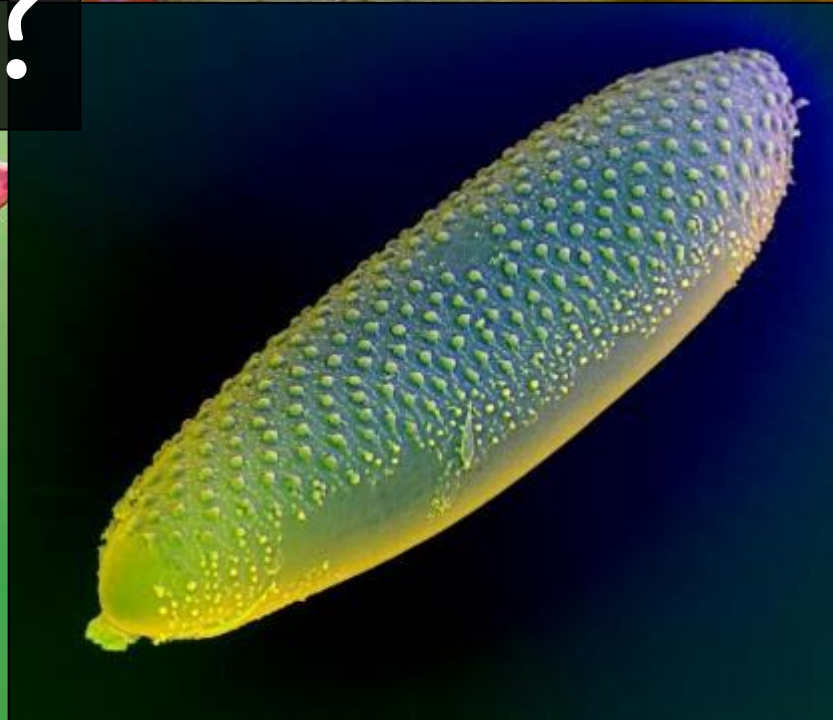
Yellow Fever Mosquito
(*Aedes aegypti*)

- Introduced multiple times to UT
- Sub-population from Tucson, AZ





Questions?



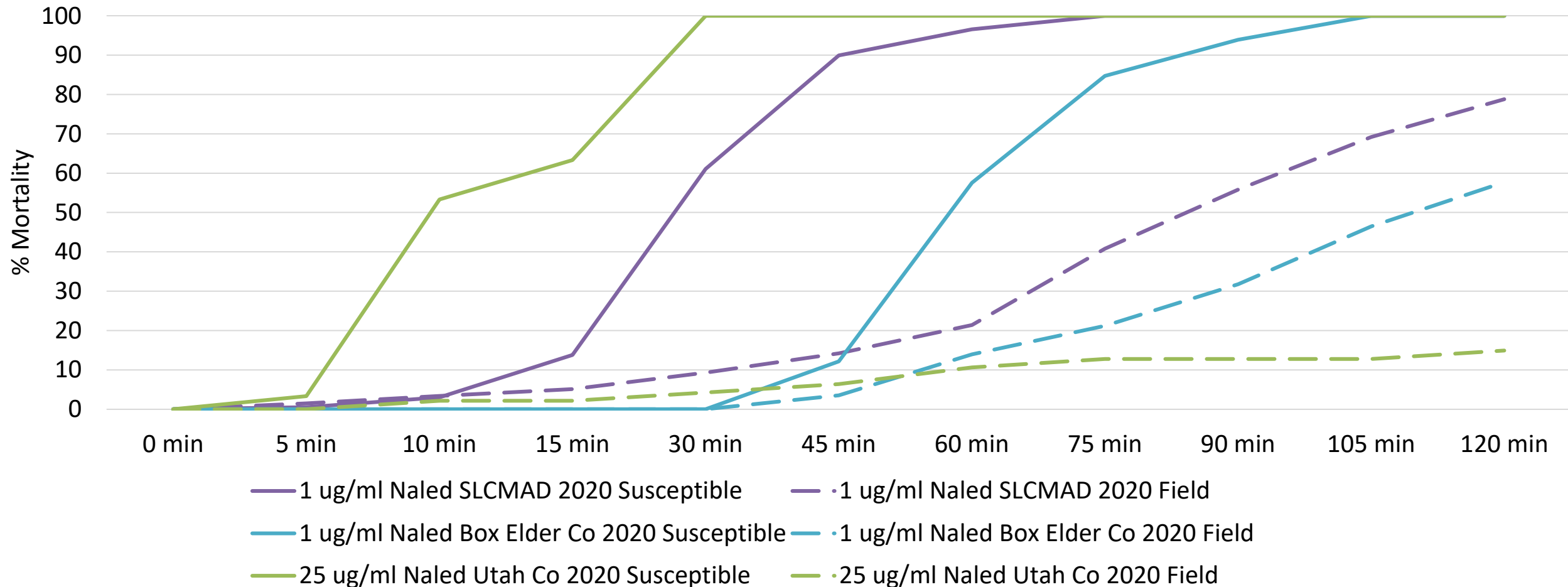
Duet HD Aerial Adulticide Trials at Salt Lake City MAD



Trial Background

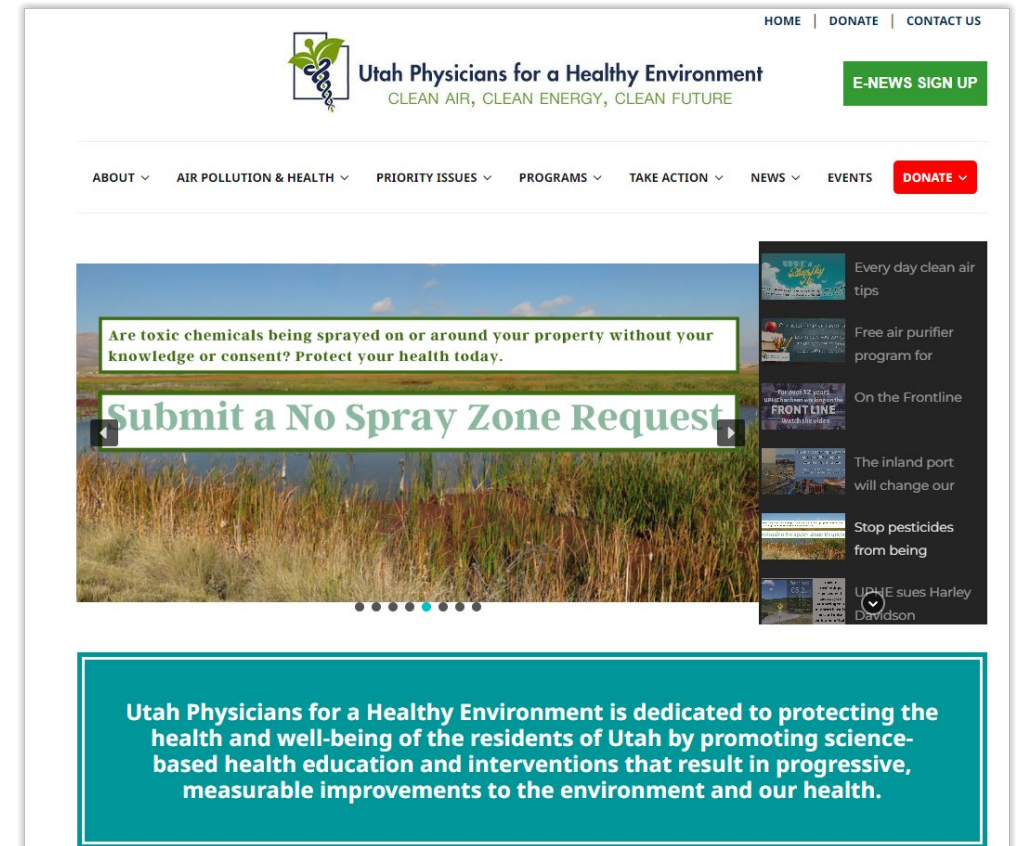
- Salt Lake City MAD (SLCMAD) is currently applying naled (Dibrom) as an aerial adulticide

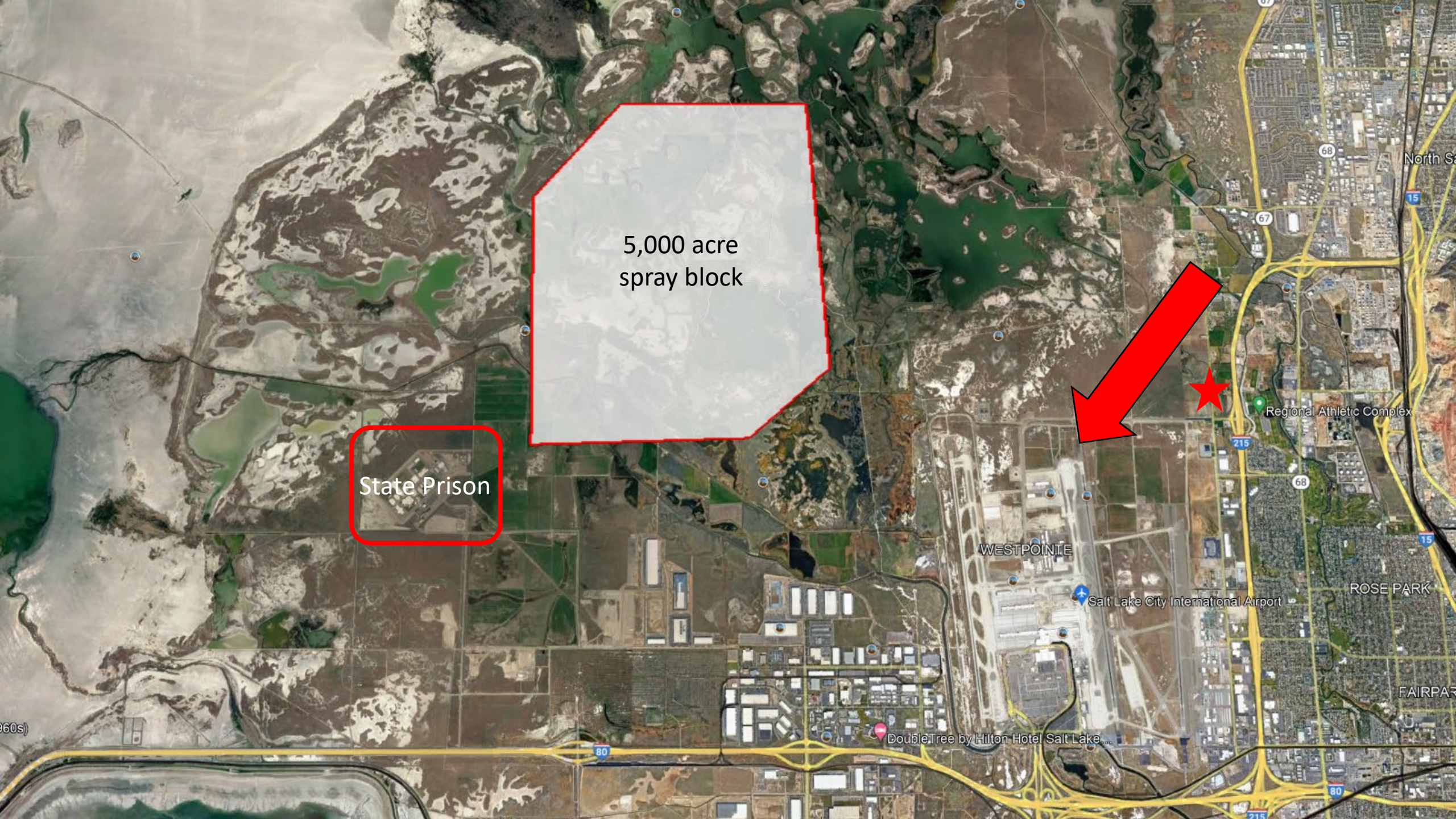
Culex tarsalis 2020 Naled Bottle Bioassays



Trial Background

- Salt Lake City MAD (SLCMAD) is currently applying naled (Dibrom) as an aerial aduaticide
- In recent years, environmental groups, particularly UPHE (Utah Physicians for a Healthy Environment) have applied public pressure to the district on its use of pesticides
- Conduct 3 Duet HD applications over 3 weeks
 - July 27th, August 2nd, and August 9th
- SLC International Airport in close proximity to spray blocks
- Challenging temperature inversions and difficult wind conditions
- New Utah State Prison site in the district





5,000 acre
spray block

State Prison

WESTPOINTE

Salt Lake City International Airport

Regional Athletic Complex

ROSE PARK

FAIRPARK

DoubleTree by Hilton Hotel Salt Lake

North Salt Lake

Trial Questions

- Can we get Duet HD to the target area without an offset?
- Can we apply Duet HD successfully in shifting conditions?
- Will Duet HD control the target population?



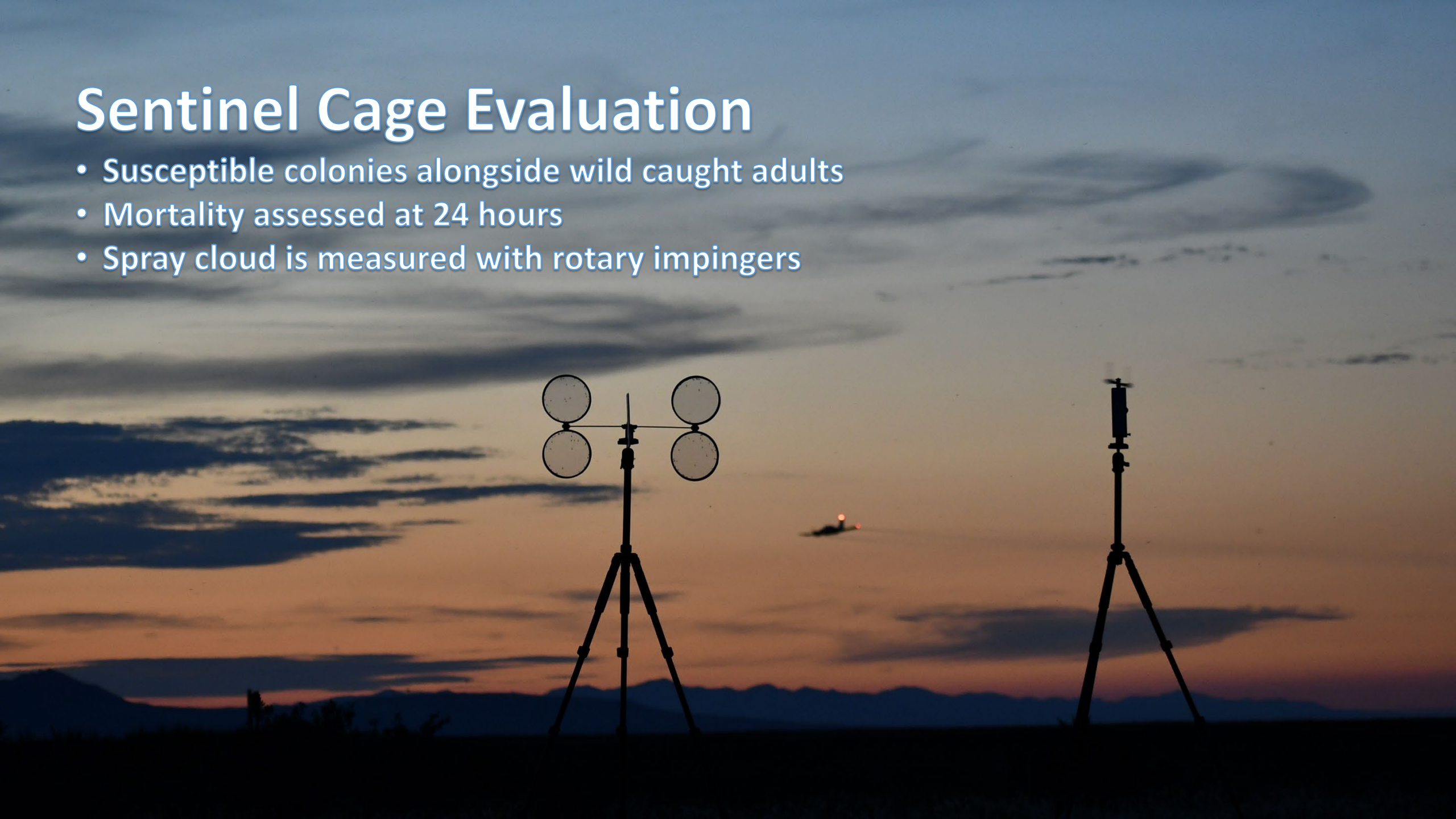
An aerial photograph of a crop duster plane flying over a dark, flat landscape at sunset. The sky is a mix of orange, pink, and blue, with scattered white clouds. The plane is in the center-left of the frame, leaving a white trail behind it.

Treatment Details

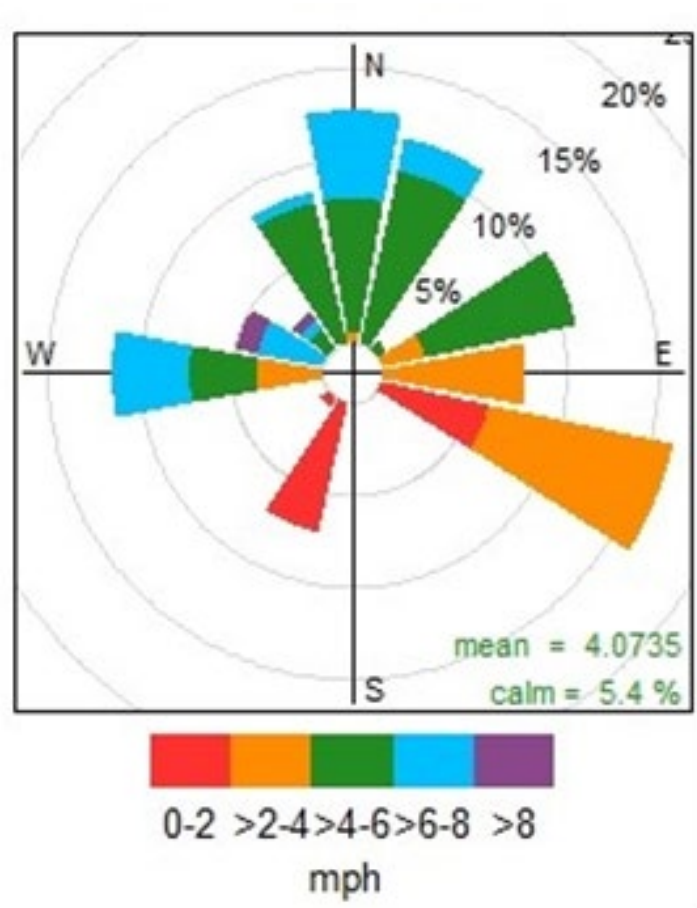
- 0.75 oz Duet HD per acre
- 100 ft. release height
- 1000 ft. swath

Sentinel Cage Evaluation

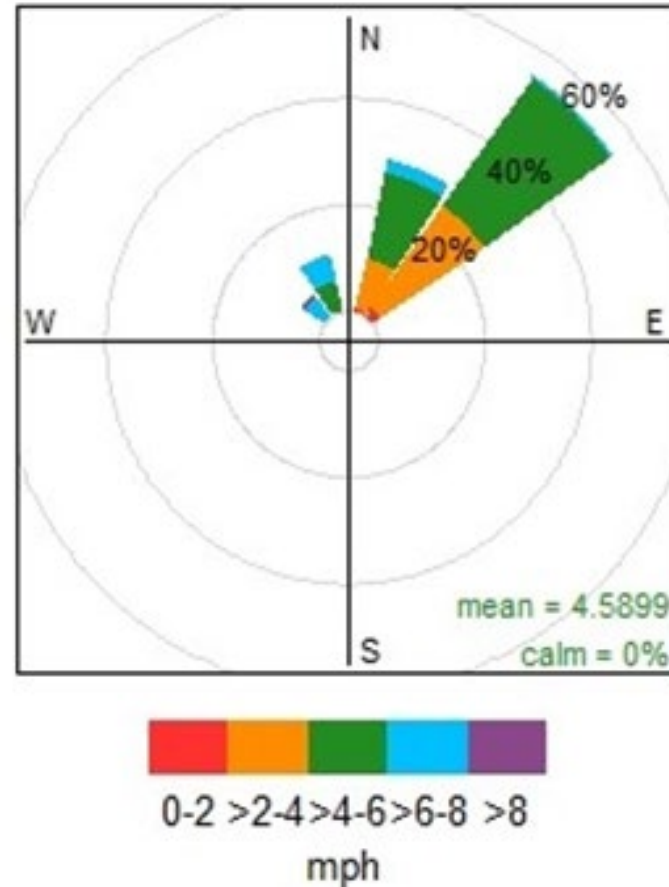
- Susceptible colonies alongside wild caught adults
- Mortality assessed at 24 hours
- Spray cloud is measured with rotary impingers



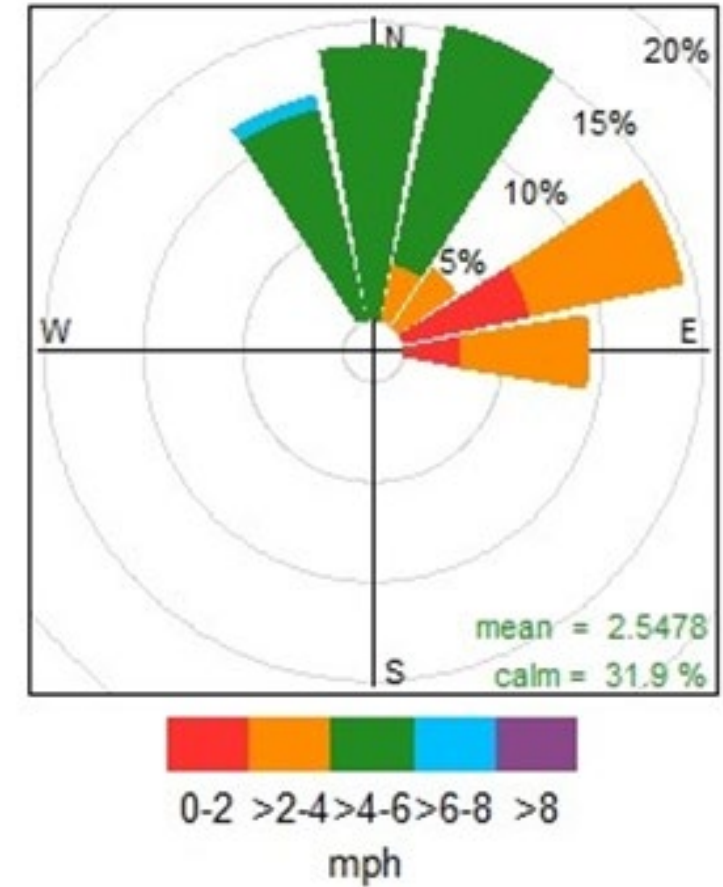
Wind Conditions (Wind Rose Plots)



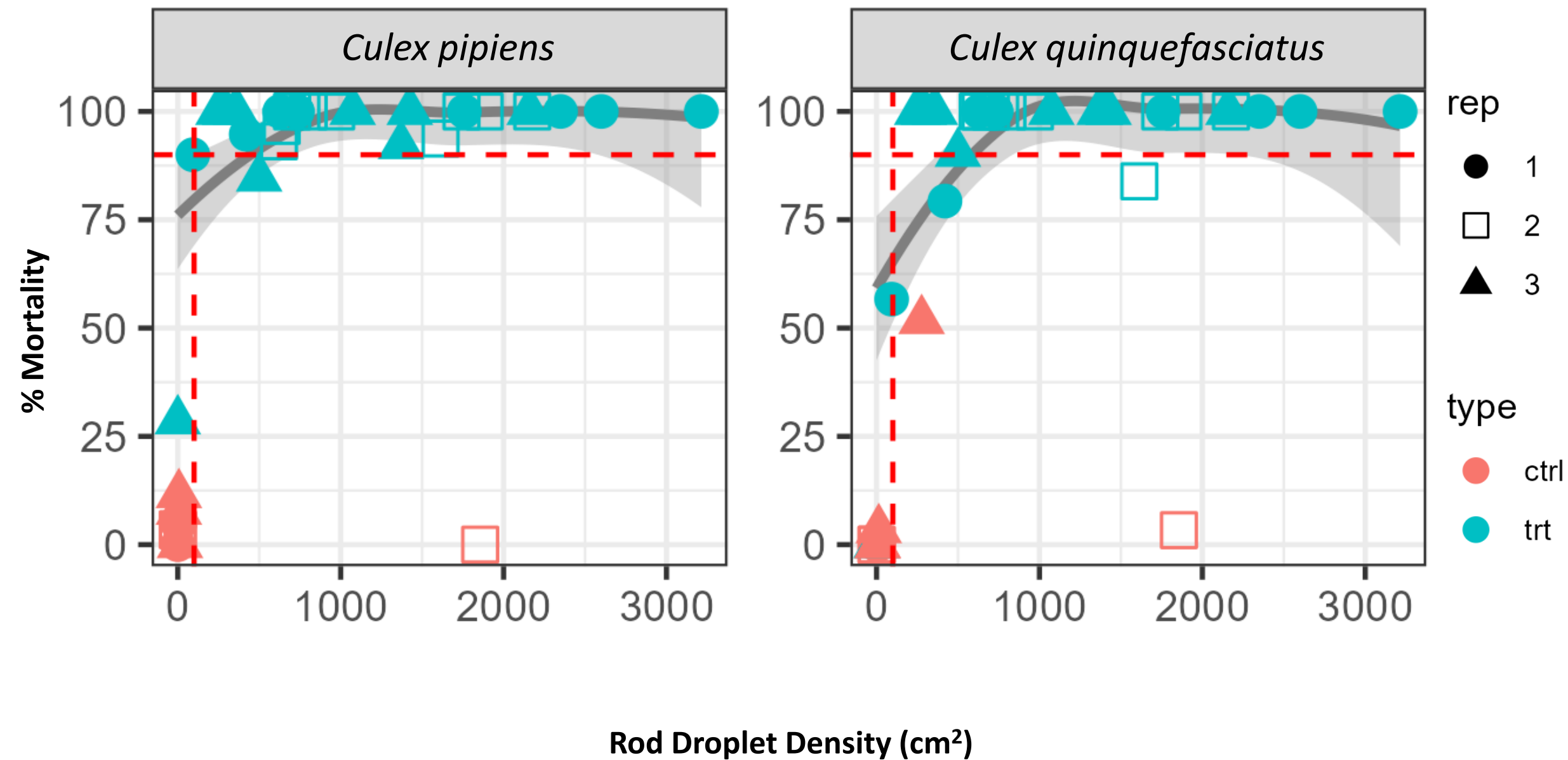
Trial 1

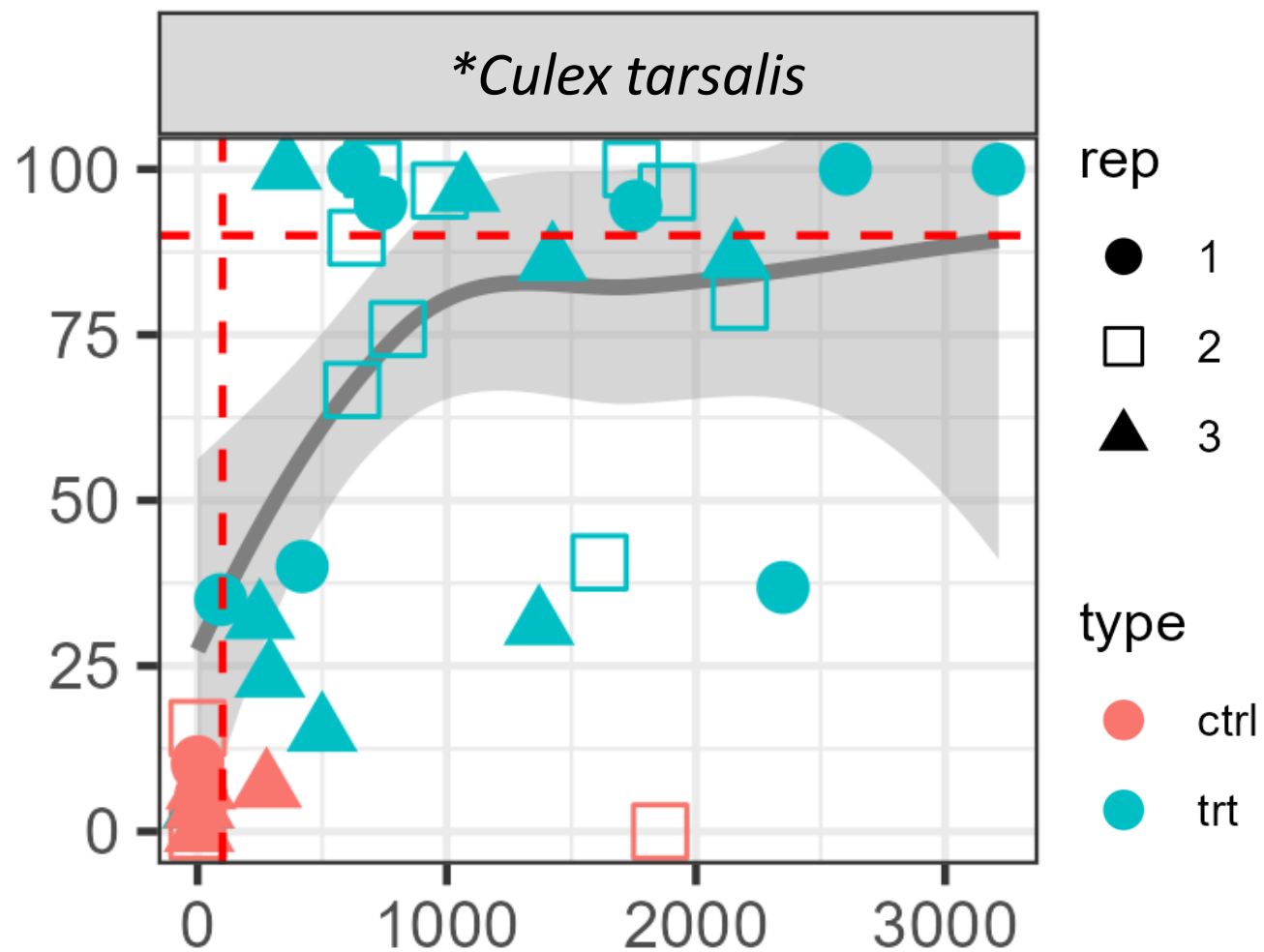
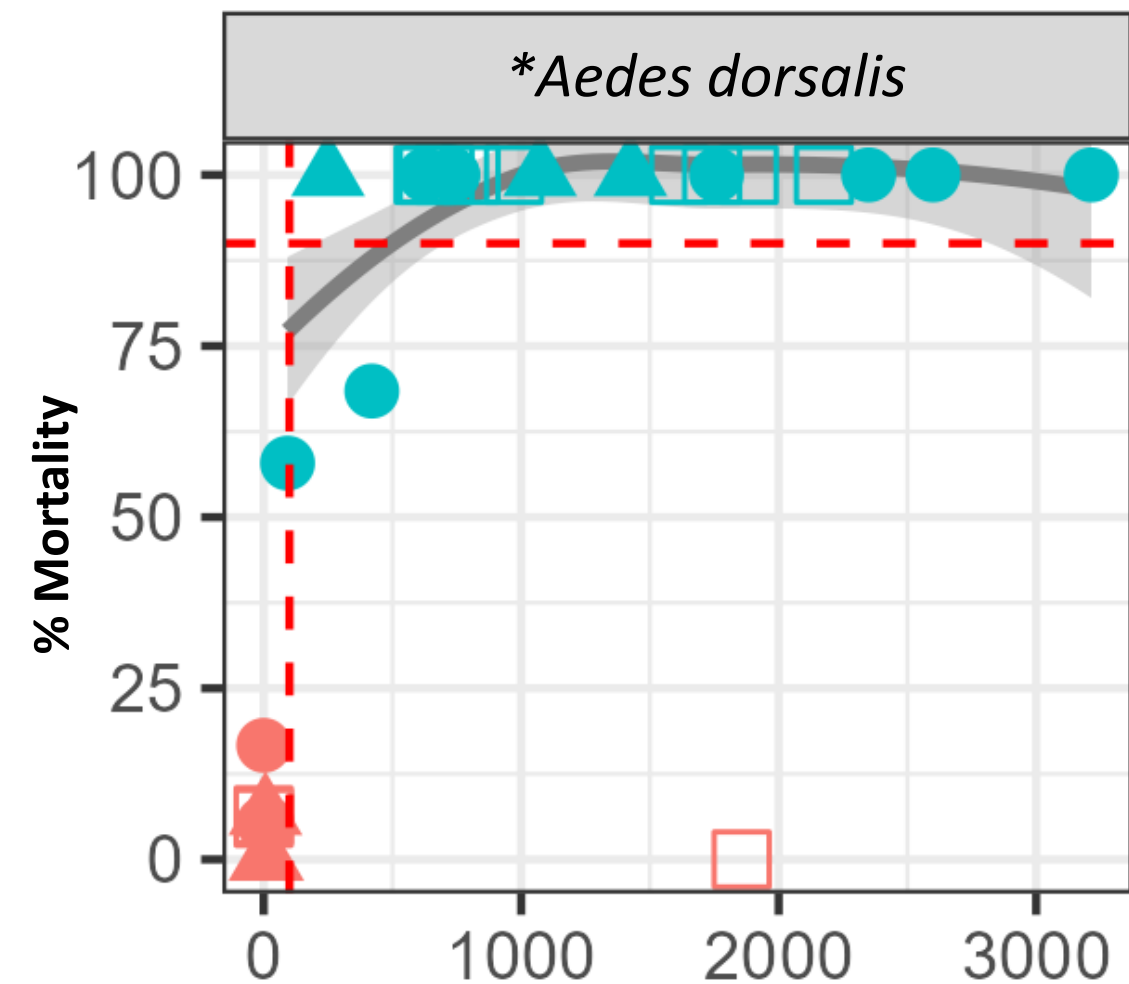


Trial 2



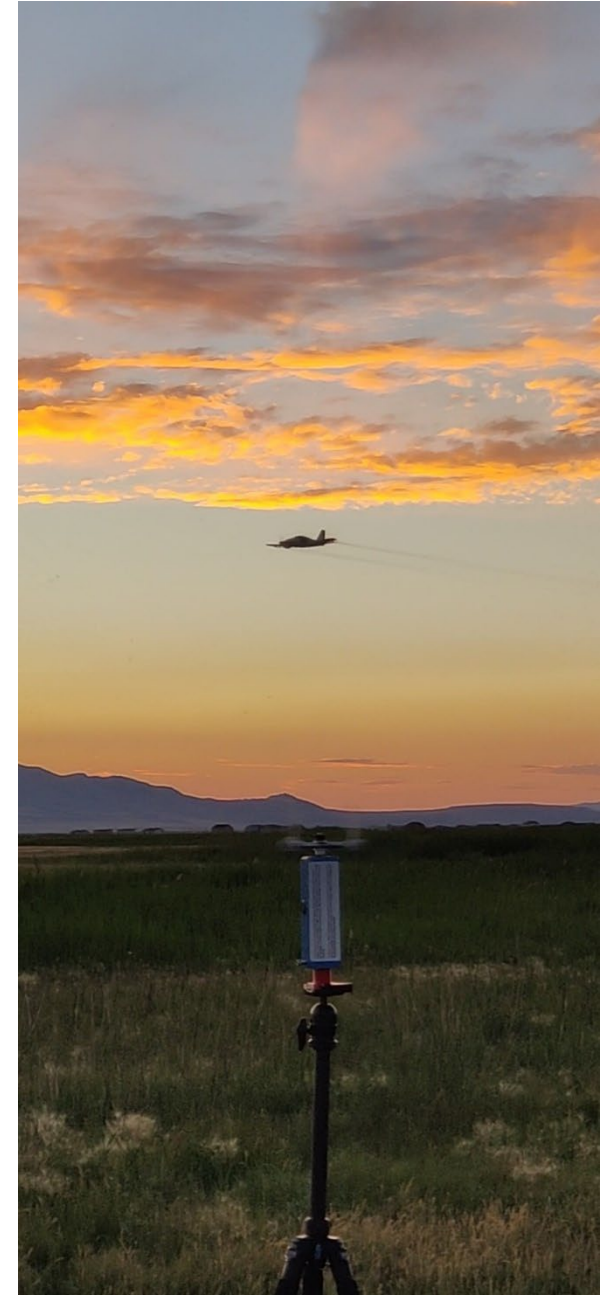
Trial 3



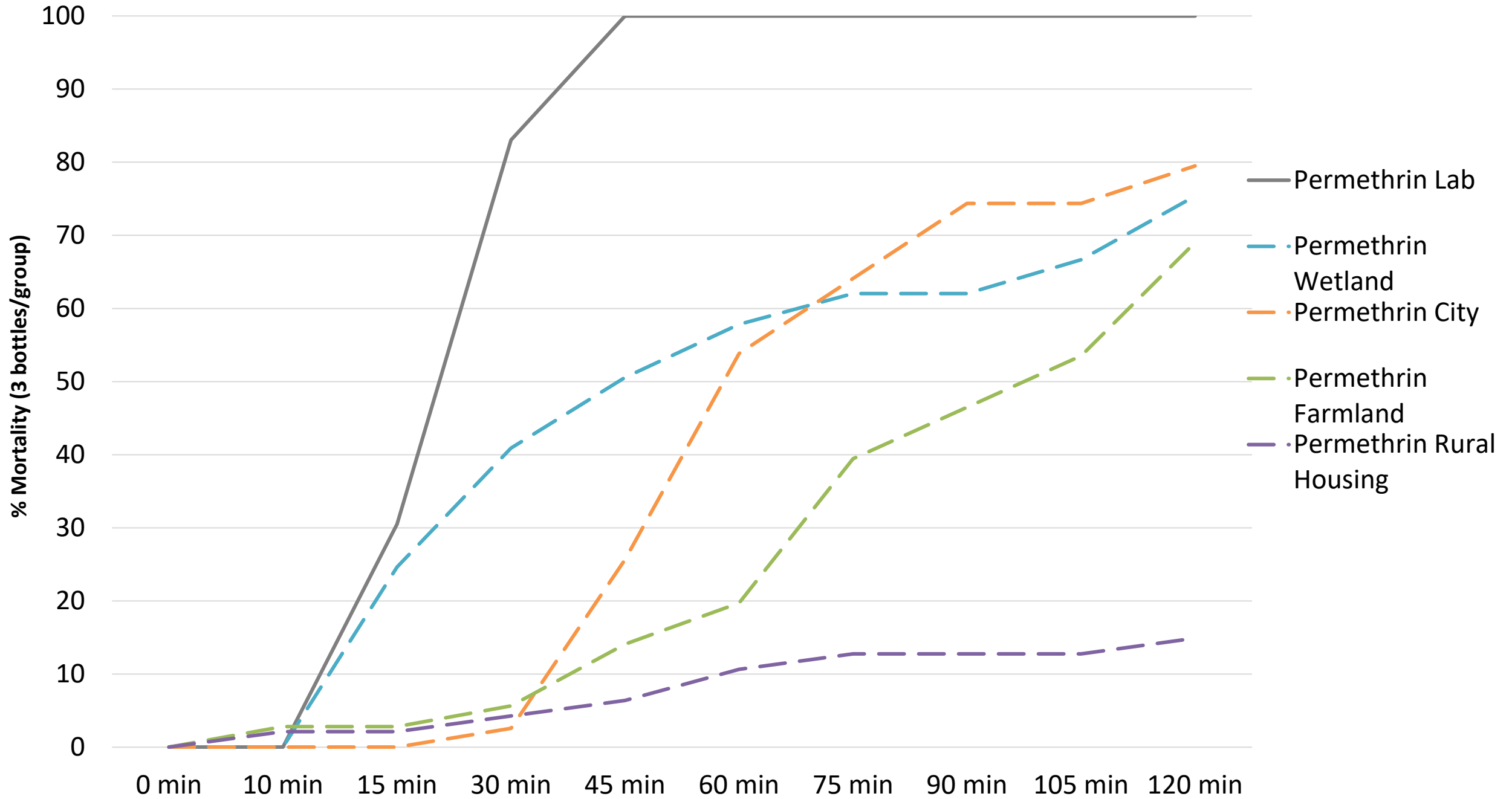


Notes on IR in SLC

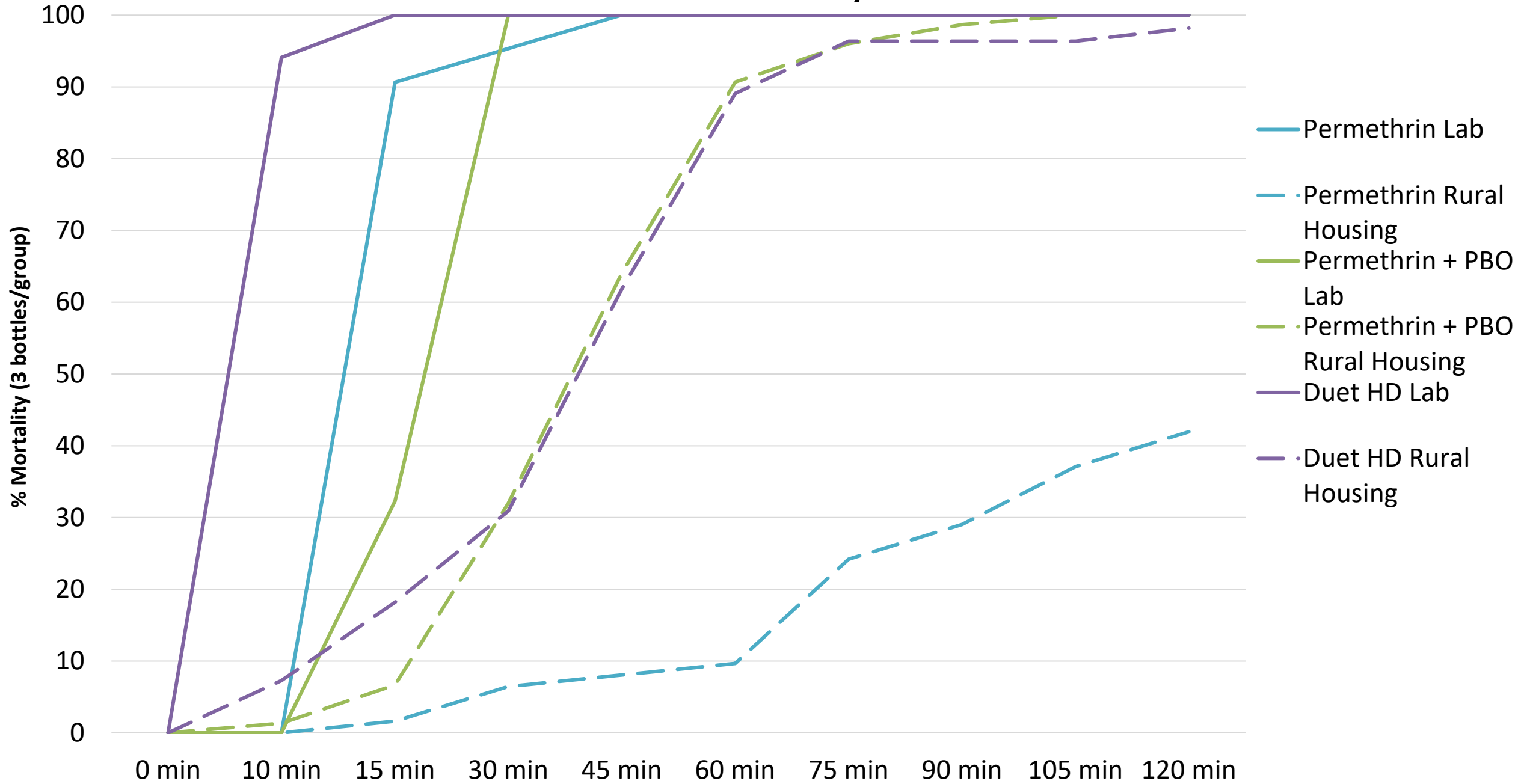
- Ground applications with pyrethroids are rarely made.
- Aerial applications with pyrethroids only happen in operational trials.
- Sources causing IR come from agriculture use and from urban runoff to the east of the wetlands.
- Higher pyrethroid exposure exists on the east side of the district, not in the wetlands and rural habitat.



Pre-Study



Post-Study



Trial Takeaways

- Can we get Duet HD to the target area without an offset?
- Can we apply Duet HD successfully in shifting wind conditions?
- Will Duet HD control the target population?
- 21/27 stations with more than 200 drops/cm²
- Only 2 stations that were flat out missed
- No question about it for *Ae. dorsalis*.
- *Cx. tarsalis* have developing pyrethroid resistance, but regionally, this is lower than our neighbors.
- Duet HD can be a product backup, but not a replacement for naled (Dibrom)

Acknowledgements & Thanks



- Salt Lake City MAD staff

- Dr. Ary Faraji
- Dr. Greg White
- Dr. Chris Bibbs
- Dr. Michele Rehbein
- Brad Sorensen
- Jason Hardman
- Quinten Salt
- Andrew Dewsnap
- And many interns and seasonal employees

- VDCI

- Pilots, aircraft, and ground support



- Clarke Field Science Team

- Andrew Rivera
- Mackenzie Wilson
- Kattie Morris
- Madeleine Schmitz
- Yemi Bullen-McClain



