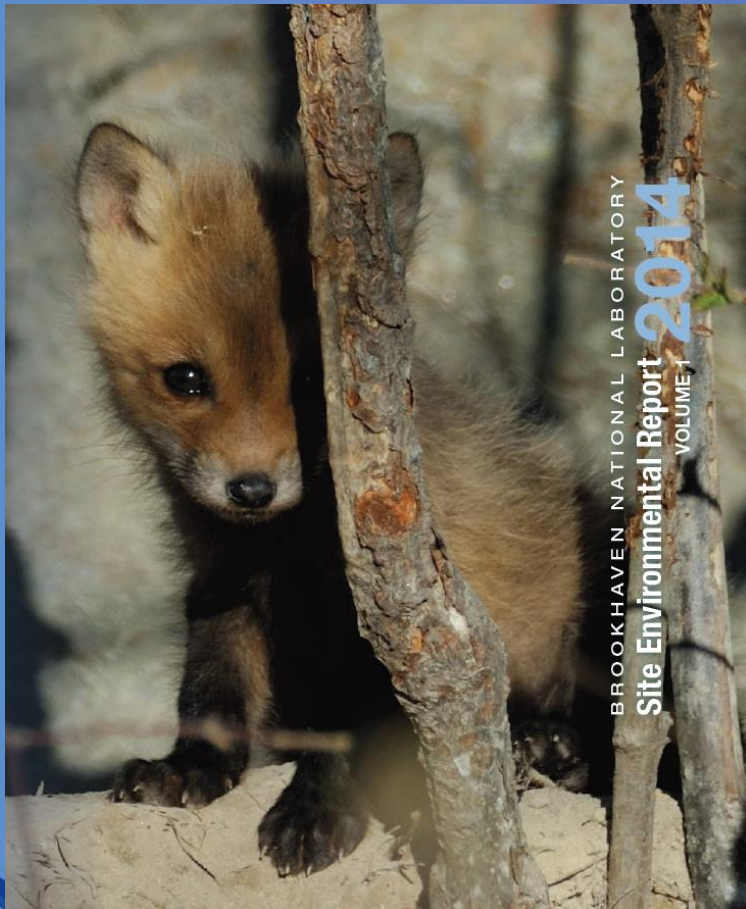


Natural Resources - Update



Tim Green
Environmental Protection Division
March 10, 2016

BROOKHAVEN
NATIONAL LABORATORY

a passion for discovery



Agenda

- **Chapter 6 – 2014 Site Environmental Report**
- **Deer Management Recap and Update**
- **4-Poster Update**
- **Forest Management – Southern Pine Beetle**
- **LISF Research Update**
- **Threatened and Endangered Species**

Chapter 6 - Natural and Cultural Resources

■ Natural Resource Management

- Natural Resource program continues to estimate major wildlife populations, focus on white-tailed deer management, bats, and impacts of LISF on local ecosystem.
- Continue to host several college interns, providing a learning opportunity while helping the Natural Resource program track important ecological aspects.

■ Surveillance Monitoring

- Cs-137 in deer had similar results as past years - highest value 1.93 pCi/g, wet weight, along William Floyd Parkway.
- Ten year trend shows decline; 2014 on-site average in meat was 0.60 pCi/g, wet weight, with ten year on-site average being 1.0 pCi/g, wet weight.

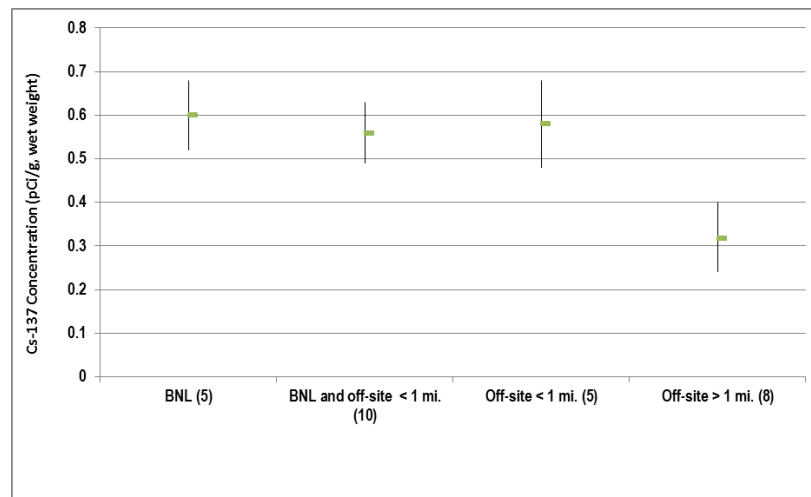


Figure 6-2. Comparison of Cs-137 Average Concentrations in Deer Meat (2014).

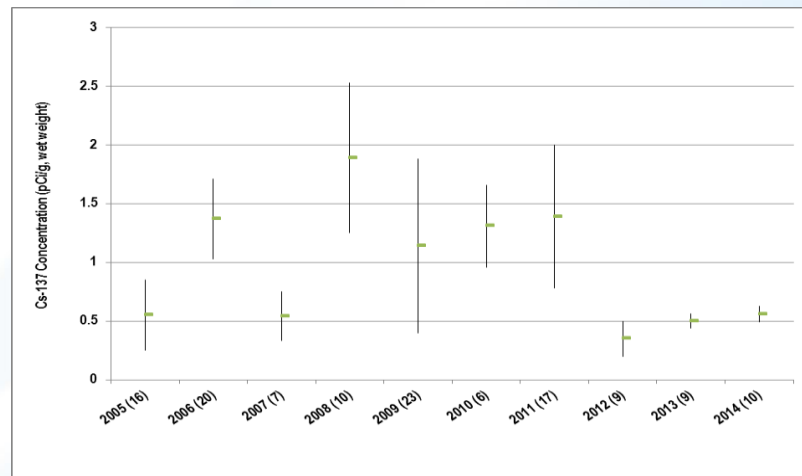
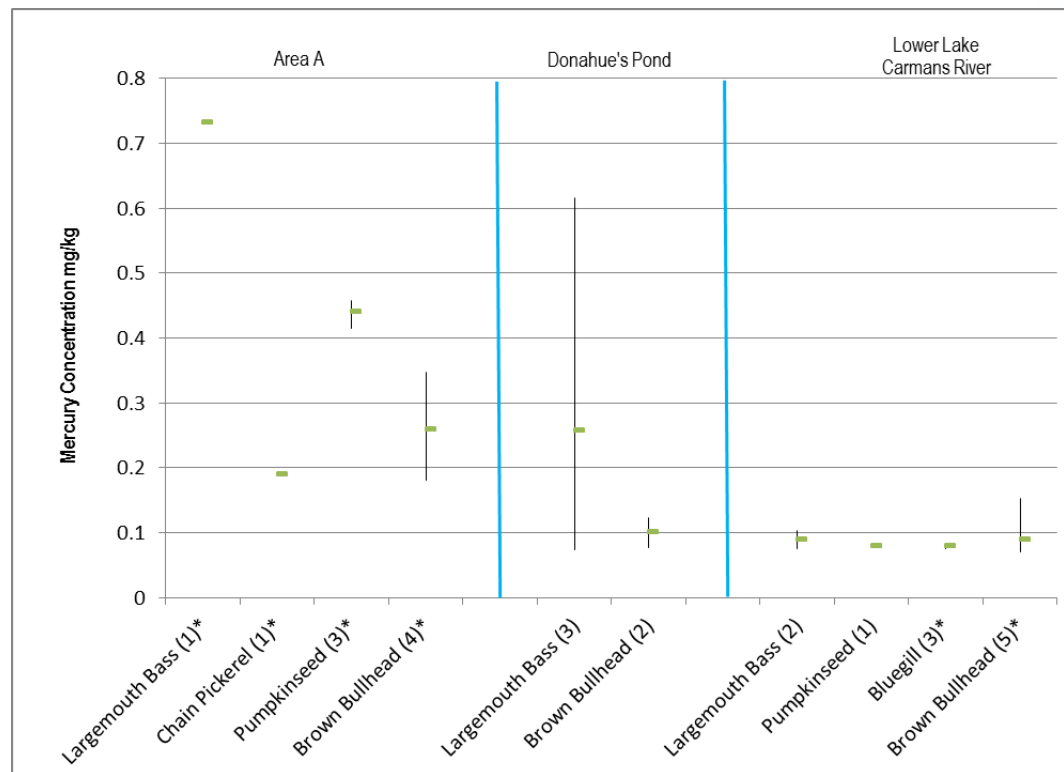


Figure 6-3. Ten-Year Trend of Cs-137 Concentrations in Deer Meat.

Chapter 6 – Flora and Fauna Monitoring (continued)

▪ Fish Surveillance Monitoring

- On- and off-site fish sampling indicated low levels of Cs-137 (<0.18 pCi/g, wet weight) consistent with previous years; mercury (max value 0.73 mg/kg in a largemouth bass from on site Area A).



Peconic River and Lower Lake, Carmans River Mercury Distribution in Fish Species (Minimum, Maximum, and Average Values).

Chapter 6 – Flora and Fauna Monitoring (continued)

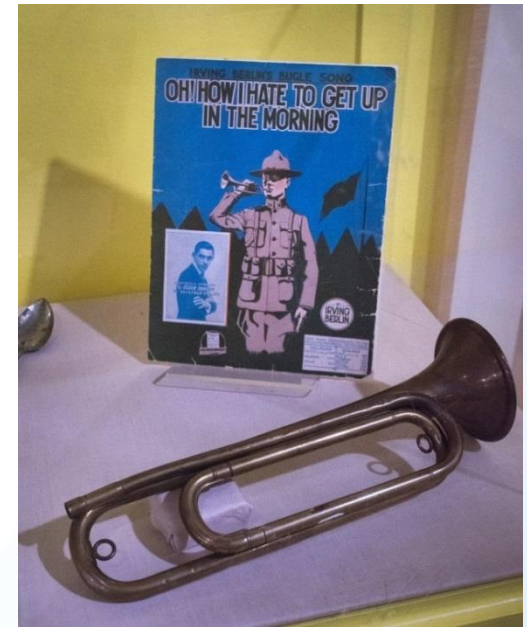
- **Other surveillance monitoring**
 - Aquatic - similar to past years.
 - Terrestrial - grassy vegetation and soils; similar to past years.
 - Precipitation monitoring - radiological similar to past years, mercury highest value 7.32 ng/L.

- **Peconic River – Post Cleanup Monitoring**
 - Mercury in sediment - highest value of 7.40 mg/kg from PR-WC-06.
 - Area being further investigated to determine extent. ([presented details during Dec. 2015 CAC meeting](#))
 - PCBs in sediment - all values ≤ 7.40 $\mu\text{g}/\text{kg}$.
 - Water column sampling - majority of locations were dry and no sample taken.
 - Areas with sufficient water indicated similar trends as past monitoring.
 - Both mercury and methyl mercury concentrations generally trended downward at greater distances from the STP outfall.

Chapter 6 – Cultural Resource Management

■ Cultural Resource Activities 2014

- Camp Upton artifacts returned to BNL after loan to the Long Island Museum in Stony Brook for planned display “Long Island at War.”
- Section 106 reviews for demolition of four early BNL support buildings (492, 650, 811, and 904).
- History of BNL Site presented to CAC and other organizations.
- EMS/OSH Assessment finding – cultural resource items not being tagged.
 - Tagging project started by end of year, continued into 2015.



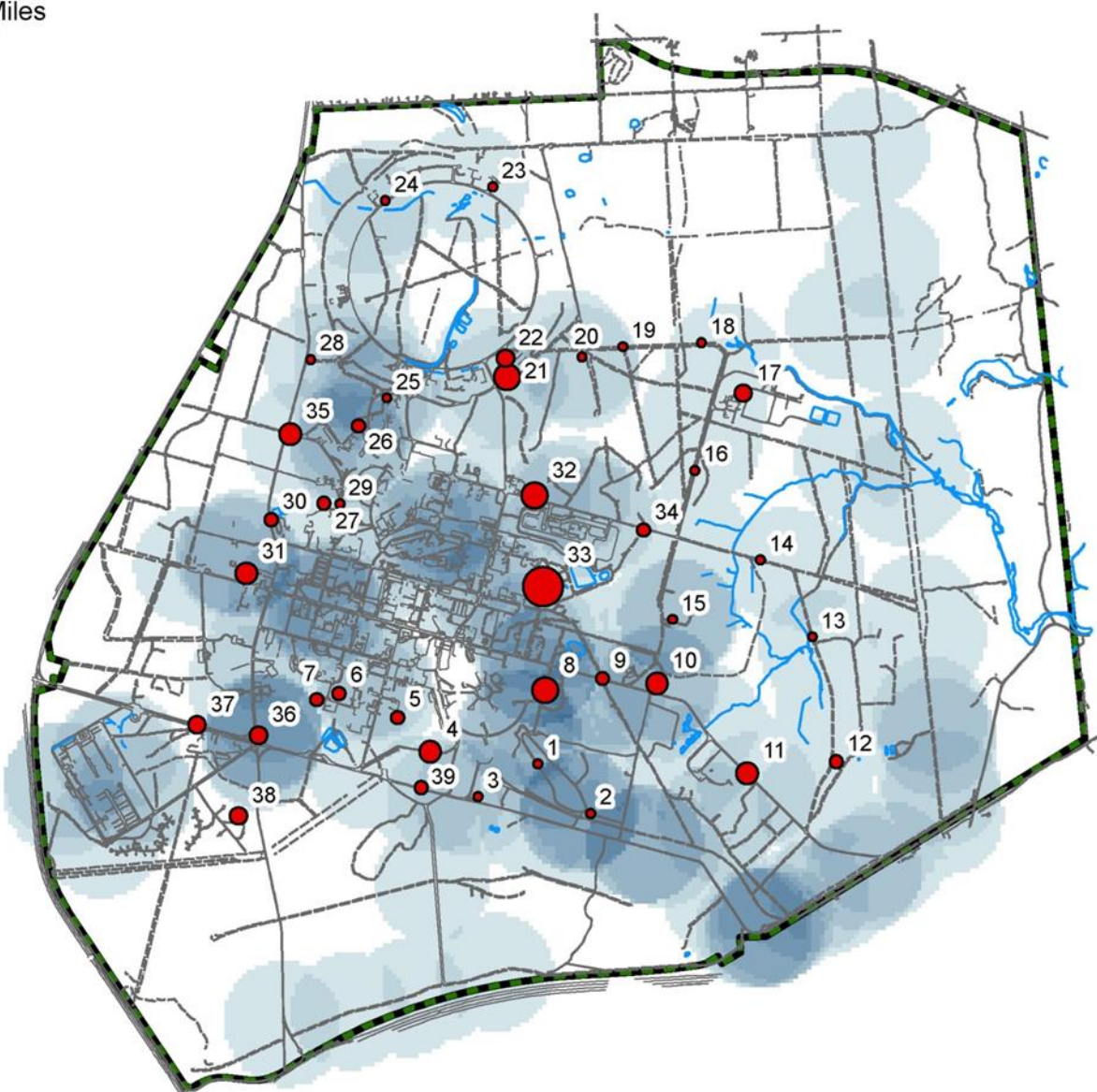
Questions?



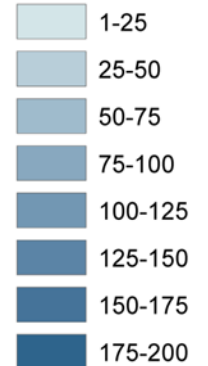
Deer Management

- **Cull – February 2015**
 - Population estimate ~830 deer (100 deer/sq.mi)
 - 300 deer taken
 - 7,340 lbs of meat donated
 - No Cs-137 issues
- **Spring estimate - ~400 deer (48 deer/sq.mi) (harsh winter resulted in additional mortality)**
- **Fall estimate - ~500 deer (61 deer/sq.mi.)**
- **Visual effect (lack of deer) from Feb. 2015 still very evident**
- **Fall Cull 2015 precluded by budget**
 - Commitment for funds in FY 2017
 - Nov. 2016 Cull – at earliest
- **Population prediction - ~675 deer (82 deer/sq.mi.)**
 - Reduction would be 250 – 270 deer
- **Intern Project – Fall 2015 (Ryan Southard)**
 - Do deer surveys reflect impacts of the cull?

SCALE



Deer Per Sq. Mile



Legend

Deer



Surface Water



Boundary

Deer Taken

Change in Density from Summer 2014 to Fall 2015: Of White-tailed Deer at BNL

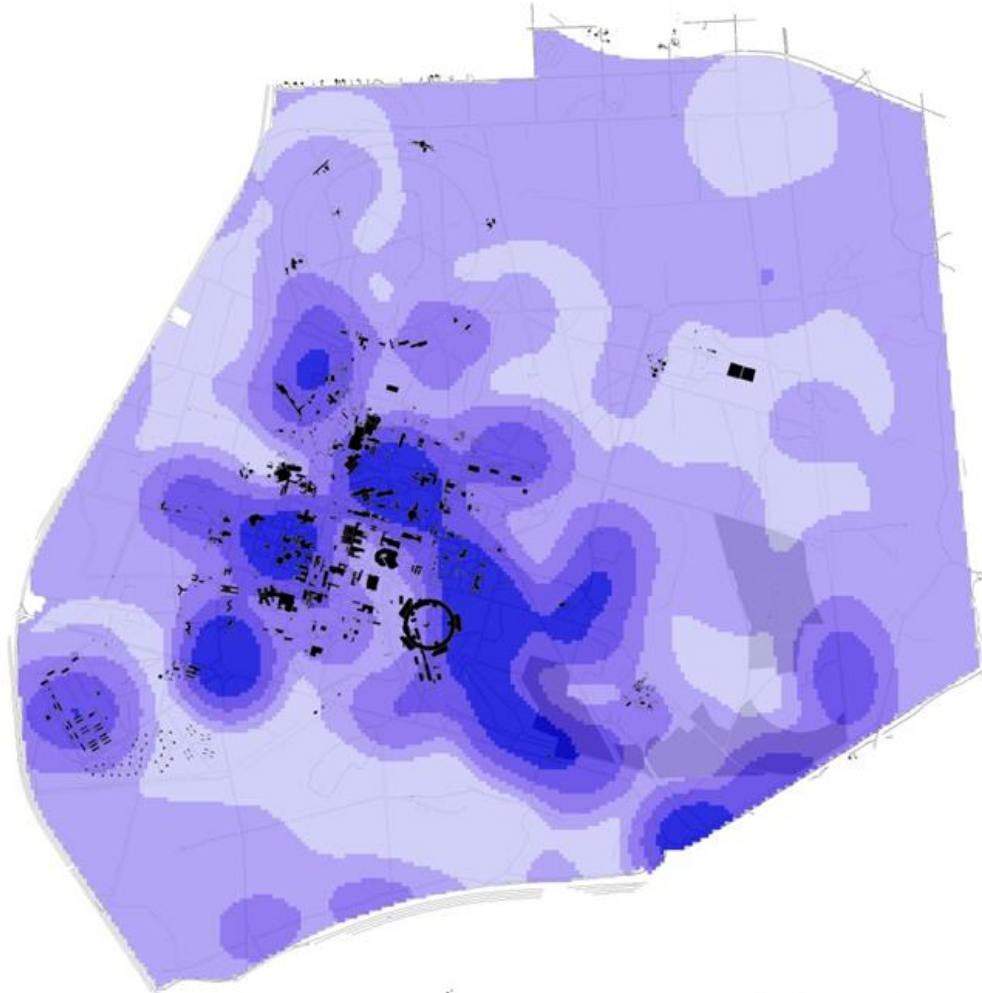
Legend

- Roads
- Boundary
- Solar Farm
- Buildings

Density Change

"Cold Spots"

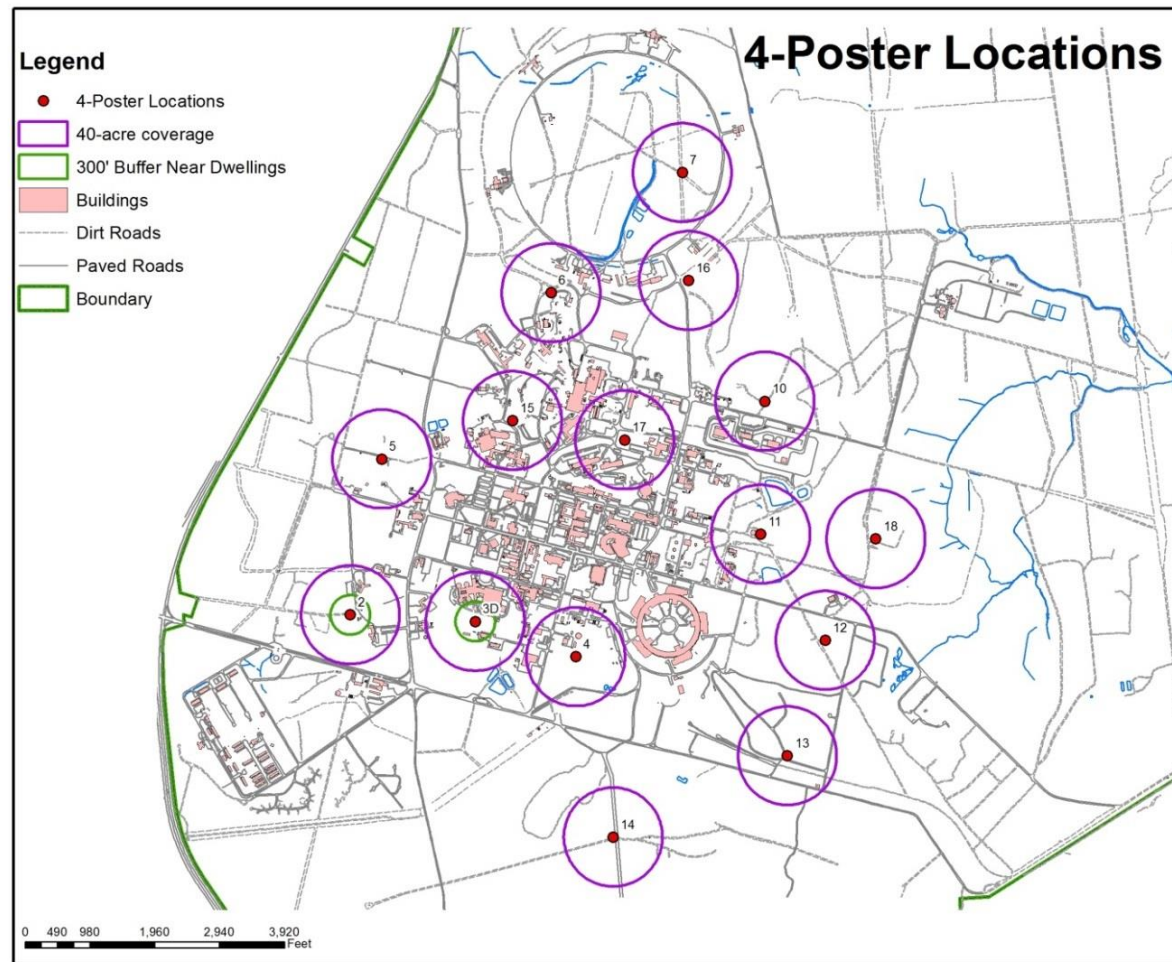
- Low
-
-
-
- High



Deer Management – 2016 Planning

- **Spring 2016 Surveys – determine winter mortality**
- **May – June preliminary planning for Fall cull**
- **Fall Surveys – August – Sept. 2016 to determine reproduction**
- **September -**
 - Develop reduction goals
 - Determine when to conduct cull (fall or winter)
 - Complete work planning
 - Contracting – if necessary
 - Notifications and Education
- **Conduct cull**

4-Poster Update



■ 16 Devices in 2015

- 2 locations, second device removed after decreased use due to deer cull
- Deployed mid-April through mid- October
- >2,000 lbs. of corn/week

4-Poster Update

2013-2015

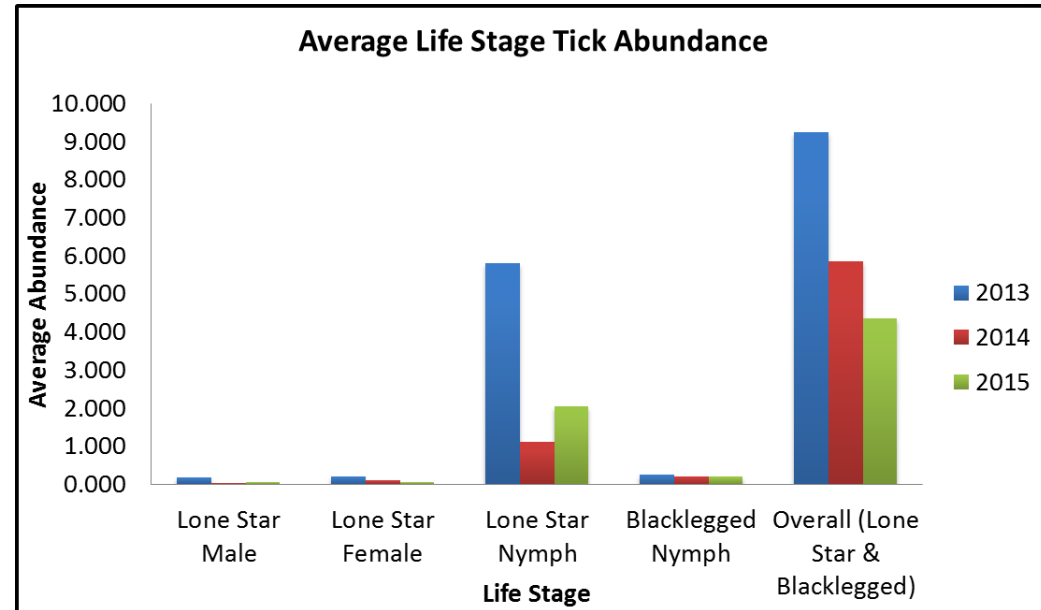
	A. americanum		I. scapularis	
	Male	Female	Nymph	Nymph
4P-2	75.0%	80.0%	98.3%	68.4%
4P-3	100.0%	100.0%	66.7%	-140.0%
4P-4	-	-200.0%	-152.9%	-
4P-5	75.0%	100.0%	77.3%	85.0%
4P-6	100.0%	100.0%	94.4%	66.7%
4P-7	0.0%	85.7%	-182.6%	0.0%
4P-10	57.1%	40.0%	75.2%	-300.0%
4P-11	80.0%	80.0%	-48.3%	80.0%
4P-12	61.5%	78.6%	-171.6%	-
4P-13	100.0%	50.0%	53.2%	0.0%
4P-14	0.0%	100.0%	96.2%	60.0%
Average	59.0%	55.8%	0.5%	-7.3%

-% : Indicates an increase in tick abundance

- : Indicates unquantifiable increase in tick abundance

■ Effectiveness

- Overall ~ 50% decrease in number of ticks between 2013 and 2015
- Data really illustrate difficulty of measuring effectiveness



4-Poster Update

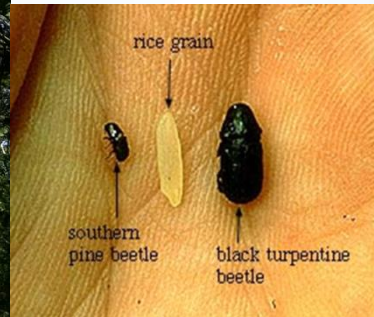
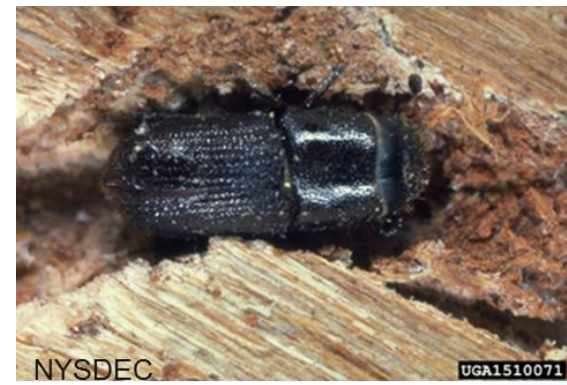
- **4-Poster Workshop held Dec. 2015**
 - ~ 30 attendees both public lands and private lands represented. Several applicators attended.
 - Presenters - Cornell Cooperative, SCDHS – Vector Control, NYSDEC, and BNL



Forest Health

■ Southern Pine Beetle

- Found throughout Central Pine Barrens (including BNL) and elsewhere on Long Island
- Very destructive
- Kills pine trees in 2 – 4 months
- Difficult to manage – Eradication is not possible



Forest Health – Southern Pine Beetle

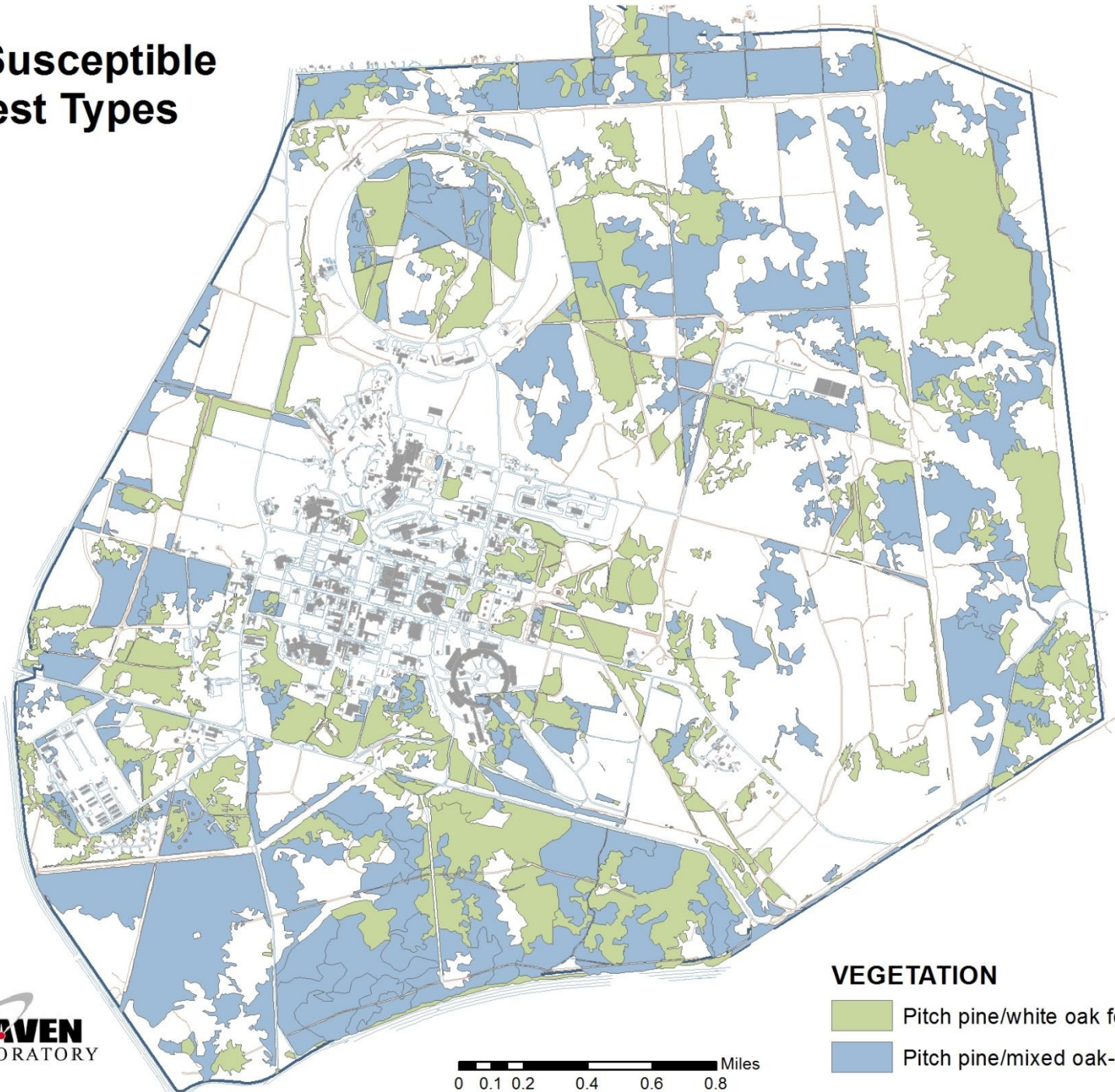
- **Forests are not healthy**
 - Not actively managed (no management in over 70 yrs)
 - Lack of fire
 - Tree density too high
 - Greater competition for resources = stressed trees
 - Lack of regeneration (too many deer)
- **Consequences**
 - Reduced resistance to stressors
 - SPB potentially devastating

Forest Health – Southern Pine Beetle

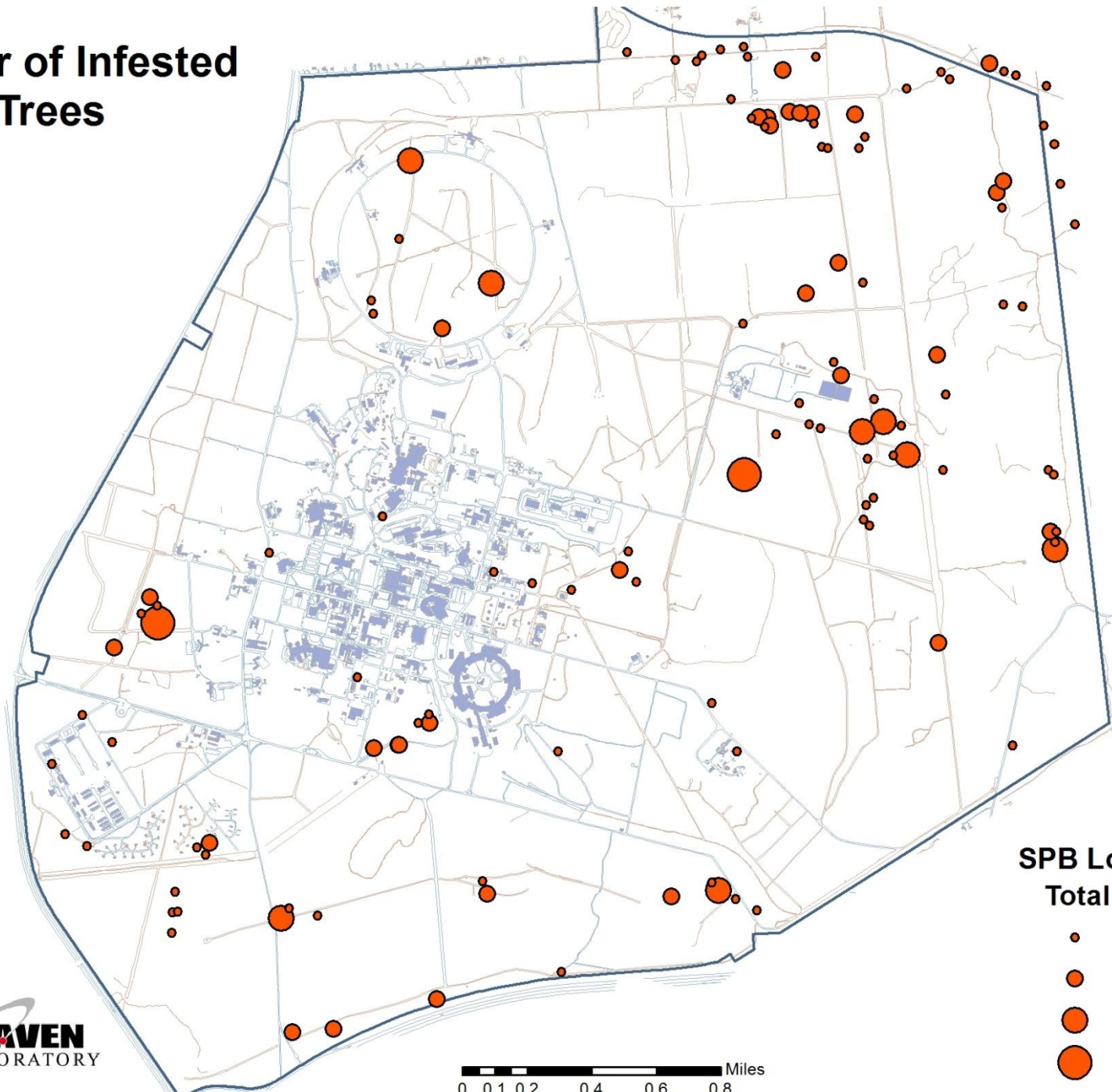
- **Response - monitoring**
 - Utilizing Aerial Surveys
 - Ground-truthing
 - Baseline data collection April – May 2015
 - Continued monitoring this past fall
 - Pheromone traps – 2 locations



Most Susceptible Forest Types



Number of Infested Trees

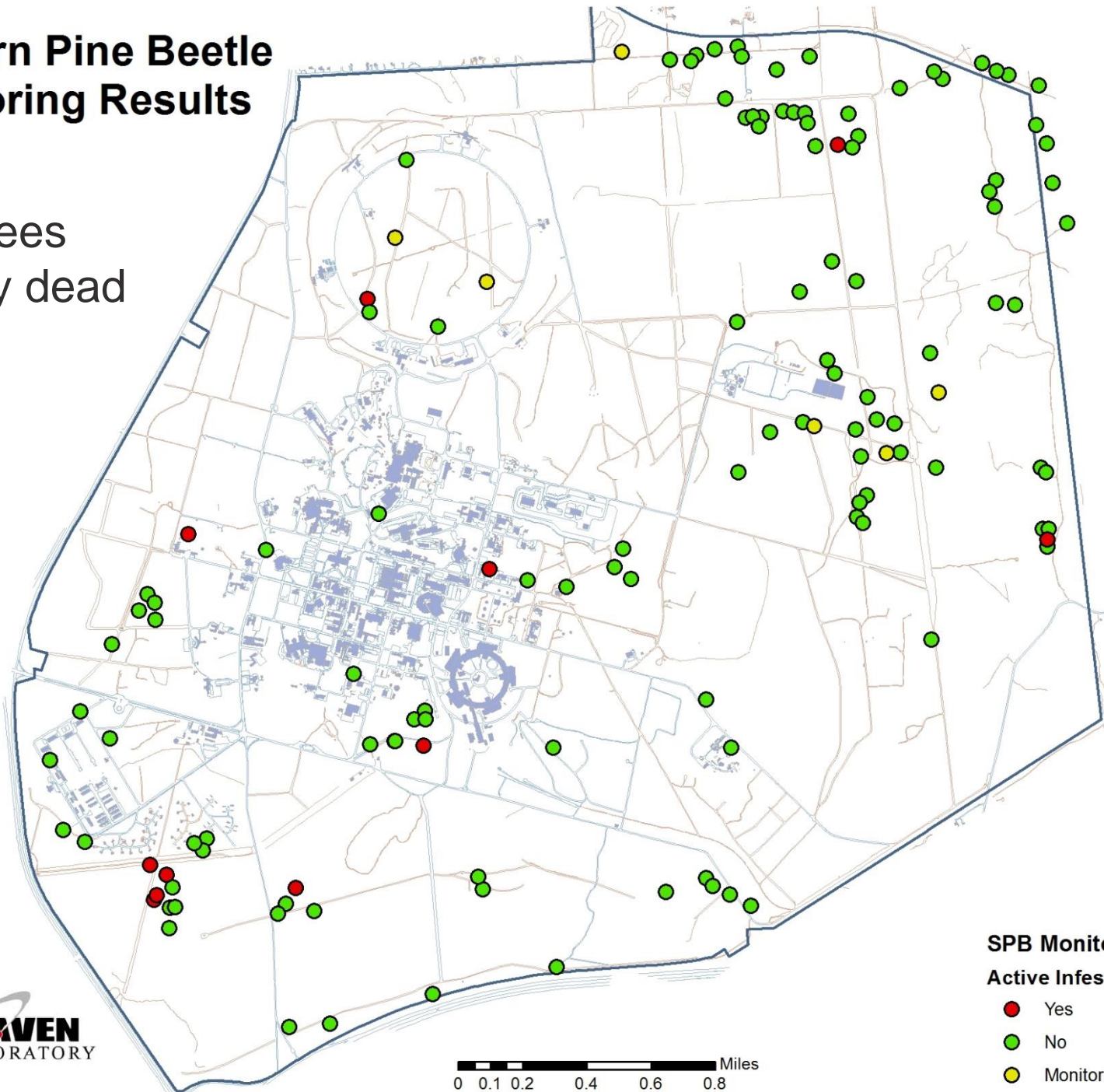


SPB Locations Total Trees

- 1 - 4
- 5 - 10
- 11 - 22
- 23 - 40

Southern Pine Beetle Monitoring Results

~ 750 trees
currently dead



SPB Monitoring Results

Active Infestation

- Yes
- No
- Monitoring required

Forest Health – Southern Pine Beetle

- **Response - management**
 - **Currently no budget for this**
 - **Briefed BNL's Institutional Risk Management Committee**
 - **Continue to monitor and track infestations**
 - **Monitoring NYSDEC's approach for targeted timber sale to thin forest**
 - **Currently no bids have come forth**
 - **US Forest Service in support of thinning**
 - **Most other options are expensive**
 - **Forest thinning needs to be done in conjunction with prescribed fire**

Questions?



LISF Research - Update

- **Data collection – complete/nearly complete**
 - **Vegetation – complete with potential need to fill in any gaps**
 - **Small mammal trapping - complete**
 - **Fence opening use by wildlife - complete**
 - **Eastern box turtle work – complete for LISF, continuing for other questions**
 - **Migratory birds – sufficient data available for LISF, continued as part of natural resources monitoring**
- **Next Steps**
 - **Data analysis**
 - **Publication**
 - **Future CAC presentation?**

Threatened and Endangered Species

- **Tiger salamander**
 - Historic ponds continue to support TS
 - Drought preventing production but likely not impacting population
- **Banded sunfish**
 - Zeke's Pond nearly dried up, drought impact
 - Will require monitoring for recovery in 2016
- **Northern long-eared bat**
 - Now federally listed as threatened
 - Acoustic monitoring document continued presence
 - Mist netting – no captures for first time in 4 years
 - Building demolitions (bldg. 130, bldg. 811) no impact