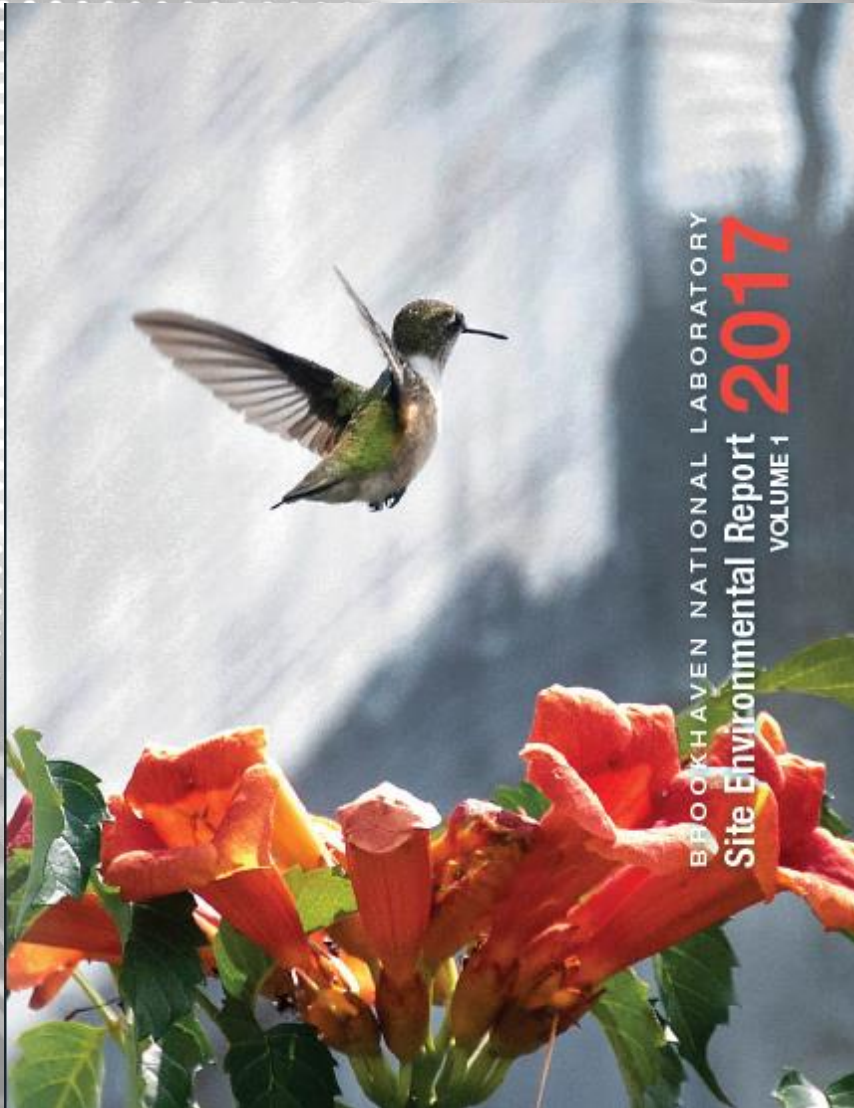


Natural and Cultural Resources Update

Brookhaven National Laboratory
Community Advisory Council Review
December 13, 2018

Tim Green
Environmental Protection Division



Agenda

- **2017 SER Chapter 6**
- **Cultural Resources Update**
- **Natural Resources Update**

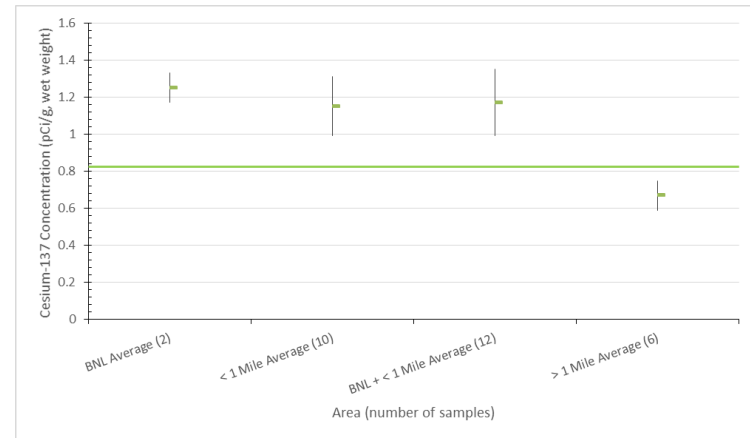
Chapter 6 - Natural and Cultural Resources

■ Natural Resource Management

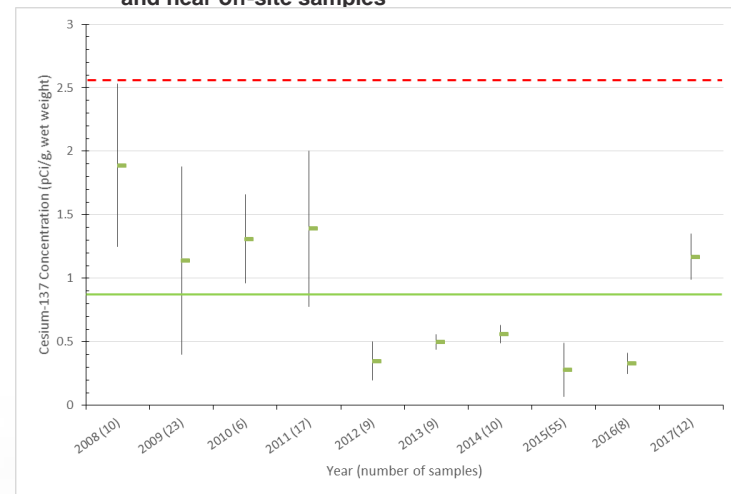
- Deer Management
 - March cull removed 202 deer
 - End of year population ~ 300
- (3) successful Prescribed Fires
- Turkey population at ~500
- Continued opportunities for interns looking at a variety of ecological topics (a little more on this later)

■ Surveillance Monitoring – Deer

- 2 on site, 16 off site samples
- Cs-137 in deer had similar results as past years - highest value 3.33 pCi/g, wet weight, off-site along WFP.
- Ten-year trend shows decline; 2017 on-site average in meat was 1.25 pCi/g, wet weight, with ten year on-site average being 0.83 pCi/g, wet weight
- Average value from deer cull (41 samples) sampling was 0.26 pCi/g, wet weight. Well below BNL administrative limit of 1.0 pCi/g, wet weight



Comparison of Cs-137 Average Concentrations in Deer Meat (2017), line is ten year average 0.83 pCi/g for onsite and near off-site samples



Ten-Year Trend of Cs-137 Concentrations in Deer Meat, dashed line is pre-cleanup avg., solid line is 10-year avg.

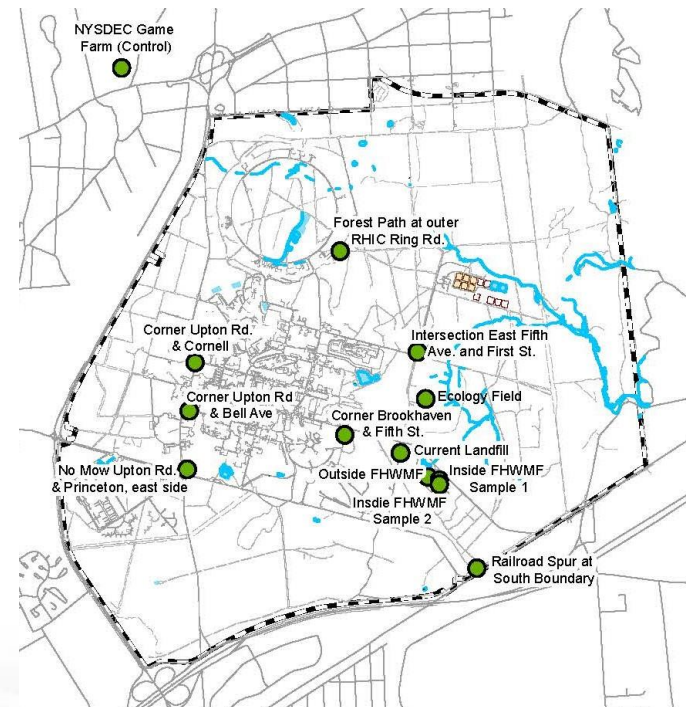
Chapter 6 - Flora and Fauna Monitoring (continued)

- **Fish surveillance monitoring**
 - Peconic River Dry – no fish monitoring
- **Peconic River Clean-up**
 - Final 2600 sq. ft. area cleaned up



Chapter 6 - Flora and Fauna Monitoring (continued)

- **Terrestrial vegetation and soils**
 - Grassy vegetation and soils similar to past years
 - High Cs-137 values in both vegetation and soils at FHWMF, values below clean-up standards
 - 10.00 pCi/g wet weight – vegetation
 - 10.08 pCi/g dry weight - soils
- **Basin Sediments**
 - Sampled on a 5-year rotation
 - Non-detect to 0.08 pCi/g Cs-137
 - Low levels of PCBs, DDT, and DDE
 - No Semi-VOCs
- **Precipitation monitoring**
 - Low level mercury – highest value 45.1 ng/L
 - Previous high 24.6 ng/L recorded in 2013



Chapter 6 – Wildlife Programs

- **Internships**

- 17 Undergraduate Interns
- 2 Faculty Members (Hofstra and SUNO)

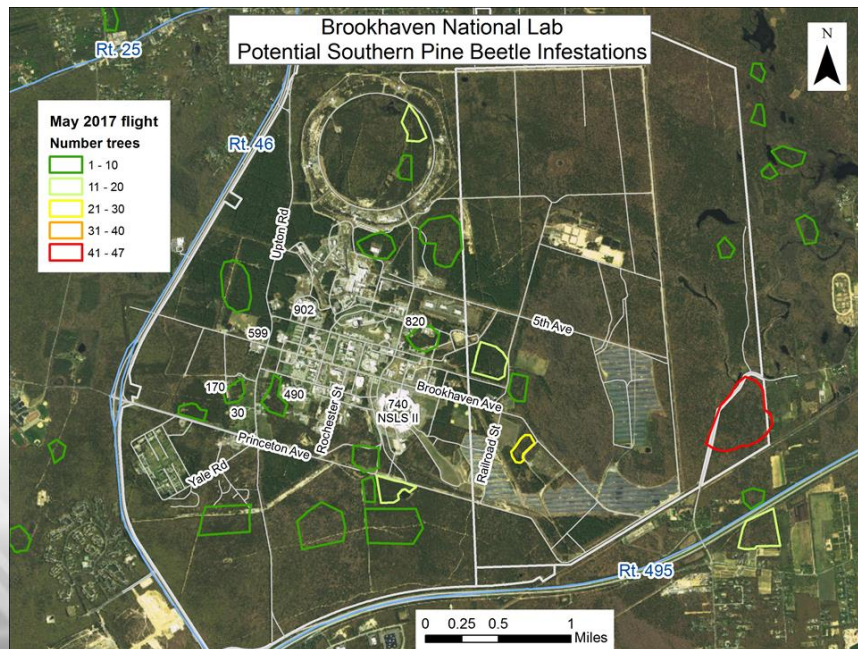
- **Projects**

- Eastern box turtles
- Small mammals and ticks
- Prescribed fire – fuels monitoring, pre- and post-fire monitoring, fire effects monitoring
- Data analysis – bird survey data
- Pollinator studies



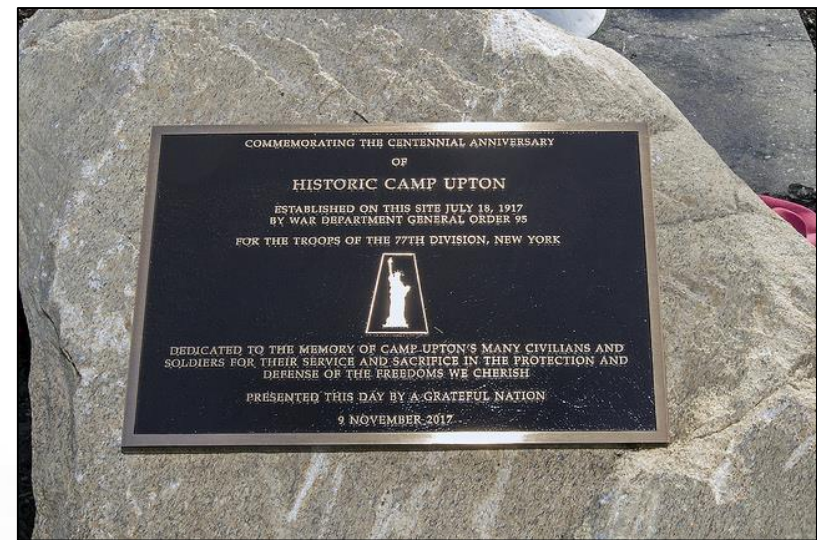
Chapter 6 – Wildlife Programs

- **MOU w/SUNY Environmental Science and Forestry**
 - Agreement to develop research opportunities
 - Initial discussions and planning for first round of research initiated (more in 2018 update)
- **Southern Pine Beetle**
 - Tracking and suppression efforts



Chapter 6 - Cultural Resource Management

- **70 YEARS OF Discovery – A CENTURY OF SERVICE**
 - Summer Sundays – History of BNL Site
 - 70th Anniversary Celebration
 - Multiple speaking opportunities
 - Loan of Camp Upton collection to local museum
 - Dedication of 100th Anniversary plaque at flag pole



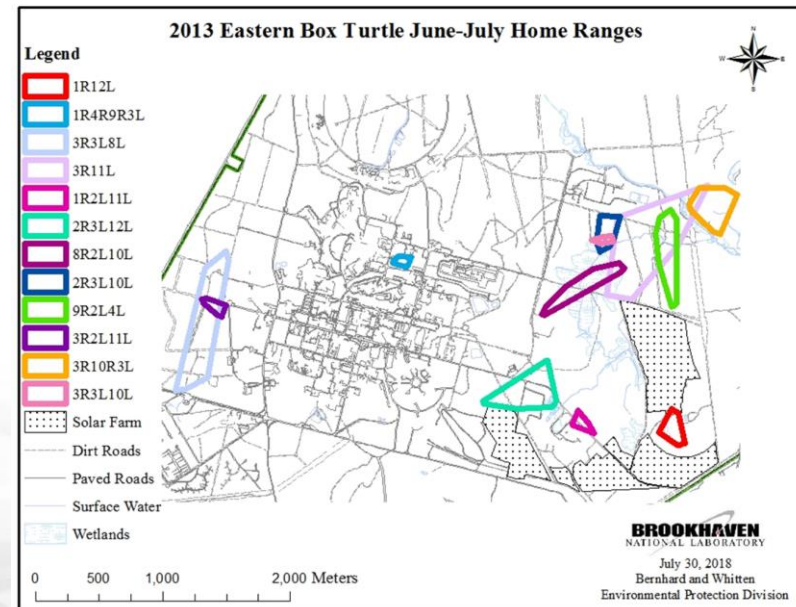
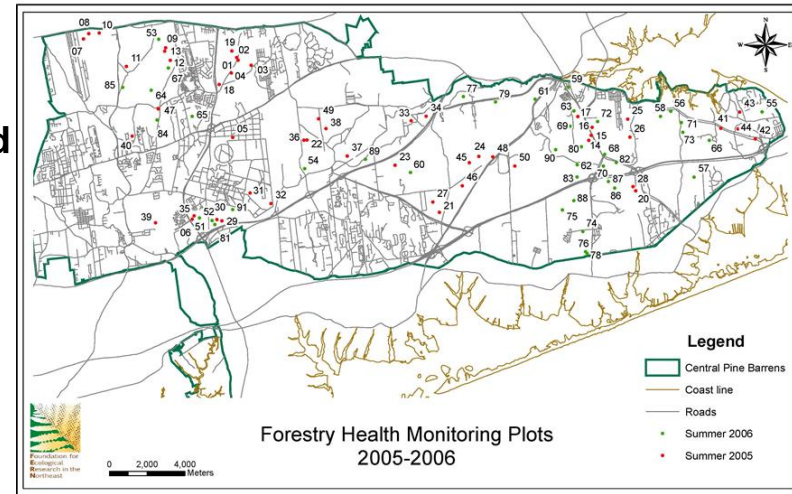
2018 Cultural Resource - Update

- 100th Anniversary – God Bless America
- Recordation of 1960s era apartments
- Evaluation of WW I era concrete roads
 - Determined “not eligible” for listing on National Register



2018 Natural Resource - Update

- **MOU between BNL and SUNY-ESF**
 - January meeting – research needs for Long Island Pine Barrens
 - May – Proposal Reviews – Forest Health selected
 - Planning for implementation summer 2019
- **Eastern box turtles**
 - Master's student successfully defended – dietary study
 - 1st manuscript in review now
 - Freeze tolerance study – temperature logger implants removed – data being reviewed
 - Home range studies – all field work completed
 - Data now has to be analyzed



Natural Resource - Update

■ Pollinator studies

- **Interns from Southern University New Orleans established three-year study of LISF**
 - Established protocols
 - Collected baseline data



■ Vegetation monitoring

- **Forest health plots**
- **Deer exclosures**

■ Prescribed Fire

- **Single prescribed fire June 2018**
 - MOU w/NYSDEC Forest Rangers
- **Fire Effects monitoring 2017 prescribed fires (next slides)**





Prescribed Burn conducted June 12, 2017

Fuels monitoring conducted
pre- and post-burn.



Overall, fuels were reduced
from 11 tons/acre to 3.7
tons/acre – a reduction of
~69%.

Fire Effects Monitoring

- Did the burn do what we wanted it to do?
- Monitor overall burn severity – i.e. the magnitude of ecological change caused by the fire and spatial heterogeneity (patchiness) of the burn.
 - Amount and types of fuels consumed
 - Regeneration of existing species
 - Establishment of new species
 - Delayed mortality



Pennsylvania sedge



Pink Lady's slipper orchid



American burnweed

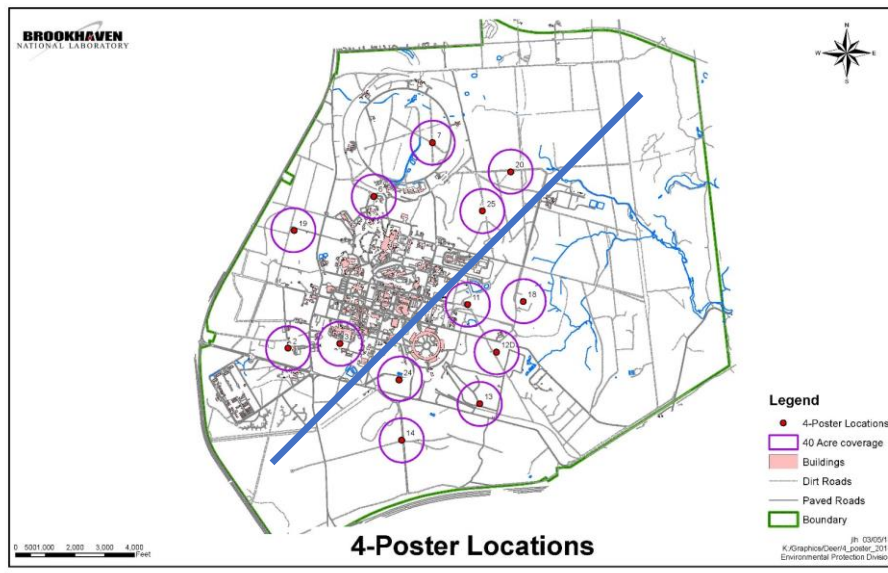
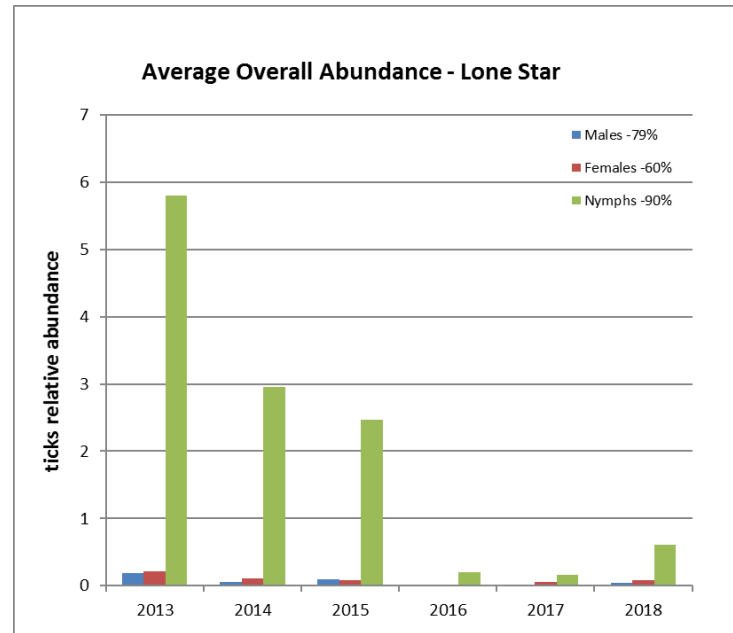
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Prescribed Burn conducted June 12, 2017



Natural Resource - Update

- **4 – Poster**
 - **Continued deployment**
 - 80% reduction in ticks where deployed
 - 64,500 lbs. of corn over 31 weeks
 - Last year 71,450 lbs. of corn over 28 weeks
 - **New experiment at request of NYSDEC deer biologist**
 - Effectiveness of reduced servicing
 - 3-year experiment



QUESTIONS?