Natural Resources Update

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February 14, 2013

BROOKHAVEN NATIONAL LABORATORY
a passion for discovery

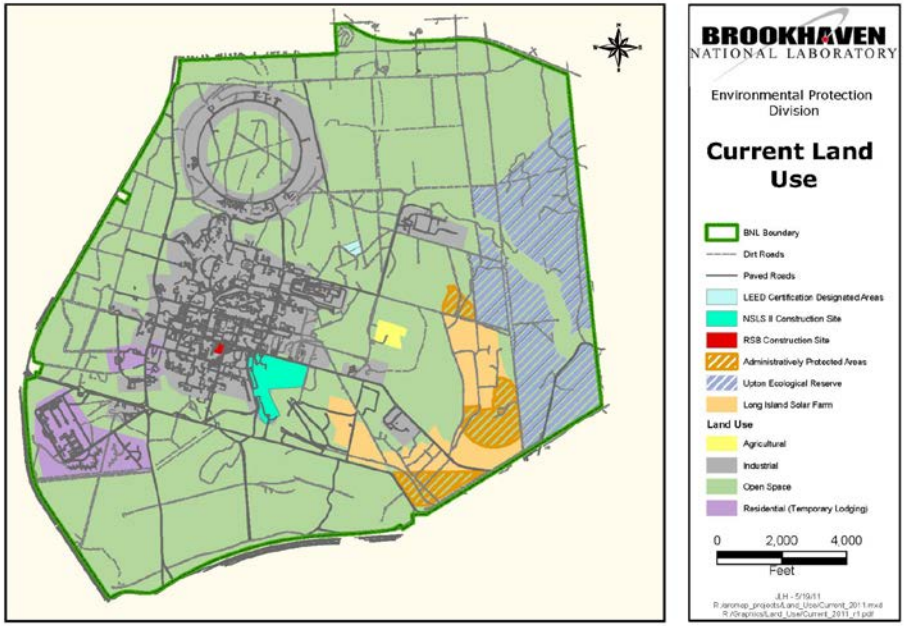
Office of Science
U.S. DEPARTMENT OF ENERGY

Topics to be covered

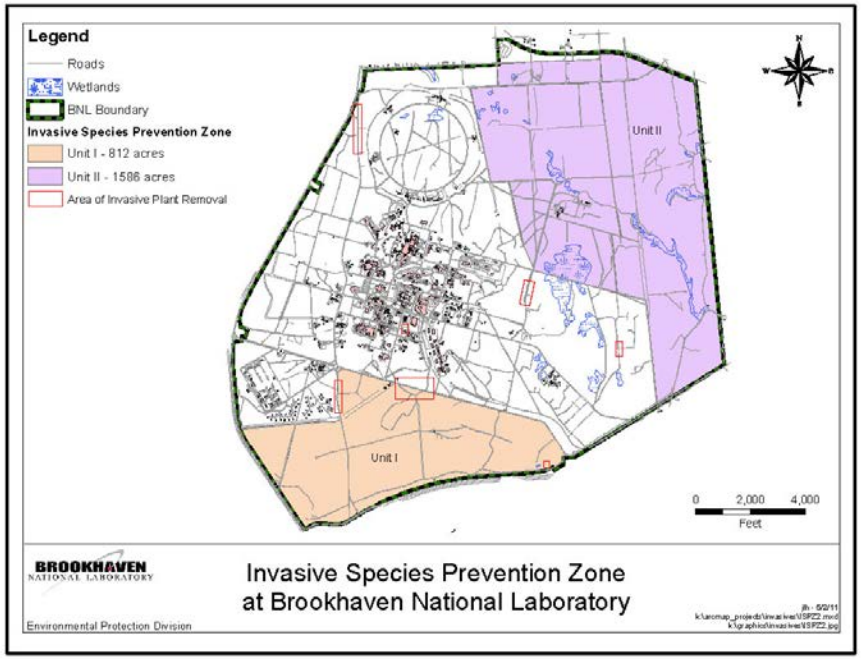
- NRMP update
- Deer
  - Status of deer management
  - Status of 4-Poster
- Spring 2012 – Fire
- Site Environmental Report – flora and fauna
- Super Storm Sandy – Tree Bronzing
- Long Island bats

Natural Resources Management Plan

- Original approved in 2003
- 2011 Update based on adaptive management (what we learned, what has changed)
- NSLS II
- LISF



NRMP



- Dealing with more T&E species since 2003
  - Added several insects
  - More plants
  - Adding even more plants in 2012 due to DEC revised list
  - Continued emphasis on tiger salamanders
- Better understanding of what we have
  - 116 species of birds
  - Distribution and control of invasive plant species

NRMP

- Wildlife populations
  - Canada geese – continued nest management
  - Wild turkey – seemingly stable population
  - White-tailed deer – more on this later
  - Nuisance wildlife – continual problem with raccoons and other animals getting in/under buildings
- Forest health
  - 2005/2006 plots revisited to establish deer exclosures
  - Not much change in 5 years, forest still not regenerating
- Continued emphasis on intern research

Deer

- Deer Management
  - Population estimated at ~ 500 animals at end of 2011
- Environmental Assessment
  - Currently out for review with New York State
  - Preferred alternative allows multiple approaches for management
- Next steps
  - Develop management strategies
  - Seek funding for implementation
- 4-Poster tick control devices
  - Permission to feed deer finally received in August
  - Devices to be deployed in March 2013

4-Poster locations

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Legend
- 4 Poster Locations
- 300' Buffer Near Dwellings
- 40 Acre coverage
- Buildings
- Onsite Surface Water
- Dirt Roads
- Paved Roads
- Boundary

0 2,000 4,000
Feet

4 Poster Locations

4 – Poster Requirements

- Devices deployed March – Sept. avoiding hunting season
- Tick monitoring – before, during, after annual deployment
- Photo monitoring of each device (game cameras to be deployed)
- Annual reporting to maintain permit

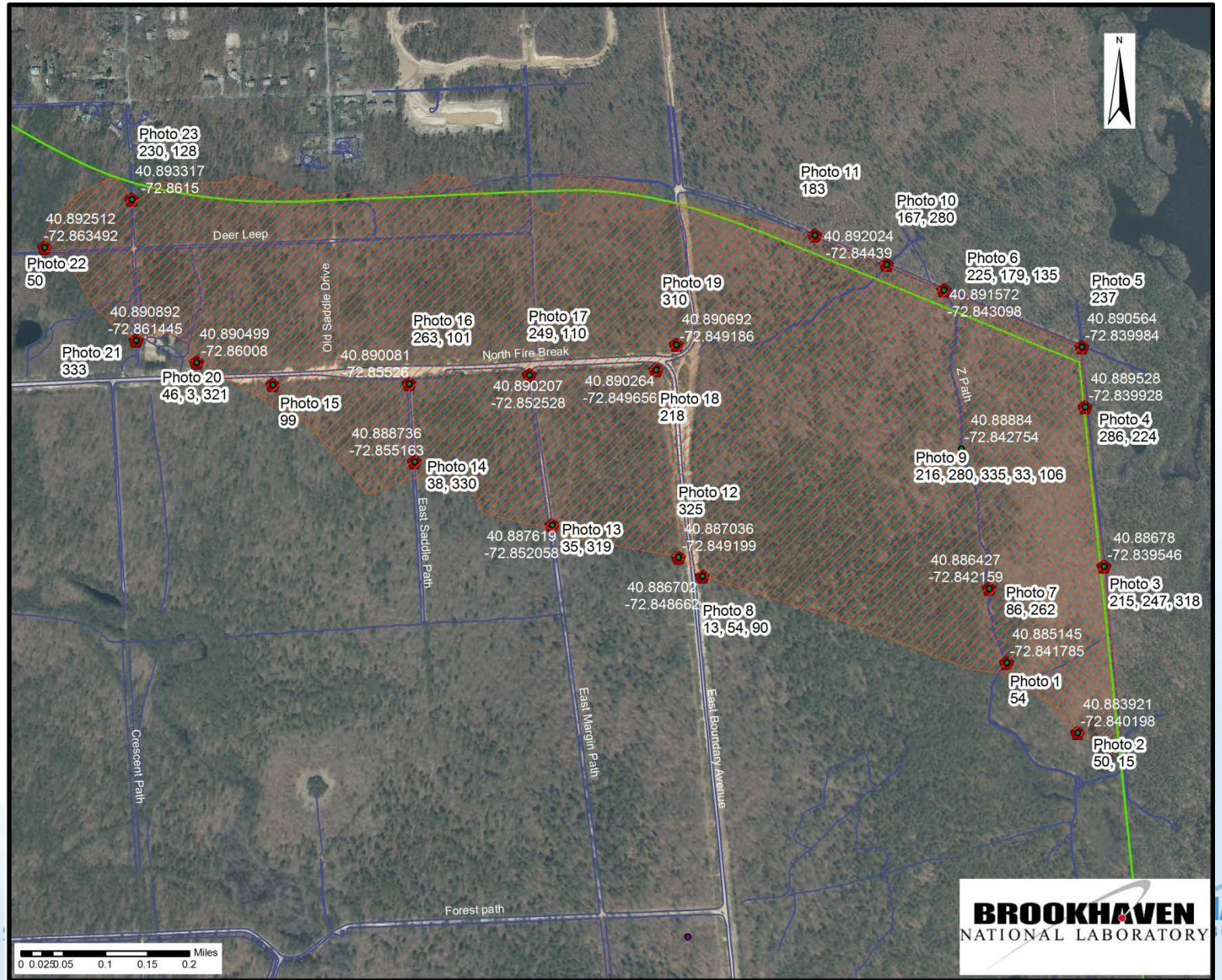
April 9, 2012 – Wildland Fire

- First Reports
  - ~2:30 first calls in to BNL Fire Department
  - Fire spreads fast
- Conditions
  - Red Flag Day
  - Humidity 17% or less
  - Winds WNW 20+ mph, gusting
- BNL – 287 acres
- Fire – 991 acres

Photos 4/9/2012

Photos 4/10/2012

BNL Coverage




09/12/2012 11:40


07/10/2012 11:34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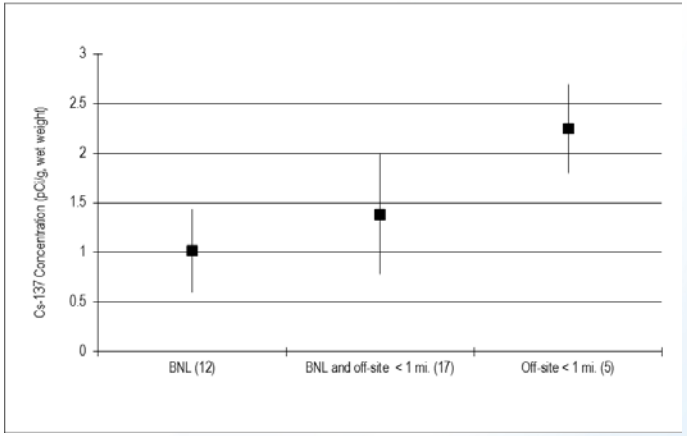
09/12/2012 10:08

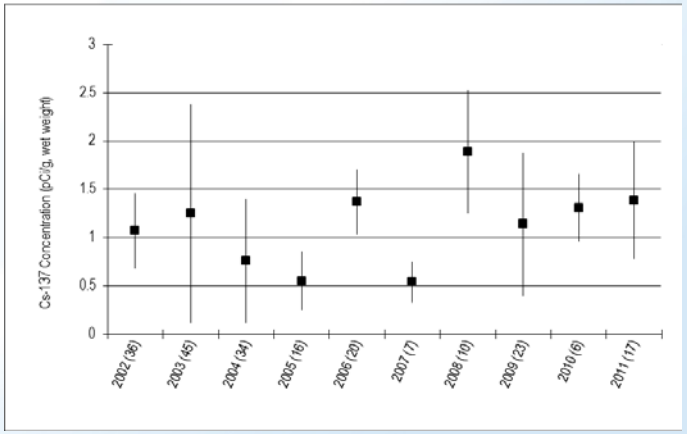
SER – flora & fauna monitoring

- **Deer Sampling**
  - 12 on-site, 5 off-site samples (none greater than 1 mile from BNL)
  - Cs-137 average for on site (1.02 pCi/g, wet weight) is lower than average within 1 mile of the Laboratory (2.25 pCi/g, wet weight)
  - Highest sample value was 4.08 pCi/g, wet weight, from sample just off the south boundary.
  - Ten-year trend for on and near off-site samples indicate stabilizing trend with average values less than 2.0 pCi/g, wet weight; 10 year average 1.13 pCi/g, wet weight
  - Bone samples analyzed for Sr-90 indicate background levels
  - Single turkey tested, 0.07 pCi/g, wet weight

Average by Sampling Group



Long-term Trend in Cs-137 Average On and Near Off-site Sampling



Chapter 6 – Flora and Fauna Monitoring (continued)

- **Terrestrial Sampling**
  - Garden vegetables: no detection of Cs-137
  - Garden soils at background levels: 0.10 pCi/g, dry weight, of Cs-137
  - Grassy Vegetation: no detection to 0.49 pCi/g, wet weight, of Cs-137
  - Associated Soils: Cs-137 <0.41 pCi/g, dry weight (background)
- **Aquatic Sampling - Surveillance**
  - On- and Off-site fish sampling indicated low levels of Cs-137 (<0.78 pCi/g, wet weight) consistent with previous years; mercury (max value 1.52 mg/kg in Brown bullhead from on site; overall average 0.307mg/kg
  - On-site aquatic vegetation contained non-detectable levels of Cs-137, off-site locations had levels <0.04 pCi/g, wet weight
  - Sediments <0.83 pCi/g, dry weight, of Cs-137; consistent with levels in previous years
- **Precipitation Monitoring**
  - Additional sampling due to Japanese reactor failures
  - Quarterly analysis for radiological components indicated normal background
  - Mercury analysis indicated depositional values between 2.1 ng/L to 10.8 ng/L

Chapter 6 – Flora and Fauna Monitoring (continued)

- **Peconic River Monitoring**
  - Supplemental clean-up of 3 small areas within the river completed in 2011
    - Areas restored with native vegetation
    - Monitored to ensure success and remove invasive species
  - Post-cleanup mercury sampling of sediment; levels at or below 2 mg/kg except for two samples with values at 2.5 and 2.7mg/kg
  - Methyl mercury and mercury water column sampling occurred; values of both decrease from the STP to downstream of Manor Road
  - Average mercury in fish for all sample locations was 0.307 mg/kg, just above the 0.3 mg/kg EPA criterion
  - Reporting of post clean-up monitoring will transfer to Site Environmental Report beginning with 2012 monitoring

SER – flora & fauna monitoring

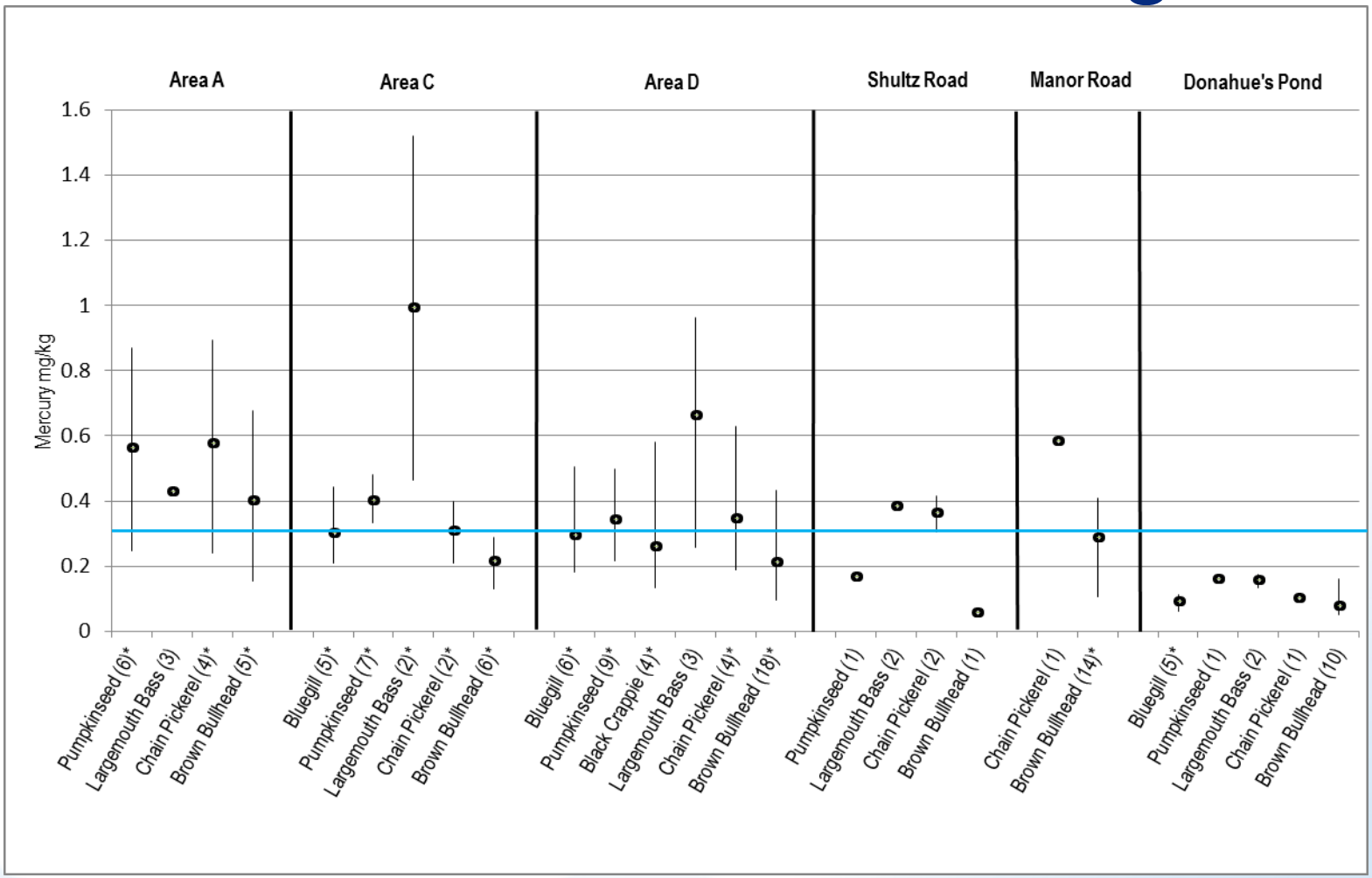


Figure 6-4. Peconic River Post Cleanup Mercury Distribution in Fish Species (Minimum, Maximum, and Average Values).

Super Storm Sandy – Tree Bronzing

- Sustained salt spray – desiccates needles
- Primarily on east and southeast facing sides of trees, on west side of open areas.
- Trees should recover in the spring

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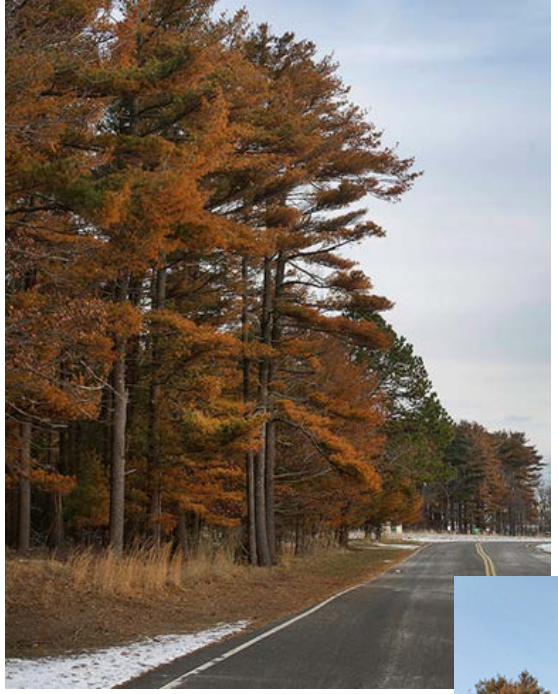
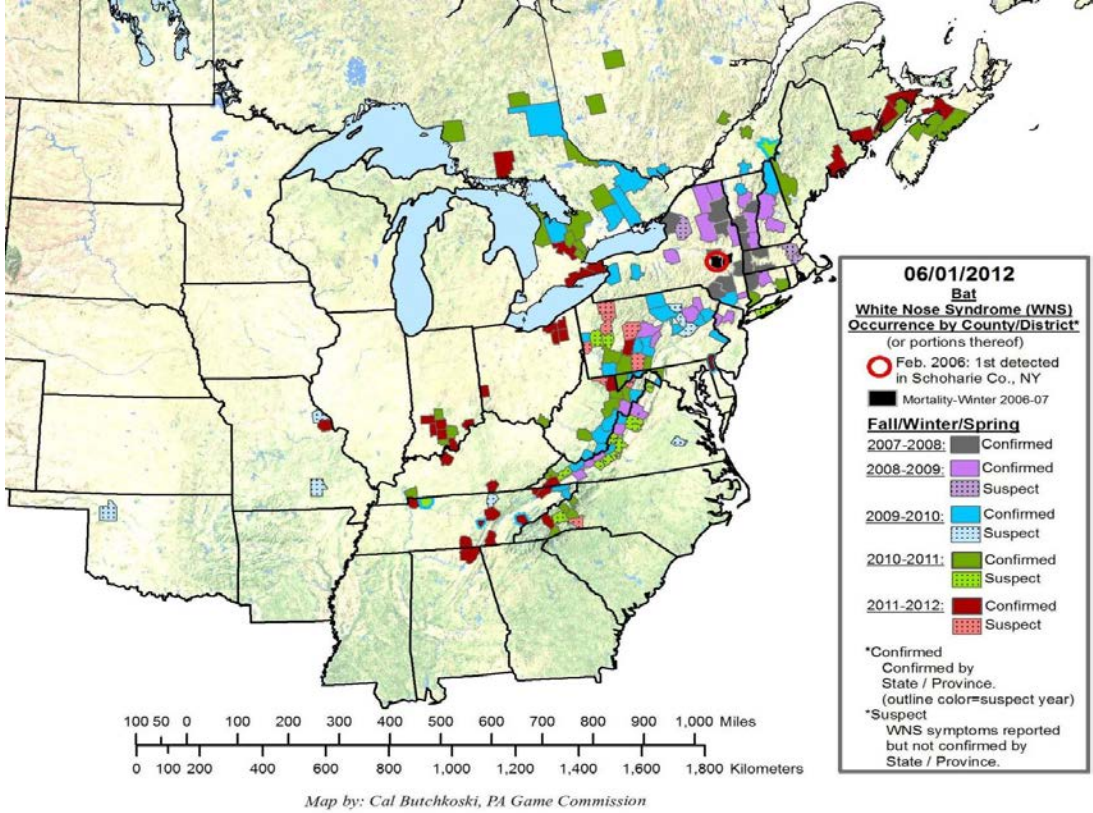
Bronzing



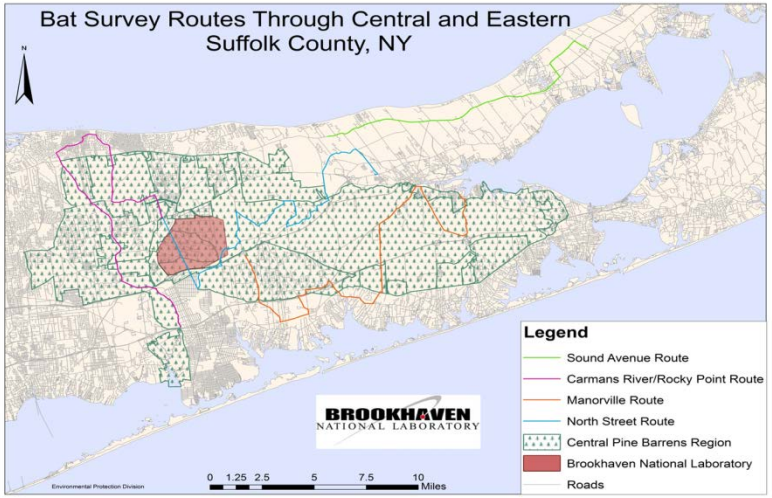
Bats



- White-nose Syndrome (WNS) identified in 2008 earliest evidence documented its presence in NY in 2006
- WNS is a fungus impacting cave dwelling bats
- Mortality of 43-100%
- Over 5 million bats have died to date
- Plentiful species may be listed as T&E

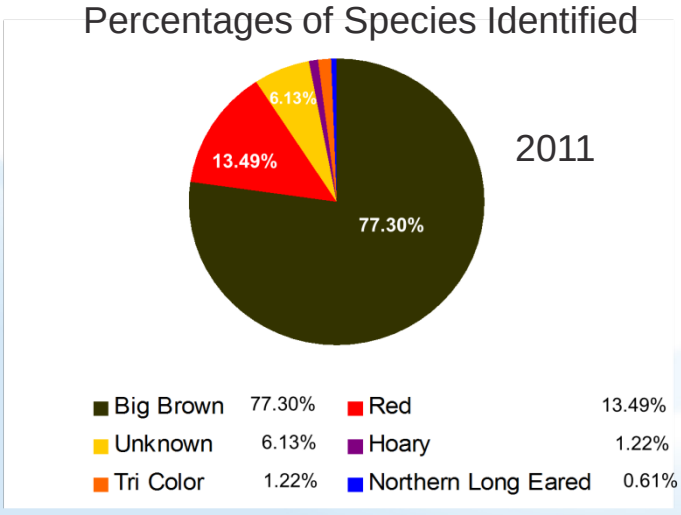
BNL and bats

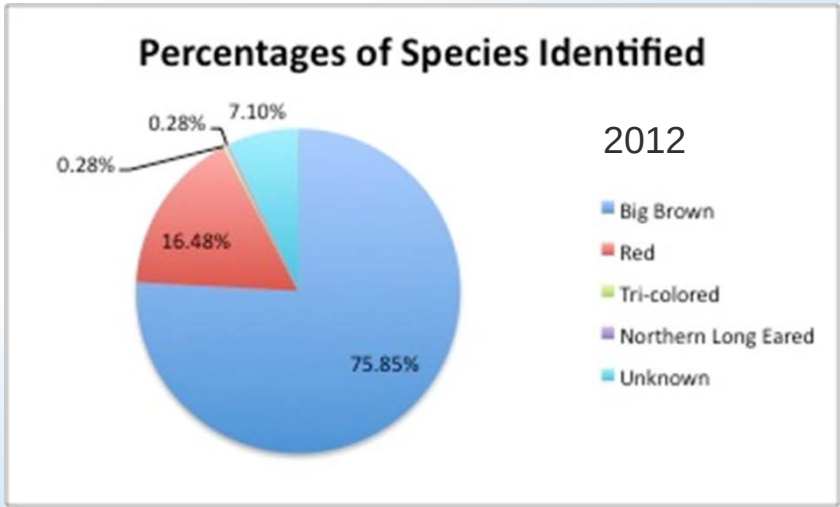
- March 2, 2011 bat found outside of Bldg. 120
- NYSDEC contacted, bat sent for analysis
- BNL begins discussion with DEC about survey methodology
- 2011 – first Long Island acoustic surveys
  - 5 species identified – big brown bats most abundant



More Bats

- 2012
  - Continued acoustic surveys – fewer bats detected
  - Added mist netting at BNL and Wertheim NWR





Mist netting - What did we find?

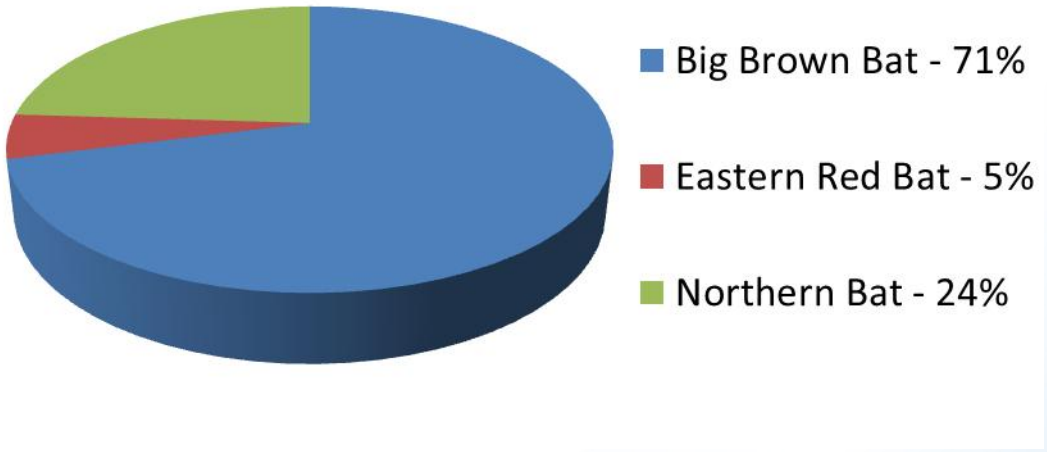
Captures:

Species	BNL	Wertheim	Total
Big Brown Bat	48	32	80
Eastern Red Bat	13	7	20
Northern Bat	15	10	25
All	76	49	125

Acoustics:

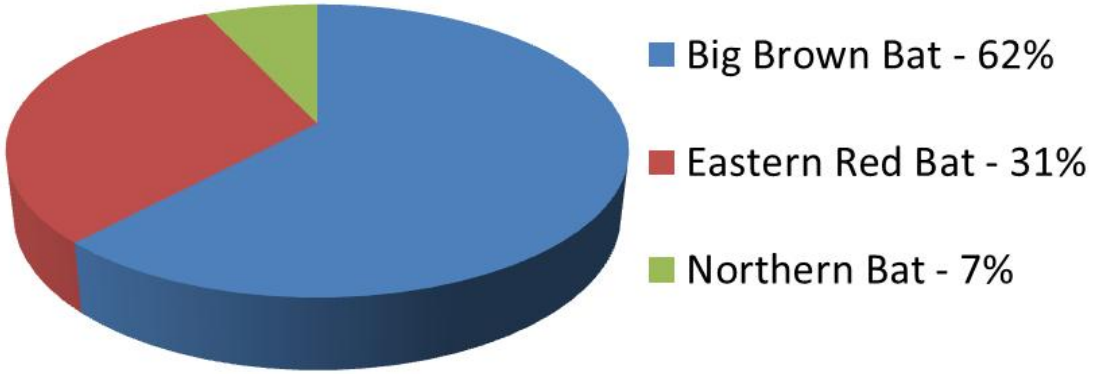
Silver Haired Bat, Little Brown Bat, Eastern Small-footed (!), Hoary

Burned



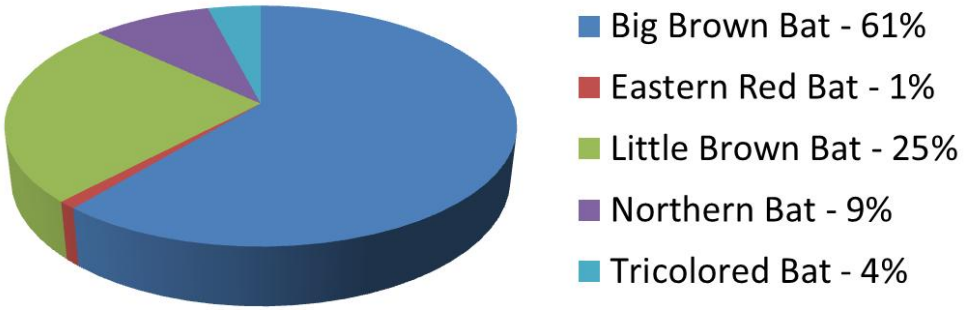
vs.

Unburned

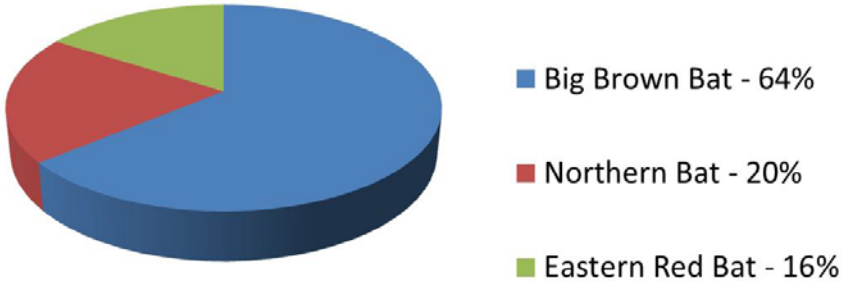


Comparison 2004 vs. 2012

Percentage of Captures - 2004-5 (from Gordon 2004-5)



Proportion of Bat Captures 2012



What does this mean and where from here?

- Big question is why does Long Island seem to have more bats than on the mainland?
  - Delay in transmission of WNS?
  - Refugia available on Long Island?
- US Fish & Wildlife Service to add work on refuges in 2013
- Acoustic surveys to continue
- FWS expected to list many impacted bats as either threatened or endangered.

Questions?