

# Box Turtle (and Bog Turtle) Health: In the Wild & Pre/Post Release

## **NJDEP Fish and Wildlife**

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## **In Coordination With:**

Bureau of Law Enforcement  
Bureau of Land Management



# Seized & Long-term Captive Eastern Box Turtles

- Location A

- 36 Box Turtles – Summer 2023
- 2 Box Turtles – Fall 2023
- 3 Box Turtles - Various

- Location B

- 54 Box Turtles – Various origins (LE Seizures, Surrendered Pets – multiple years in captivity)

95 Turtles



68 Turtles Considered for Release August 2024

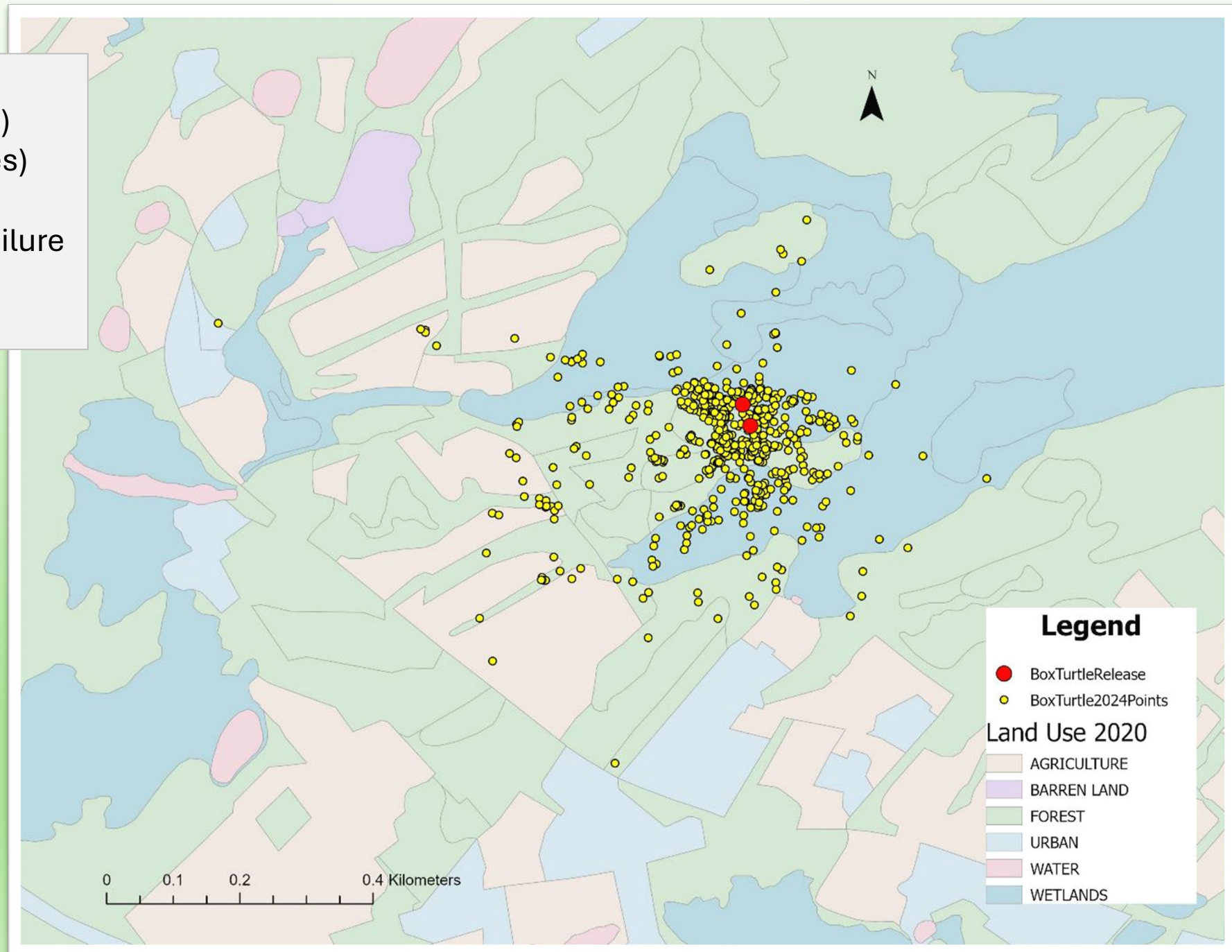
History of turtles may be significant factor in release outcome, short and long-term!

Few(er) studies on release of seized box turtles.

### 68 Turtles Released

- Group 1 – August 5 (30 turtles)
- Group 2 – August 26 (38 turtles)
- 58 Active as of Nov. 14, 2024
  - 1 potential transmitter failure
  - 2 dropped transmitters
  - 7 dead turtles

- Release Location
  - State WMA
  - > 700 hectares
  - Habitat diversity





# Health in Wild Bog Turtles: Bronx Zoo, WCS

- Sampling in 2013, 2014, 2015, 2016, 2018, 2022
- 10 Core Populations Sampled
- 202 sampled Bog Turtles





# Wild Bog Turtle Health Sampling

112 / 202 positive for ***Mycoplasma*** (55.4%)

- (Ossibof et al. 2015)

96 / 202 positive for **herpesvirus** (47.5%)

- 93 GlyHV-1
- 3 EmyHV-2

9 / 30 positive for **adenovirus** (30%)

- 5 adeno A
- 2 adeno B
- 1 adeno C

0 / 145 positive for **ranavirus** (0%)

May 2013 site (n=14)

92.9% + for ***Mycoplasma* sp.**

85.7% + for **herpesvirus**



# Pre-release Health Sampling

## ROUND 1: June 30th, 2023

### Mycoplasma -> 3 / 45 (6.7%)

- 3 *Mycoplasma* sp.

### Herpesvirus - > 8 / 45 (17.8%)

- 6 terrapene alphaherpesvirus 1
- 2 terrapene alphaherpesvirus 2

### Adenovirus -> 13 / 45 (28.9%)

- box turtle adenovirus 1

### Ranavirus -> 0 / 45

## ROUND 2: May 3rd, 2024

### Mycoplasma -> 15 / 68 (22.1%)

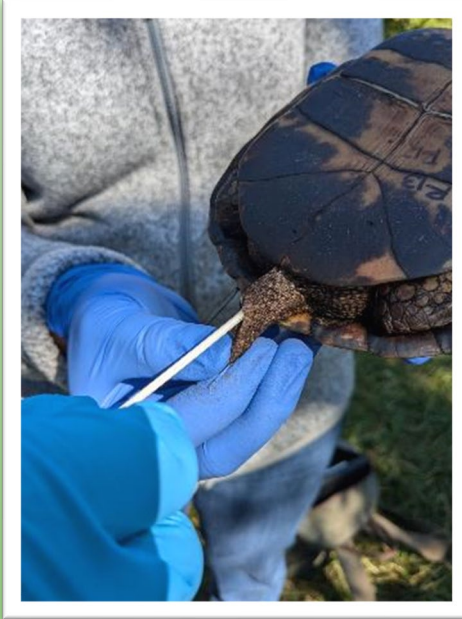
- 2 *Mycoplasma* sp.

### Herpesvirus - > 4 / 68 (5.9%)

- 3 terrapene alphaherpesvirus 1
- 1 terrapene alphaherpesvirus 2

### Adenovirus -> 1 / 48 (2.1%)

### Ranavirus -> 0 / 68



# Mortalities

First mortalities: Sep. 5th (30 days post-release)

Necropsy findings:

- oral plaques (n=4)

Histopathology:

- severe, acute bacterial stomatoglossitis (n=3)
- severe enteritis (n=1)
- moderate verminous splenitis (n=1)

Testing:

- 5/6 + for ranavirus
- 4/6 + for *Mycoplasma*





# Post-release Health Sampling

## Mycoplasma -> 30 / 62 (48.4%)

- 1 novel species (92.1% similarity to *M. testudineum* strain BH29)

## Ranavirus -> 3 / 62 (4.8%)

- including 1 "suspect positive"
- Clinical signs of URD observed in 6 turtles
  - nasal discharge
  - lethargy
  - oral plaque
  - aural swelling
  - ocular swelling

*Testing ongoing:*

Herpesvirus -> 59 / 62 are negative

Adenovirus -> 50 / 62 are negative





# Reflecting on the Health Results

- We saw a jump in *Mycoplasma* prevalence
  - 4 of 6 tested deceased turtles had rana/myco co-infections
  - similar but lower than our average site prevalence for wild bog turtles
- Ranavirus
  - we know ranavirus is present in the region
  - all 3 rana-infected living turtles entered brumation without outward signs of disease
- Next steps:
  - Assess spring survival and health status





# 2025 Spring Sampling

- Health Sampling: May 8 and May 13





# 2025 Spring Sampling

- 58 turtles remained part of the study as of November 2024 – Released 68
  - 3 dropped transmitters, 7 dead turtles
- April/May Telemetry (Pre-health sampling)
  - 3 dead turtles
- Health Sampling: May 8 and May 13
  - 31 health samples so far
  - 2 dropped transmitters
  - 2 dead turtles
- ~ 20 turtles left to sample this Spring





# So What's Next?

- We will continue with the project as planned.
  - Tracking of remaining turtles through ~ April 2026.
  - Starting this year, we will not “reset” any wandering turtles so long as they remain on the protected land.
- Reinforce focus on biosecurity when site visits and tracking resume.
- Finish Spring health samples
- Will consider capacity to monitor a subset of the turtles in 2026+ , including potential GPS transmitters.
- Explore use of aquatic eDNA pathogen sampling, in addition to turtle/amphibian screenings, for any future releases and on-site.
- Publications/White papers



Colin Osborn & Jim Angley, ENSP



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**Project Video:**

[https://youtu.be/N\\_jFt5rKSnk?si=wc0q4W\\_oK6f\\_wSBO](https://youtu.be/N_jFt5rKSnk?si=wc0q4W_oK6f_wSBO)

