

Camp Edwards, Massachusetts History, Mission, Birds, and Conservation



Massachusetts Army National Guard

Jake McCumber

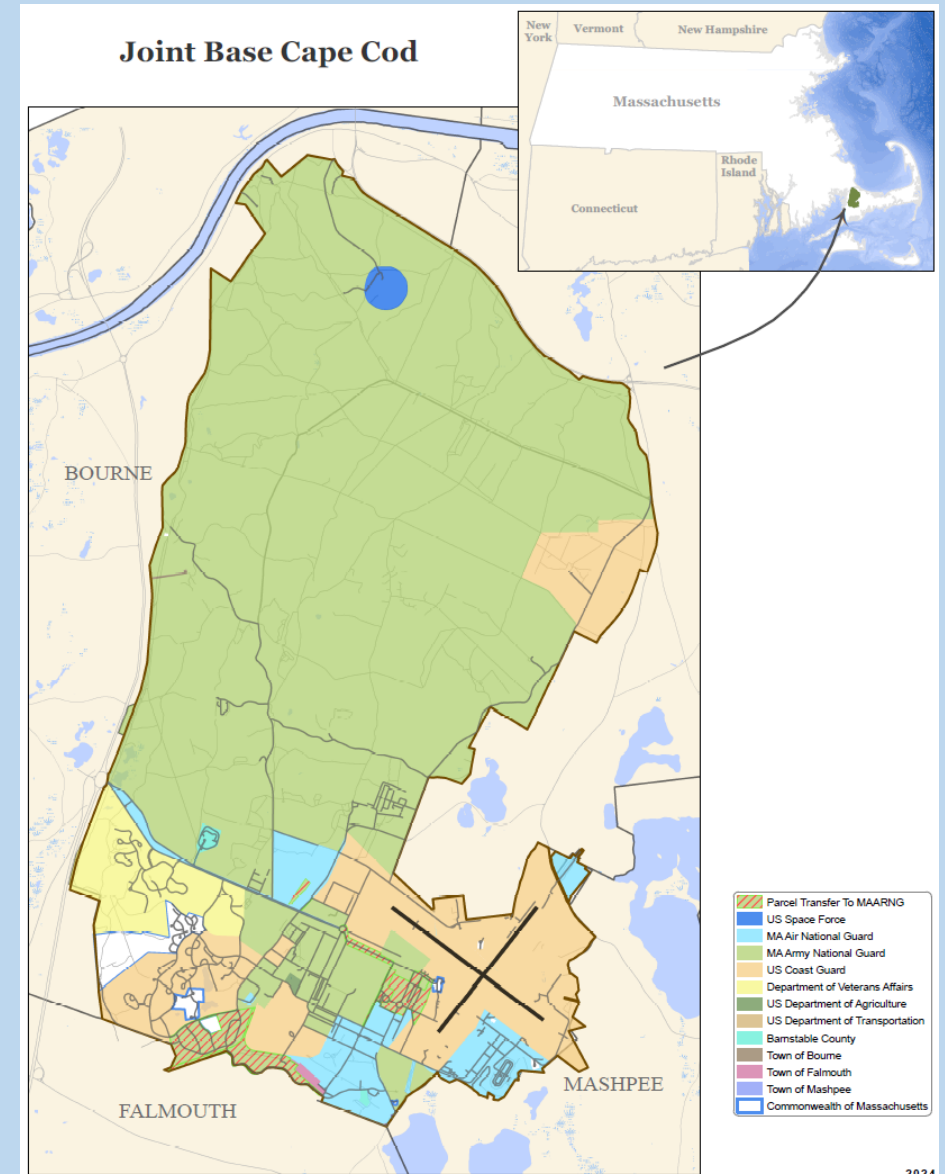
Natural Resources & Training Lands Manager

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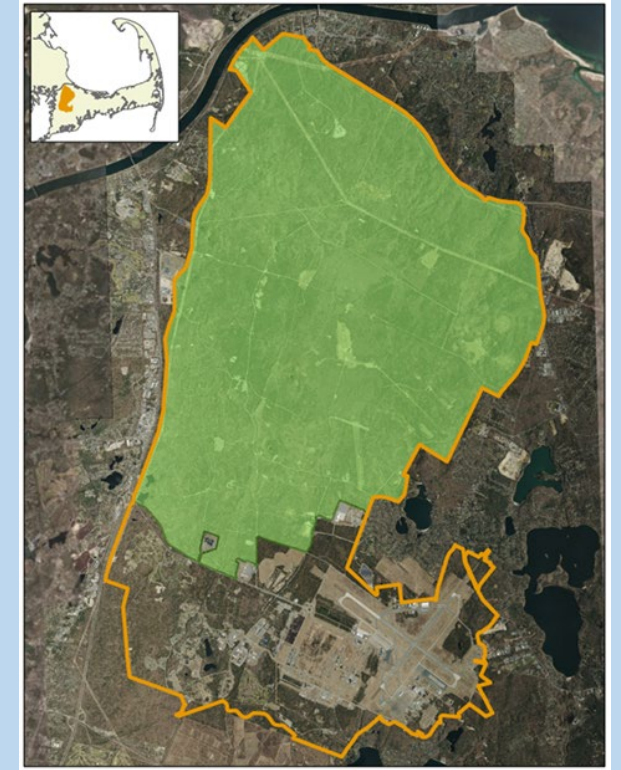
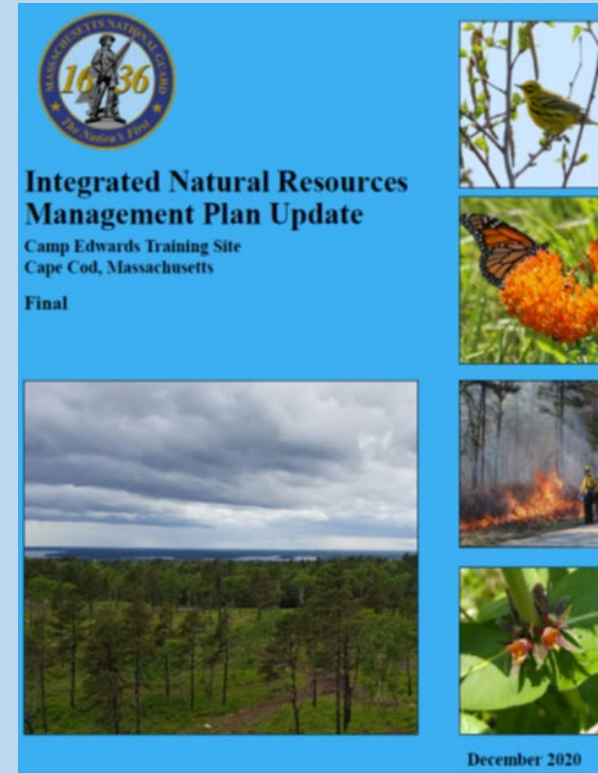
Joint Base Cape Cod

- Five primary commands
 - MA Army National Guard: Camp Edwards
 - MA Air National Guard: Otis ANG Base
 - US Coast Guard: Base Cape Cod
 - US Coast Guard: Air Station Cape Cod
 - US Space Force: SFS Cape Cod
- 22,000 acres (34 mi²)
- Other organizations
 - JBCC Fire Department
 - Impact Area Groundwater Study Program
 - Air Force Civil Engineering Center
 - USDA APHIS
 - MA National Cemetery



Camp Edwards Training Site

- 15,000 acre Army National Guard Training Site
- Largest Army training area in New England
- Maneuver, bivouac, small arms
- Largest contiguous piece of undeveloped land on Cape Cod
- Overlapped by Upper Cape Water Supply Reserve
 - Highly protected by state law for groundwater, wildlife habitat, and compatible military training



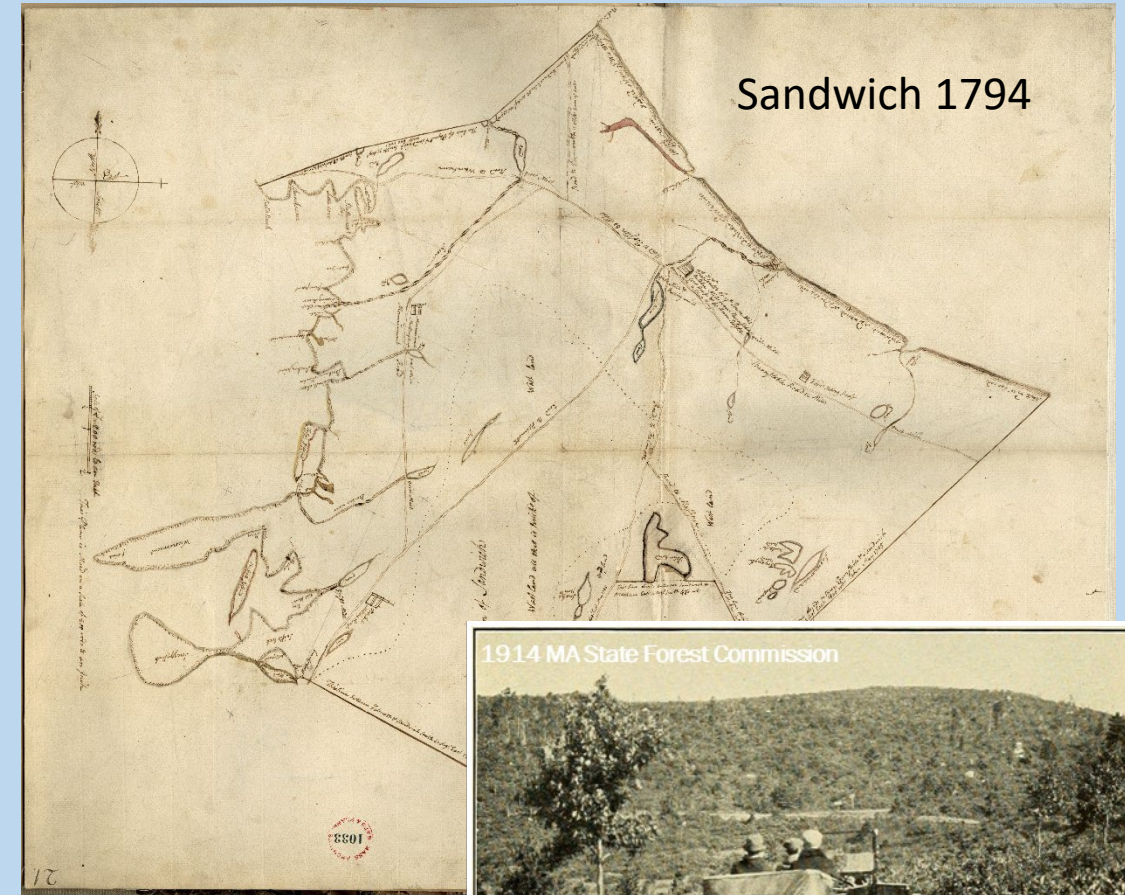
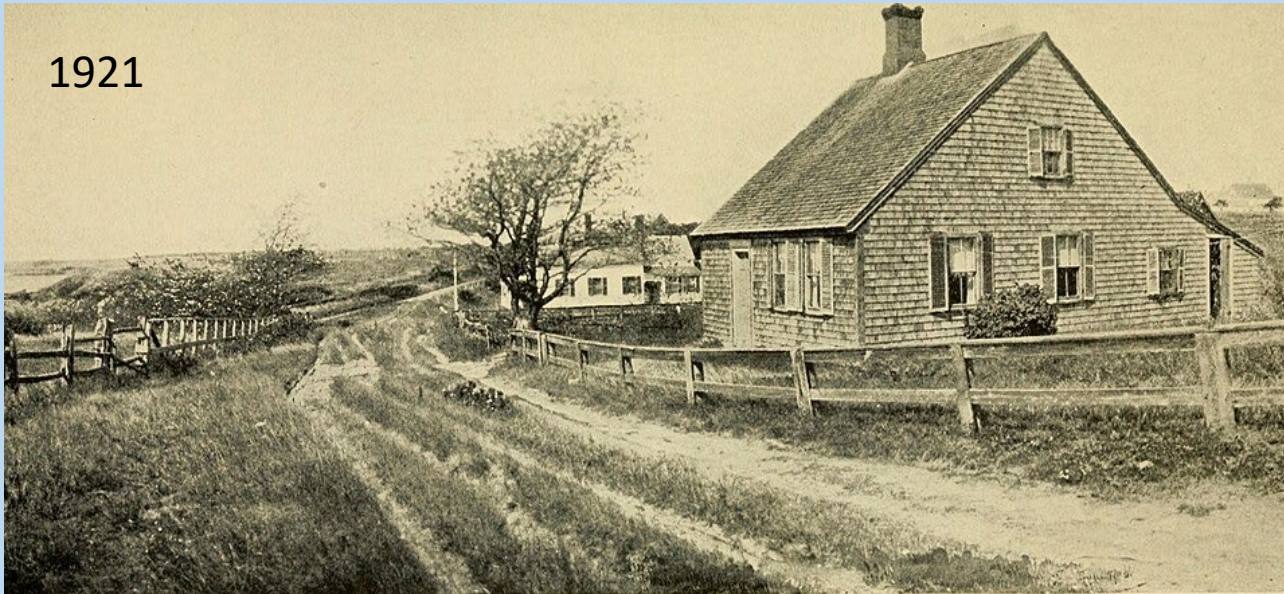
Camp Edwards Training Mission



History

- Deep Wampanoag Tribe history, including farming and the use of fire
- Colonial pastoral land use
- Extensive and intensive land clearing for wood use

1921



1914 MA State Forest Commission



View of Pine Knob in town of Bourne, showing effect of fires and neglect. Typical Cape Cod inland territory.

Developing a Cape Cod Base

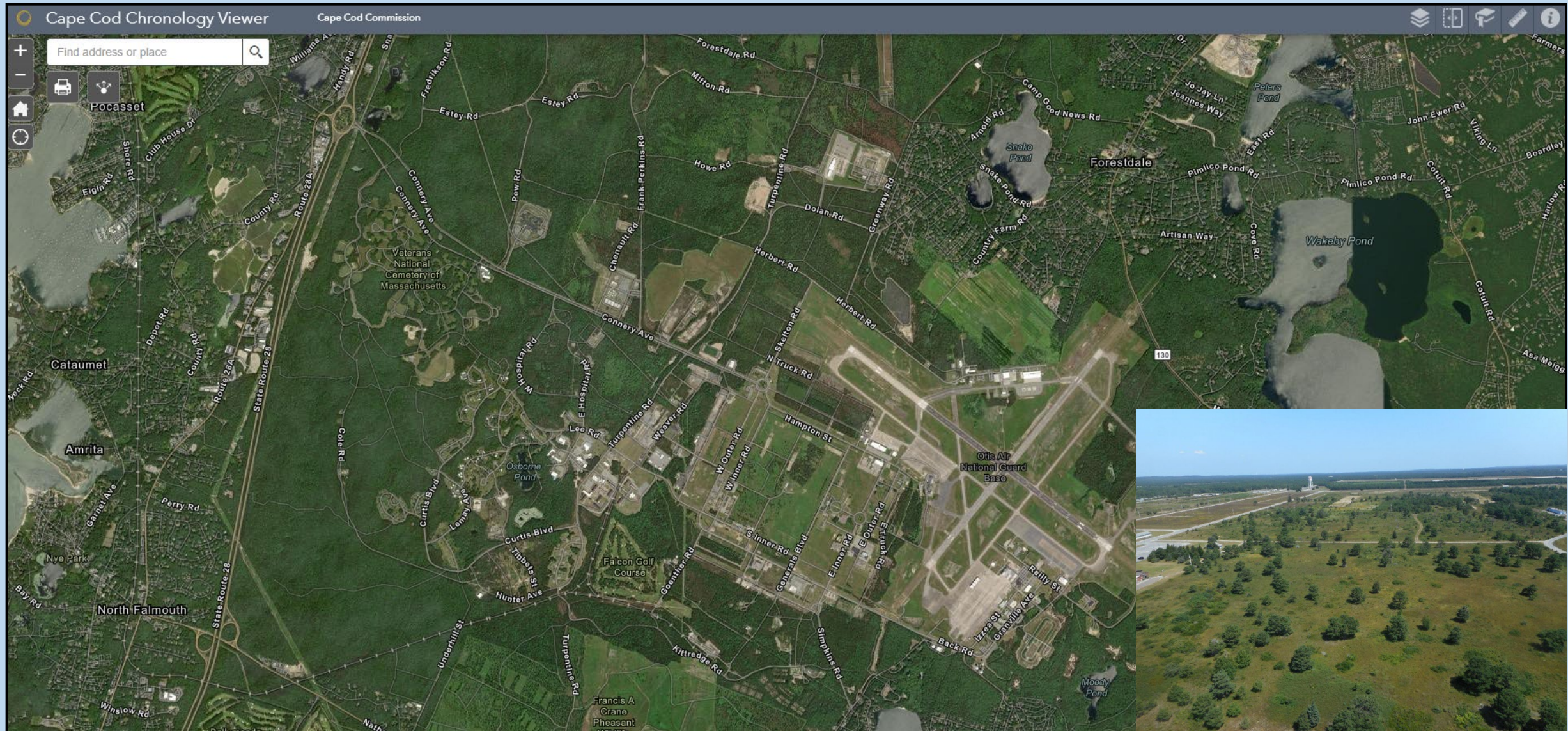
- 1935-41: Massive construction converts tent site to MA Military Reservation (MMR), pop:30K.
- 1941-1945: Base activated by U.S. Army to train/deploy troops for WWII; 200,000+ deployed.
- 1948: U.S. Air Force obtained control of Otis Field, renaming it Otis Air Force Base.
- 1950: Reactivated for training to support Korean conflict; numbers approached WWII.
- 1975: MA Army National Guard (MAARNG) assumes operational control of Camp Edwards.



Extensive Development and Training



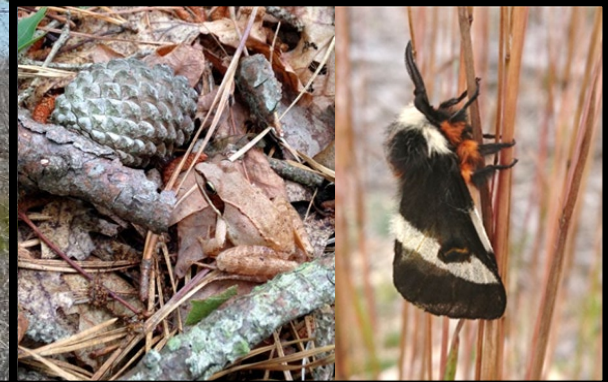
Current Condition: Integration & Conservation



A History of Disturbance



Transitioned into Conservation Management



Natural Resources Conservation

Very active Natural Resources & Training Lands Program with good leadership support

- Environmental review
- Flora and fauna monitoring and management
- Habitat restoration
- Forestry
- Wildland Fire
- Integrated Training Area Management
- Integrated Pest Management
- Wetlands

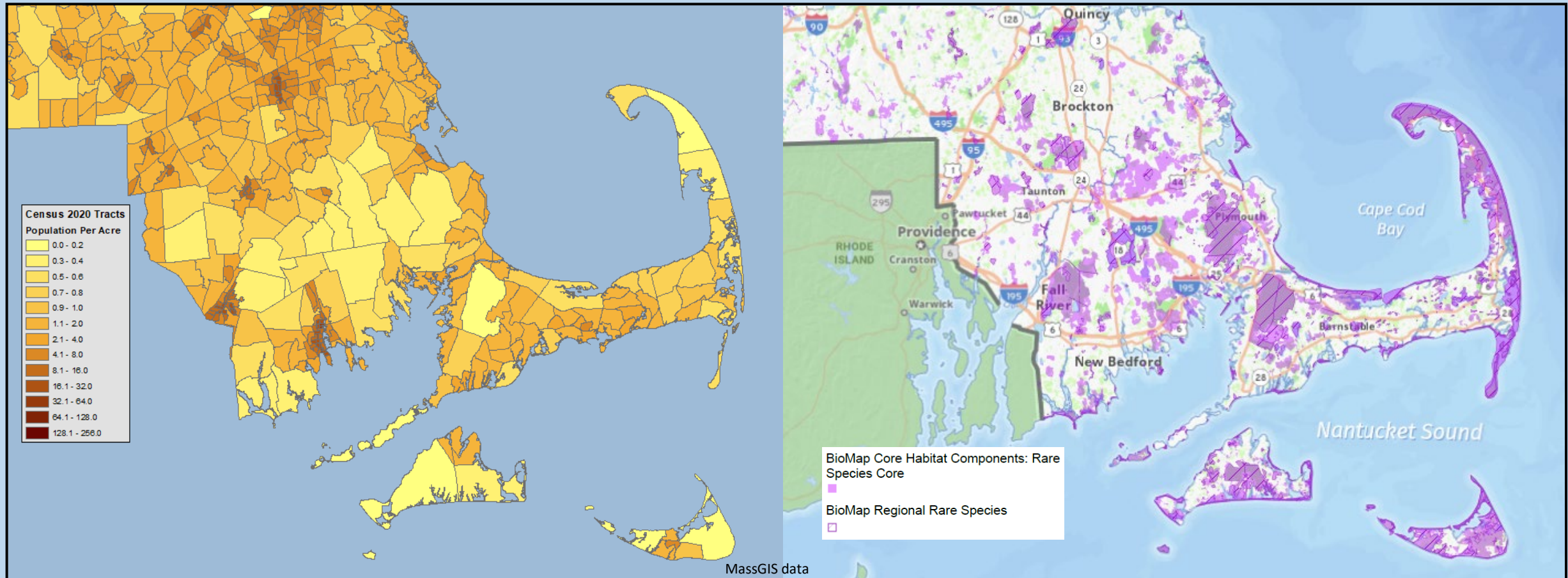


Conserving training lands for soldiers and wildlife



Planning in a Constrained System

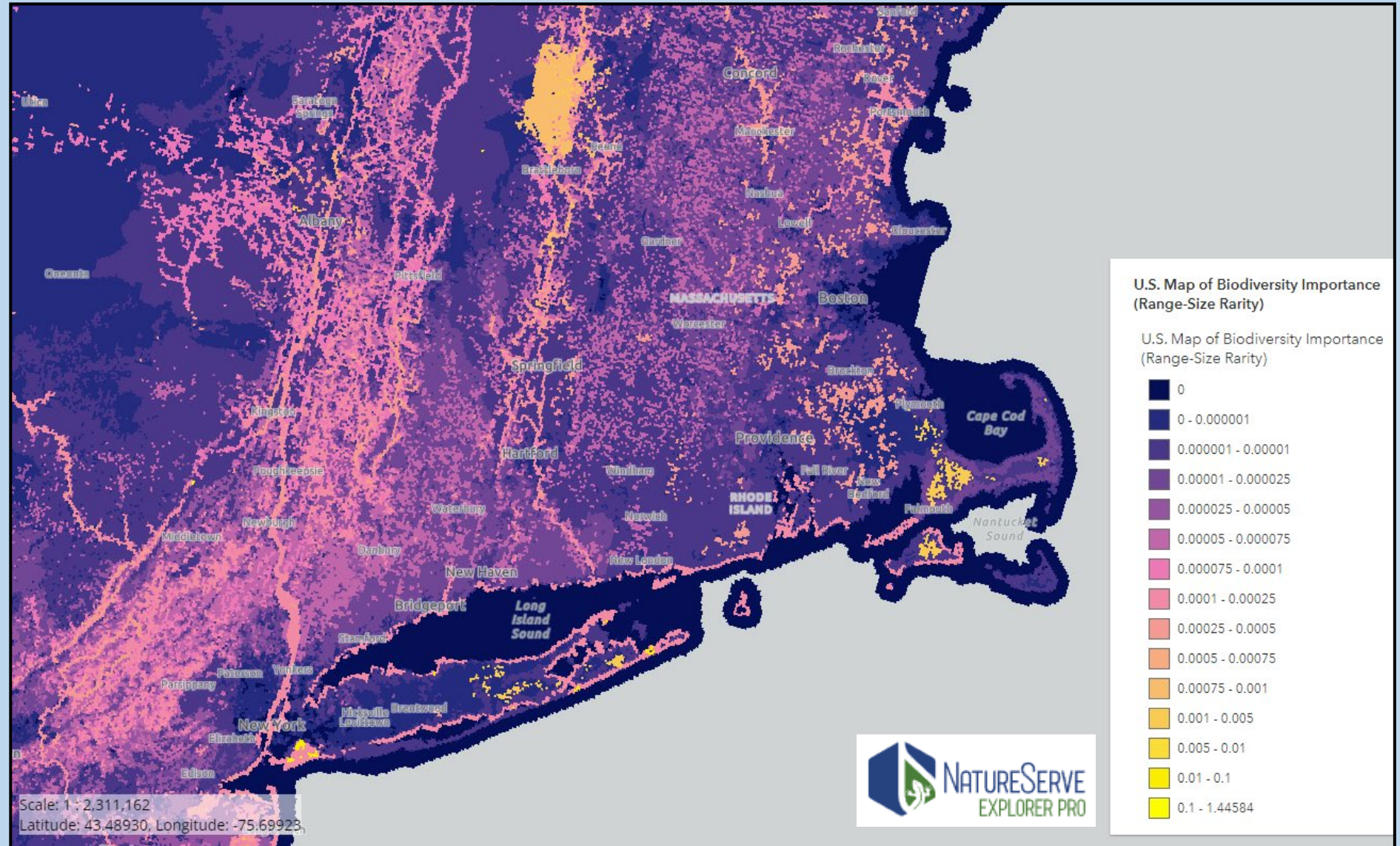
Rare species populations are restricted to isolated remnants of rare natural communities within isolated ecosystem remnants.



Biodiversity Importance

Isolated communities and ecosystem remnants with high biodiversity value

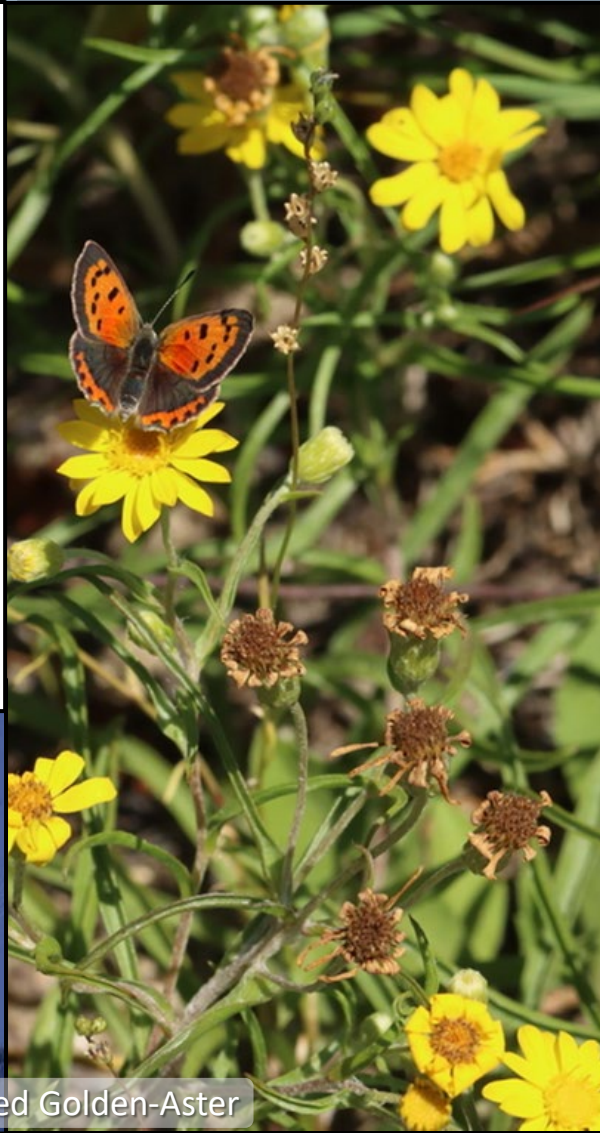
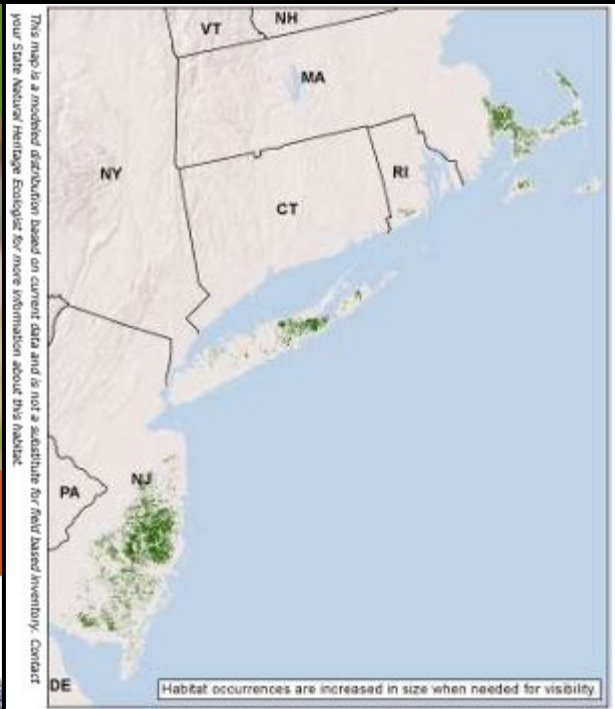
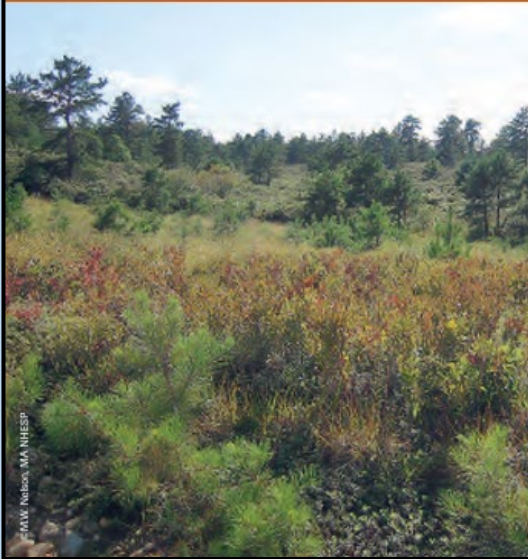
- Elevates conservation priority
- High stewardship responsibility for agencies and levels of governance (municipal, county, state, federal)
- Requires detailed planning
 - Balancing variety of ecological needs
 - Balancing species' needs with landscape scale



North Atlantic Coastal Pine Barrens & Sandplains



The Pine Barrens of Southeast Massachusetts

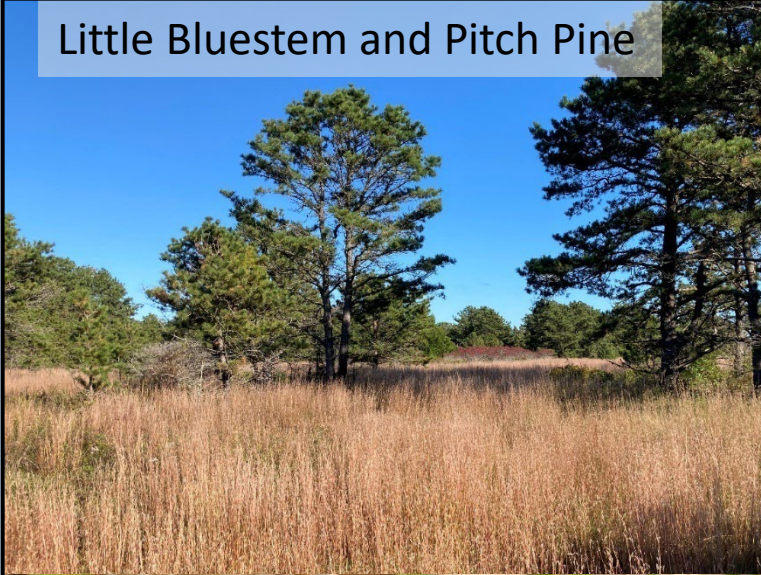


Sickle-leaved Golden-Aster



Key Pine Barrens Plants: Fundamental Pieces

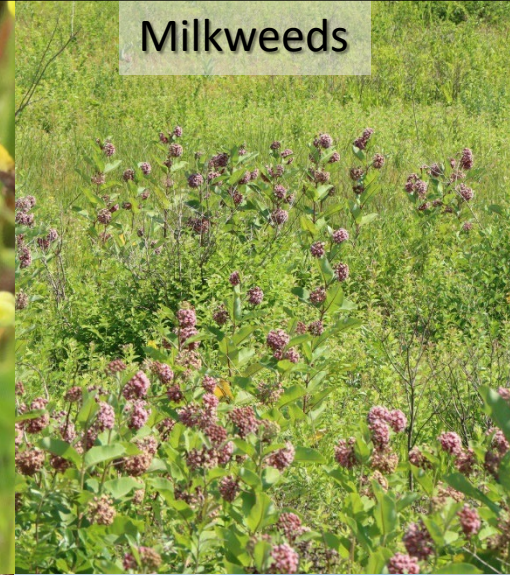
Little Bluestem and Pitch Pine



Wild Indigo



Milkweeds



Scrub/Bear Oak



Lowbush and Pallid Blueberry



Diverse wildflowers



Bare Sand



Openings and surveyors



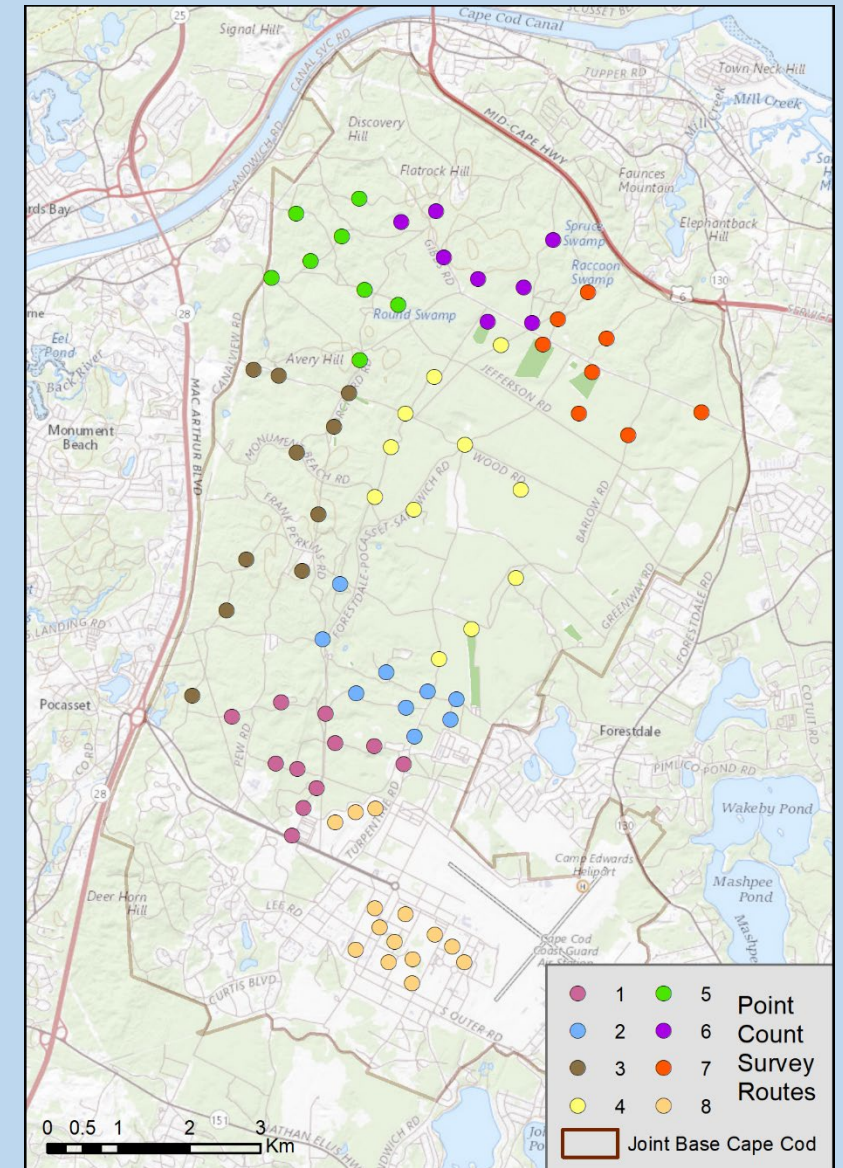
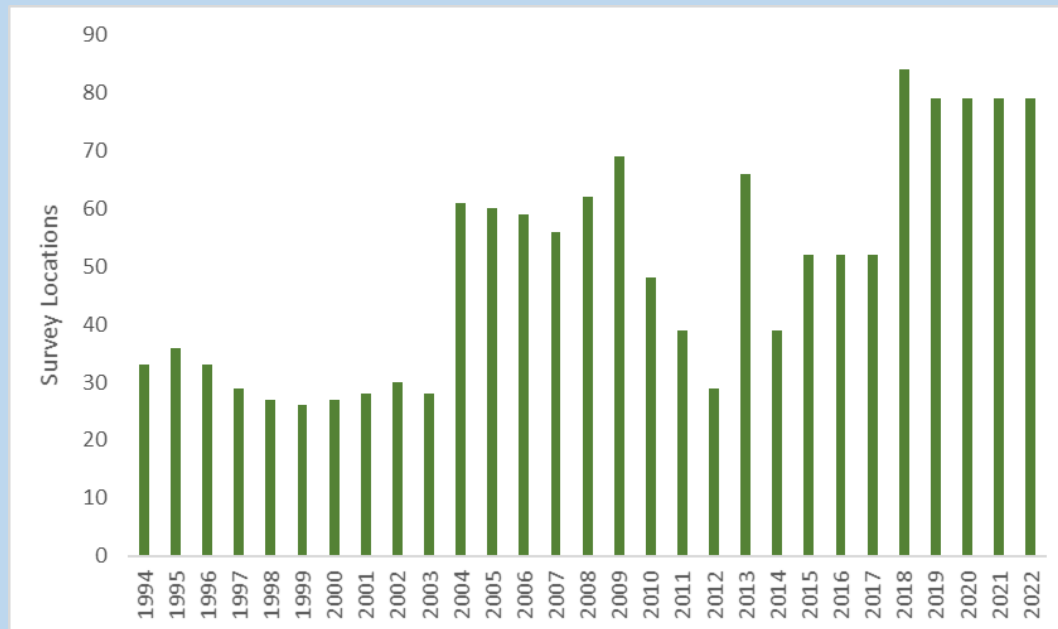
Camp Edwards Bird Monitoring Efforts

- Who/what: Multiple efforts to monitor bird populations with full-time staff and seasonal technicians.
- Why
 - Critical information resource to evaluate health of training lands, compatibility of training, efficacy and effect of natural resource management
 - One of the best tools for communication and outreach internally and with the public.
 - Comparability across boundaries and scales (not available for other taxa)
- How
 - General point-count surveys
 - Targeted supplemental efforts
 - Northeast Nightjar Survey
 - Woodcock, Ruffed Grouse



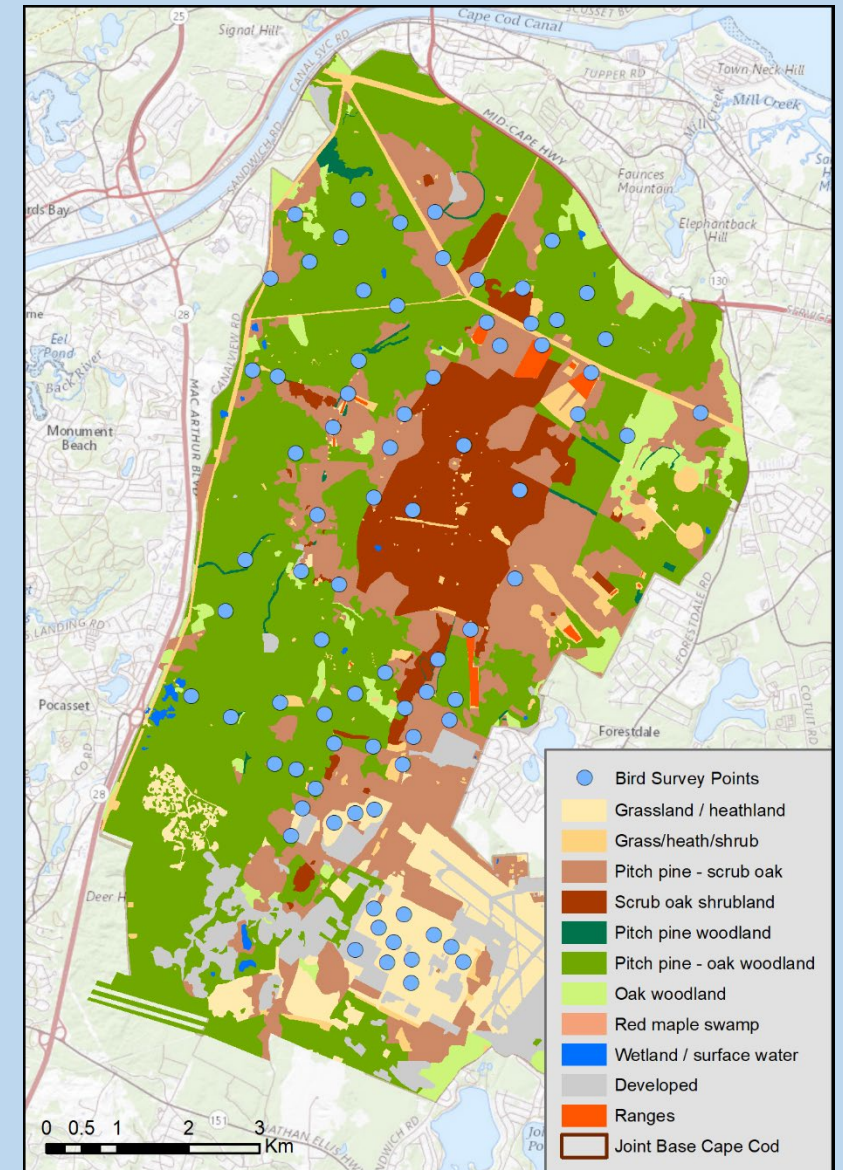
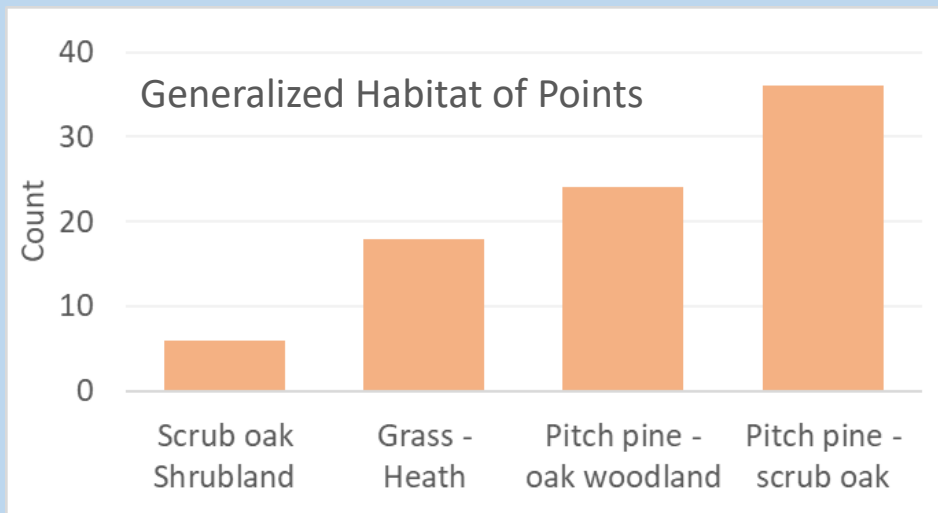
Camp Edwards Breeding Bird Surveys

- Point-count driving transects
- 79 survey points
- Three survey visits per route
- Efforts with similar, but different protocols 1994-2013 and 2013-present



Camp Edwards Breeding Bird Surveys

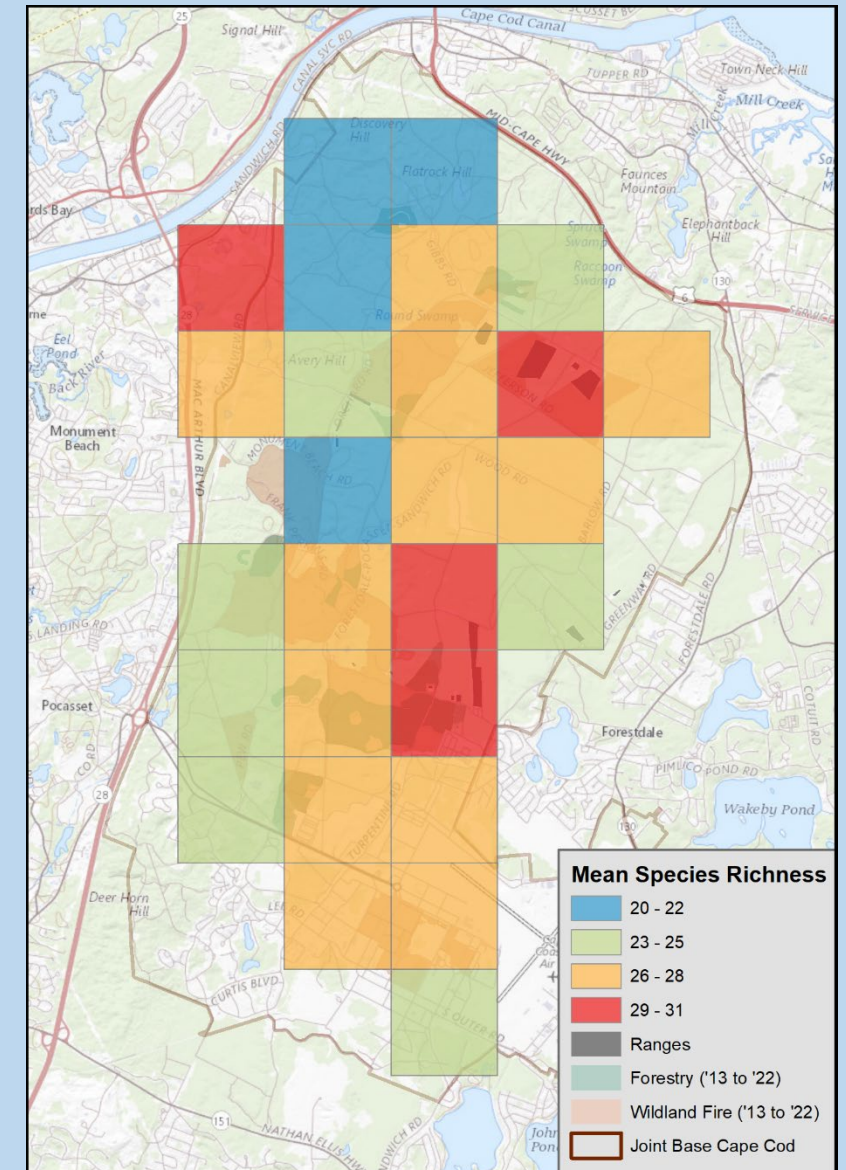
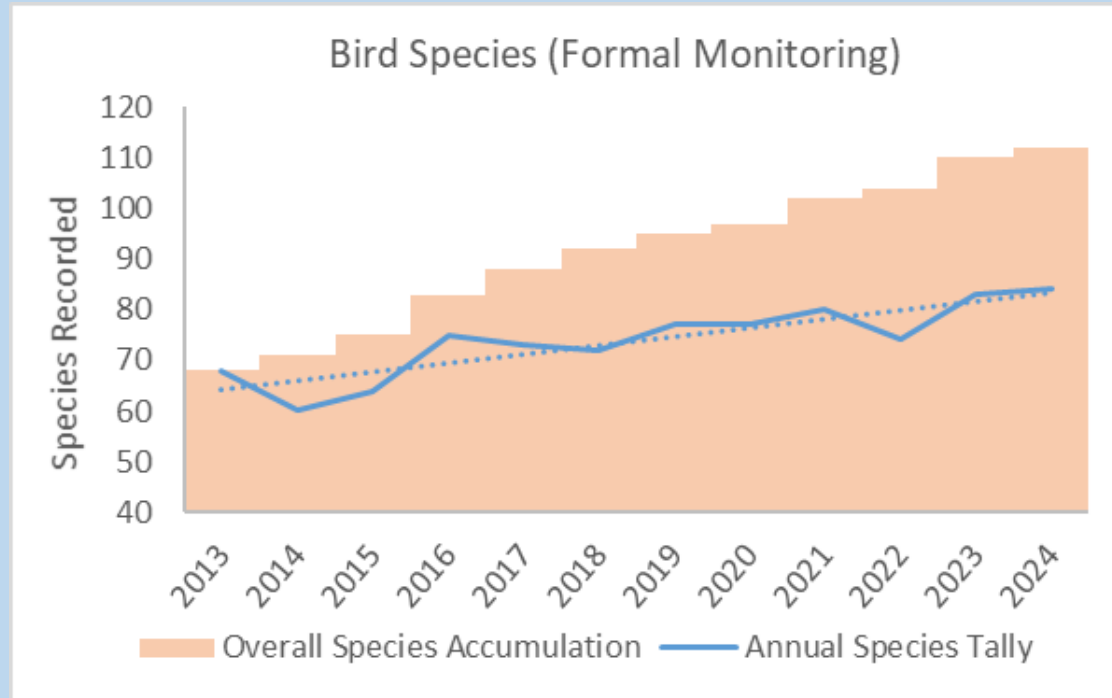
- Point-count driving transects
- 79 survey points distributed throughout the training area
- Three survey visits per route
- Efforts with similar, but different protocols 1994-2013 and 2013-present



Breeding Bird Surveys

- Mean species richness (species per point) = 26
- Total species (2013-2024) = 112 (mean 73.3/yr)

2024:
84 species
2nd year in
a row with
new high
count



Common Birds

Of the 112 species:

- # observed all 12 years: 49 (44%)
- # observed >6 years: 69 (62%)
- # observed ≤ 2 years: 25 (23%)



Most abundant

1. Eastern Towhee
2. Ovenbird
3. Pine Warbler
4. Baltimore Oriole
5. Chipping Sparrow
6. Common Yellowthroat
7. American Robin
8. Hermit Thrush
9. Black-capped Chickadee
10. Blue Jay

Highest occupancy (TA)

1. Eastern Towhee (1)
2. Pine Warbler (.998)
3. Baltimore Oriole (.995)
4. Chipping Sparrow (.992)
5. Ovenbird (.97)
6. Common Yellowthroat (.96)
7. Black-capped Chickadee (.95)
8. Hermit Thrush (.95)
9. American Robin (.92)
10. Eastern Wood-Pewee (.92)

All data using the 2013-2024 dataset

Species of Greatest Conservation Need

- SGCN Listed by MassWildlife – State Wildlife Action Plan
 - Continental, national, and regional plans and prioritization
 - Species status and population trends: state, local
 - Ongoing and future threats
- 571 total species, 95 birds
- Camp Edwards breeding birds (17)



Forest

Ruffed Grouse
Black-billed Cuckoo
Black-and-white Warbler
Scarlet Tanager
Purple Finch

Chimney Swift

Grassland

Upland Sandpiper
American Kestrel
Horned Lark
Grasshopper Sparrow
Eastern Meadowlark

Pine Barrens Mosaic

American Woodcock
Eastern Whip-poor-will
Brown Thrasher
Prairie Warbler
Eastern Towhee
Field Sparrow



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Pine Barrens Mosaic

American Woodcock

Eastern Whip-poor-will

Brown Thrasher

Prairie Warbler

Eastern Towhee

Field Sparrow



Forest Guild

- Ruffed Grouse
- Black-billed Cuckoo
- Black-and-white Warbler
- Scarlet Tanager
- Purple Finch



Forest Guild

Abundance Trend

Ruffed Grouse

slope: +0.036

$p=0.02$

Black-billed Cuckoo

slope: -0.001

$p=0.75$

Black-and-white Warbler

slope: +0.013

$p=0.03$

Scarlet Tanager

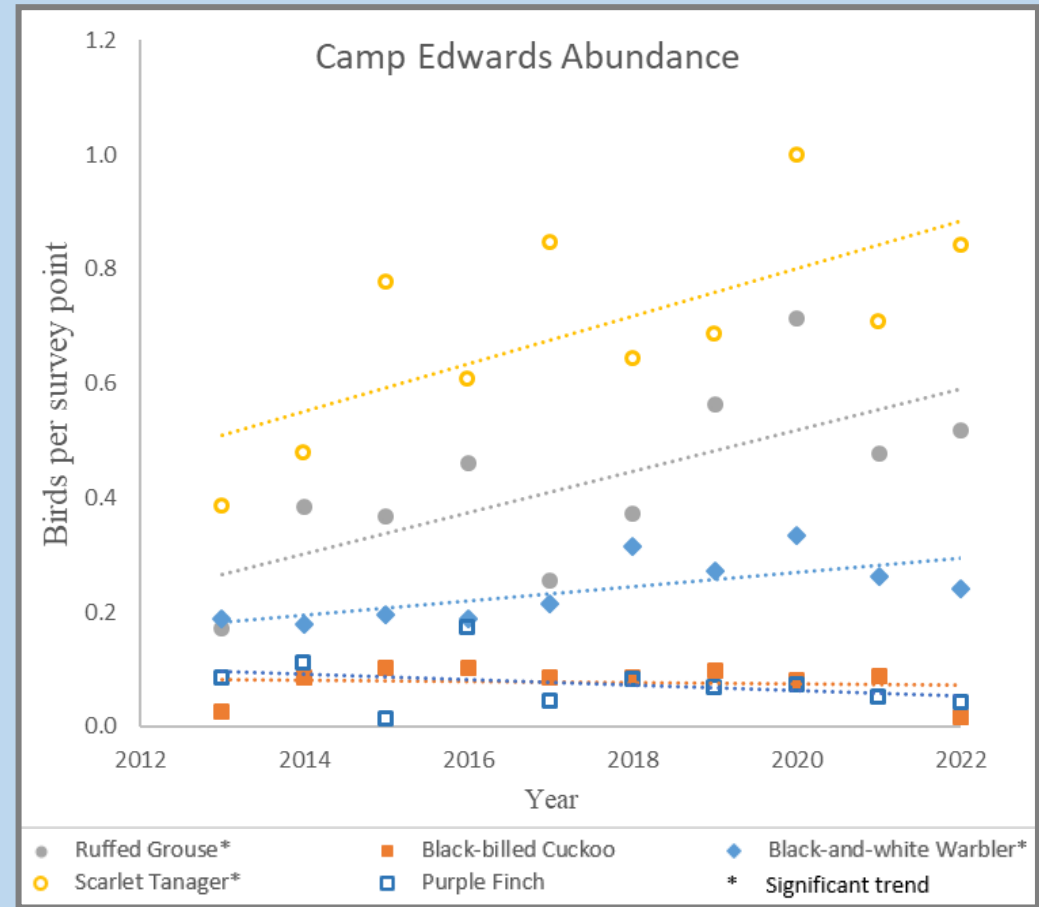
slope: +0.042

$p=0.03$

Purple Finch

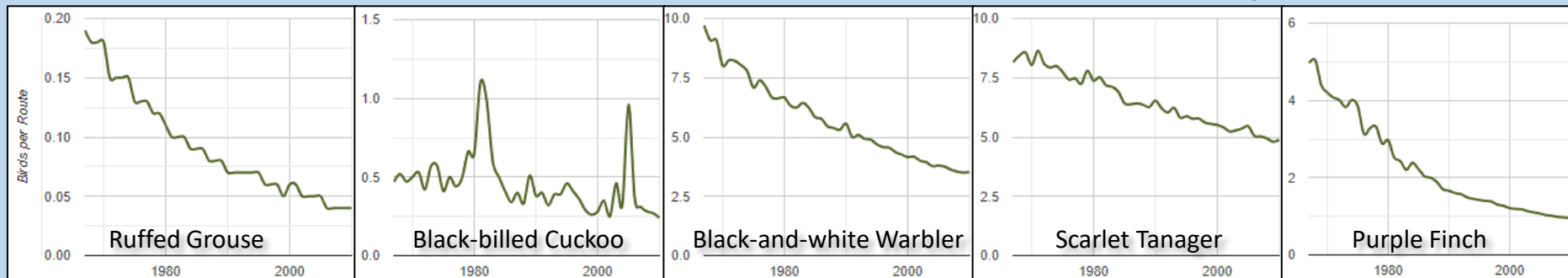
slope: -0.005

$p=0.35$



Massachusetts Breeding Bird Survey (1967-2009)

Source: MassAudubon Breeding Bird Atlas 2

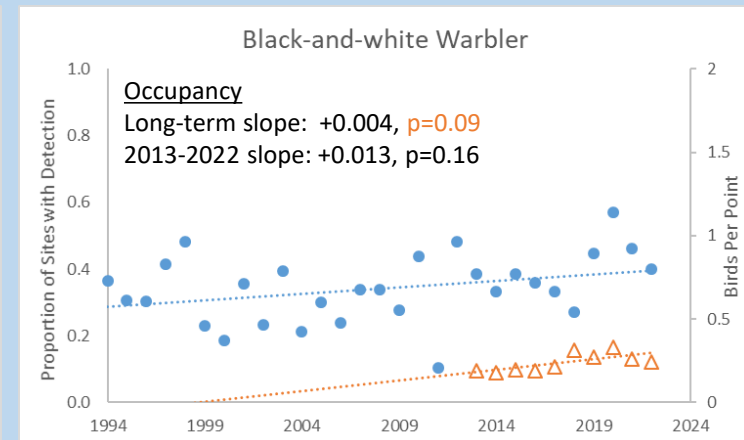
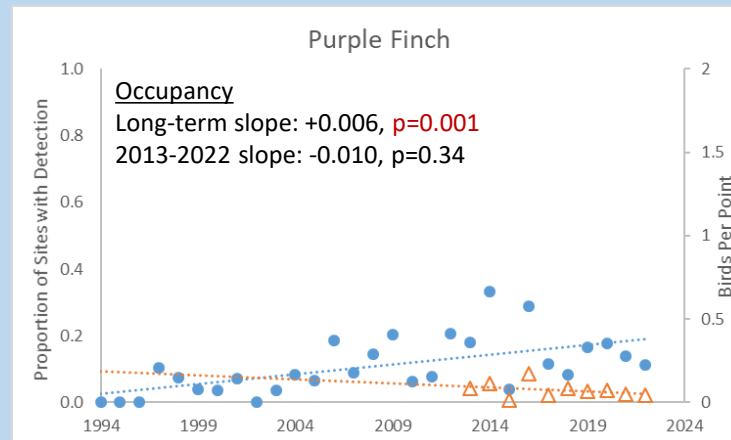
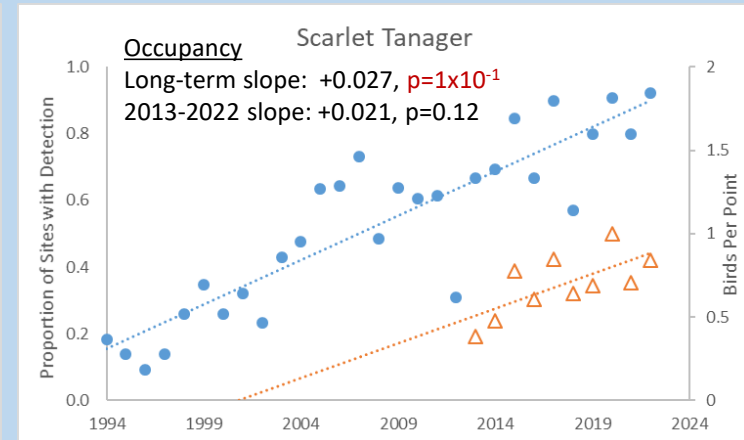
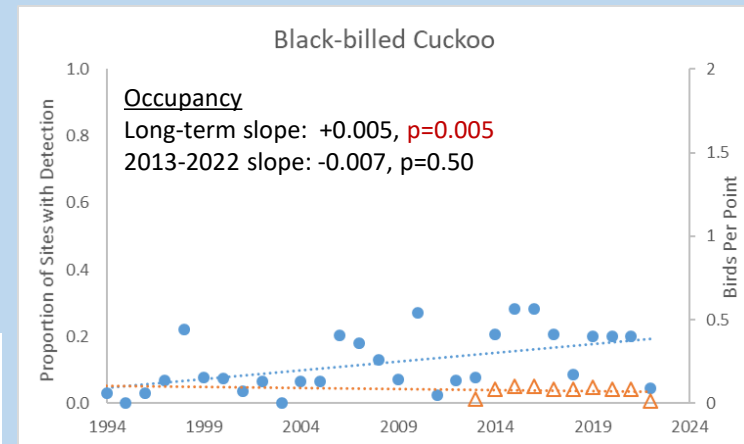
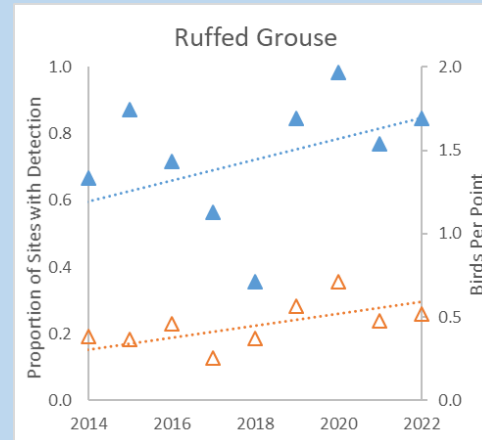


Forest Guild

- Ruffed Grouse
- Black-billed Cuckoo
- Black-and-white Warbler
- Scarlet Tanager
- Purple Finch

Occupancy
2013-2022 slope:
+0.031, $p=0.17$

● Occupancy
▲ Abundance



Grassland Guild

- Upland Sandpiper
- American Kestrel
- Horned Lark
- Grasshopper Sparrow
- Eastern Meadowlark



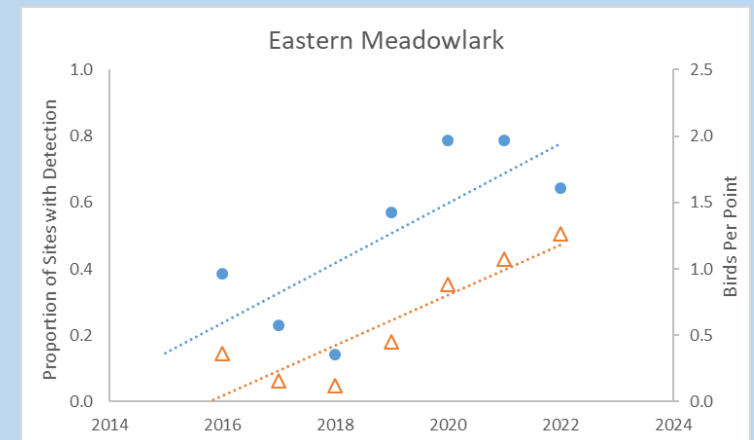
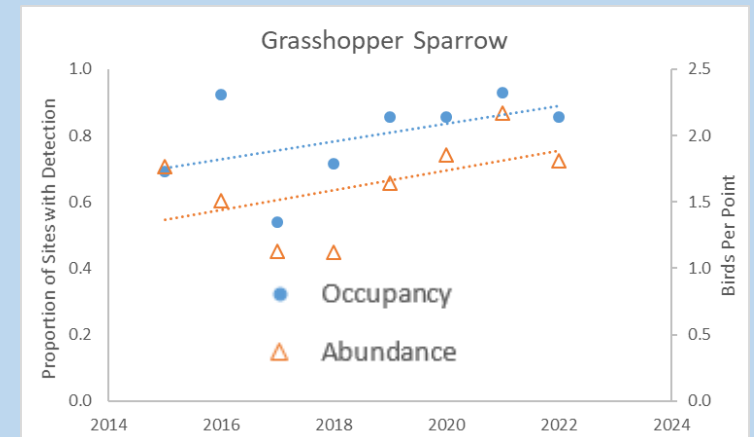
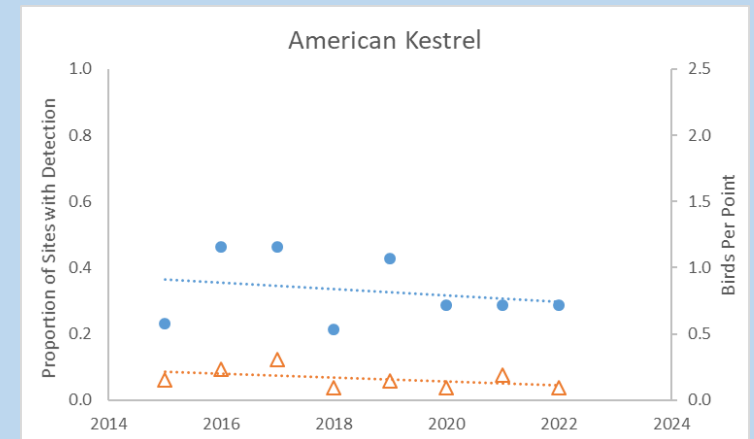
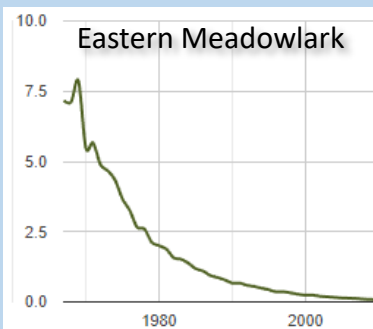
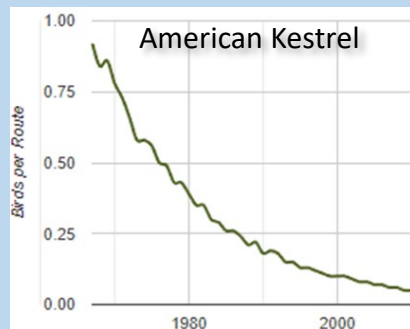
Grassland Guild

| | Trends | |
|---------------------|-------------------------|------------------|
| | Abundance | Occupancy |
| American Kestrel | slope: -0.014 p=0.25 | -0.010 p=0.58 |
| Grasshopper Sparrow | slope: +0.075 p=0.20 | +0.027 p=0.22 |
| Eastern Meadowlark | slope: +0.189 p=0.01 | +0.090 p=0.05 |



Massachusetts Breeding Bird Survey (1967-2009)

Source: MassAudubon Breeding Bird Atlas 2



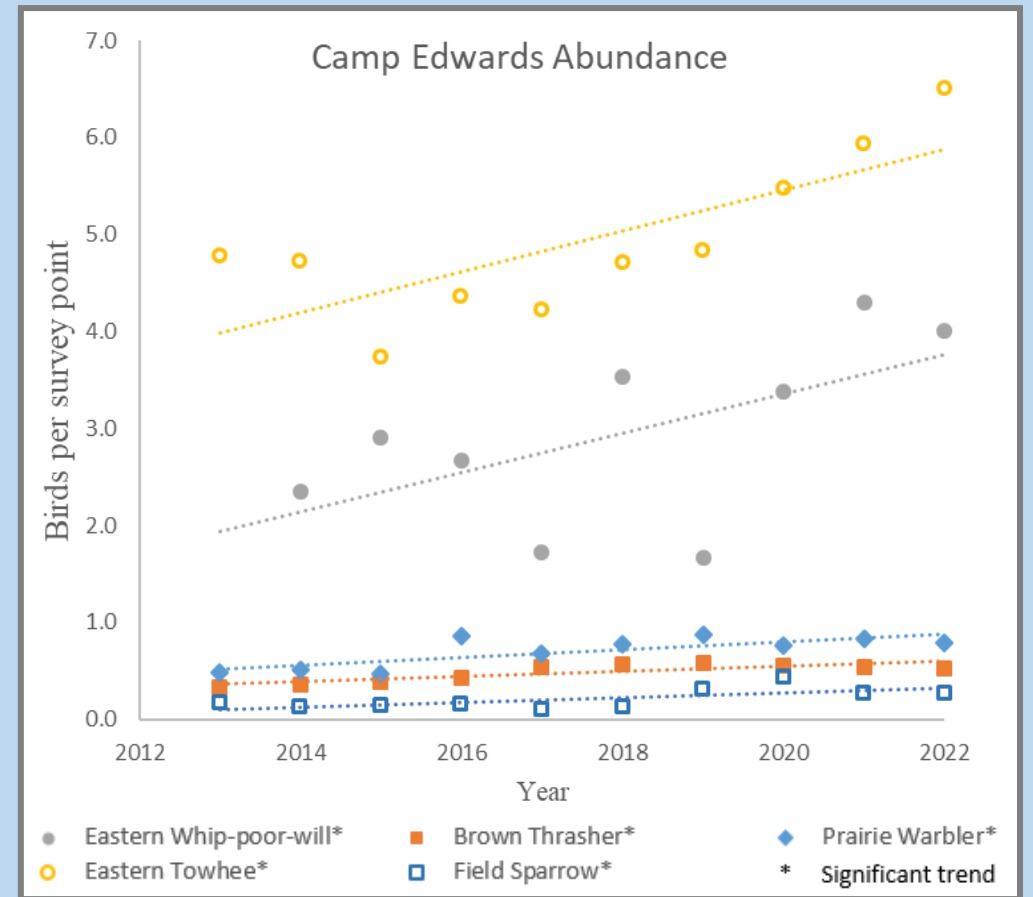
Pine Barrens Mosaic Guild

- Eastern Whip-poor-will
- Brown Thrasher
- Prairie Warbler
- Eastern Towhee
- Field Sparrow



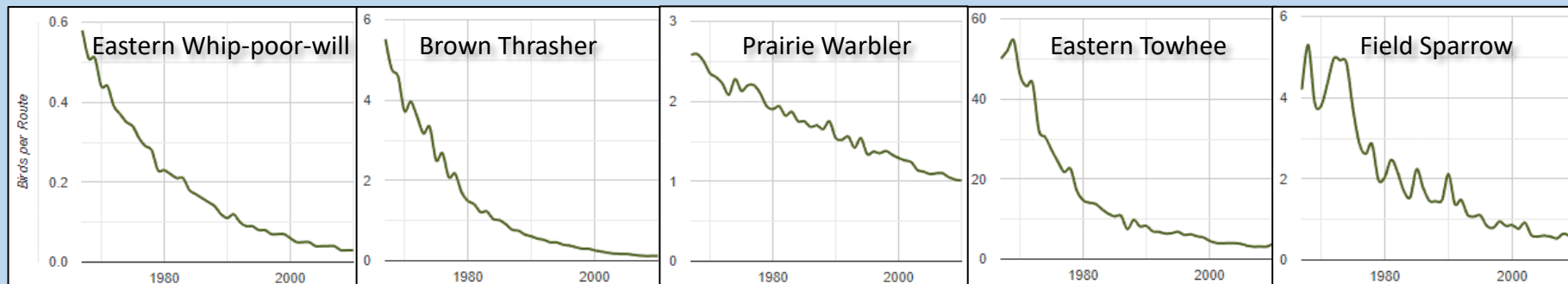
Pine Barrens Mosaic Guild

| | Abundance Trend |
|------------------------|---------------------------|
| Eastern Whip-poor-will | slope: +0.203 $p=0.09$ |
| Brown Thrasher | slope: +0.026 $p=0.00$ |
| Prairie Warbler | slope: +0.040 $p=0.01$ |
| Eastern Towhee | slope: +0.210 $p=0.01$ |
| Field Sparrow | slope: +0.023 $p=0.04$ |



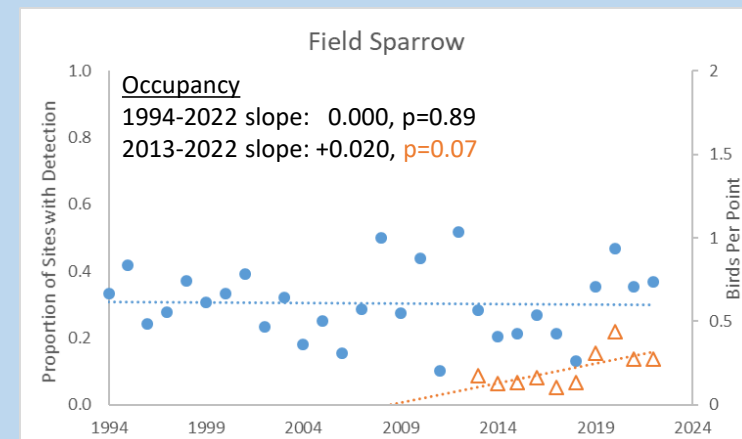
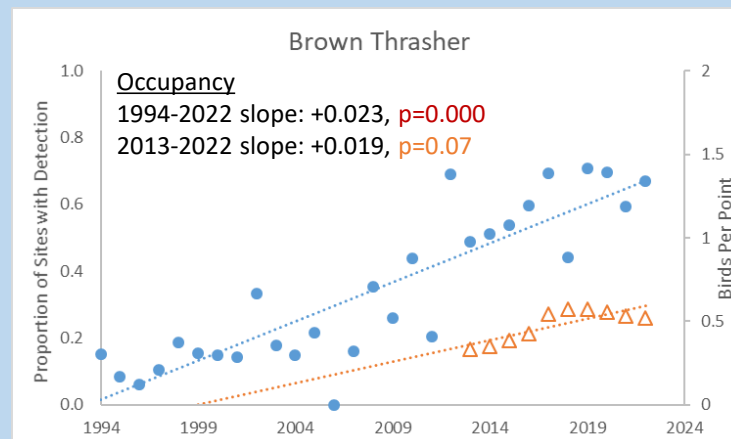
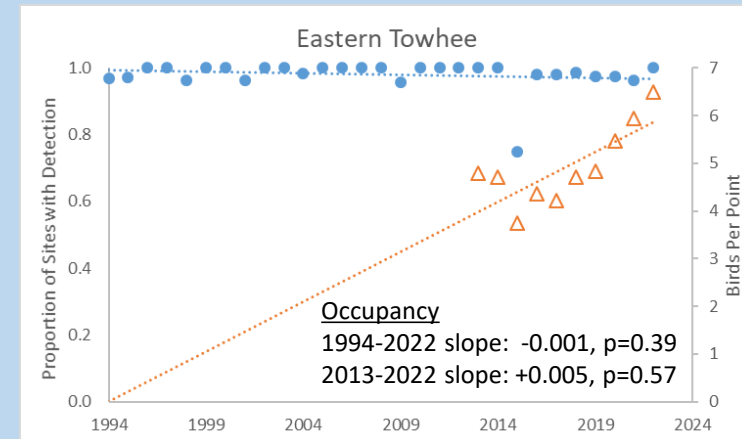
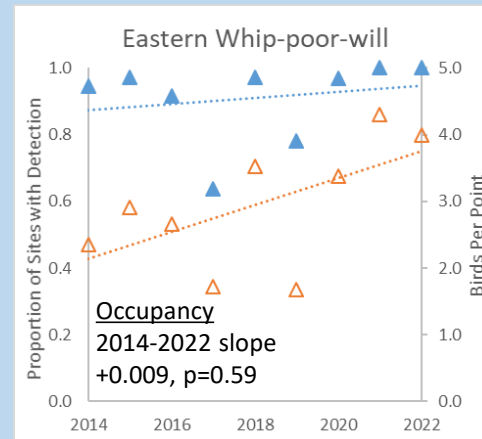
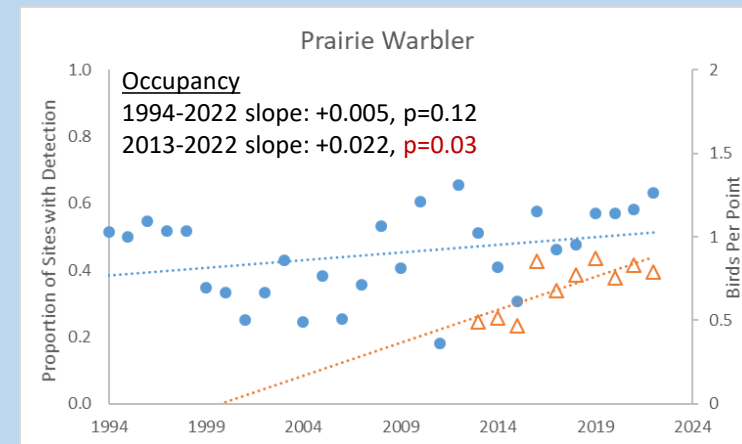
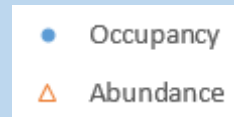
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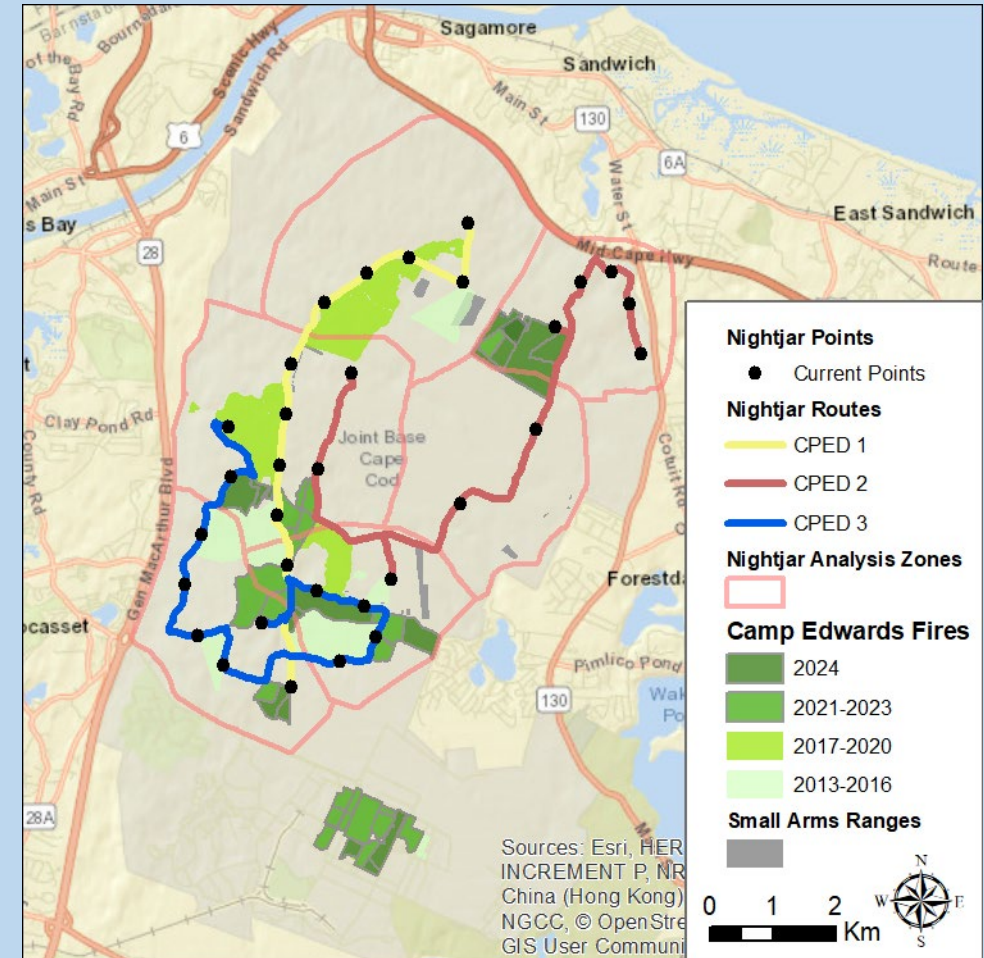
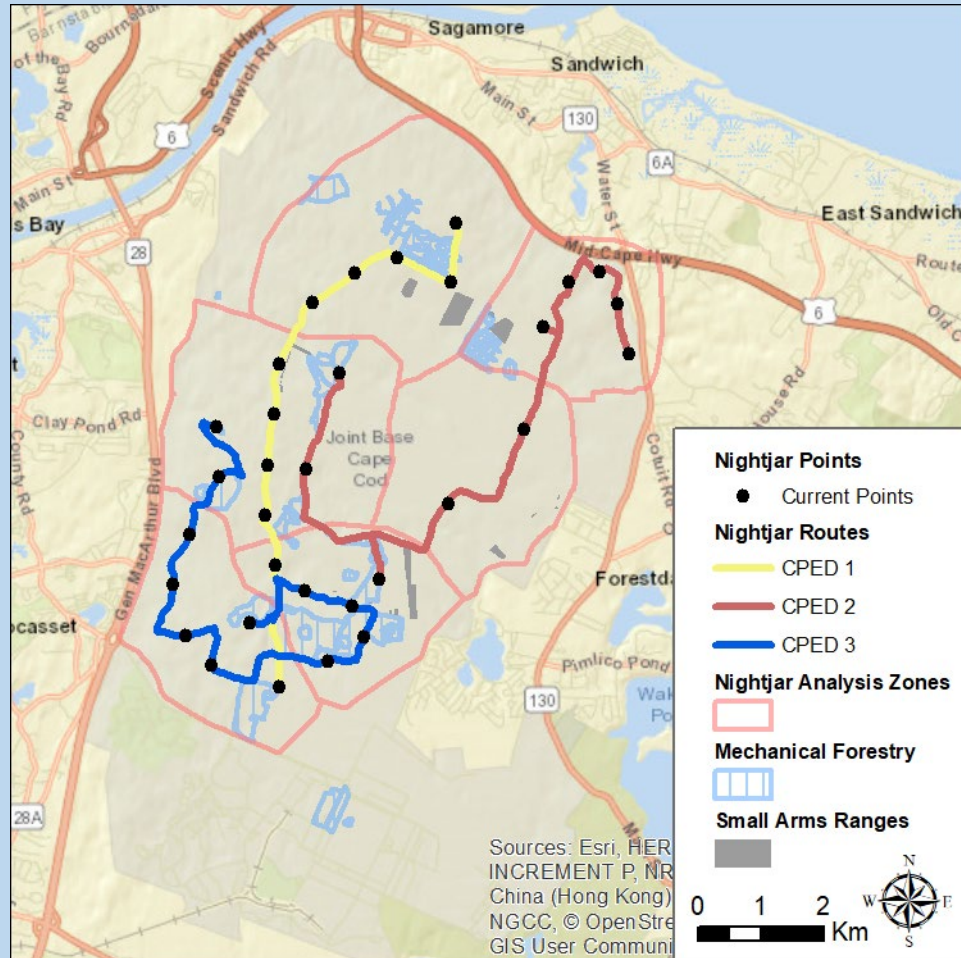
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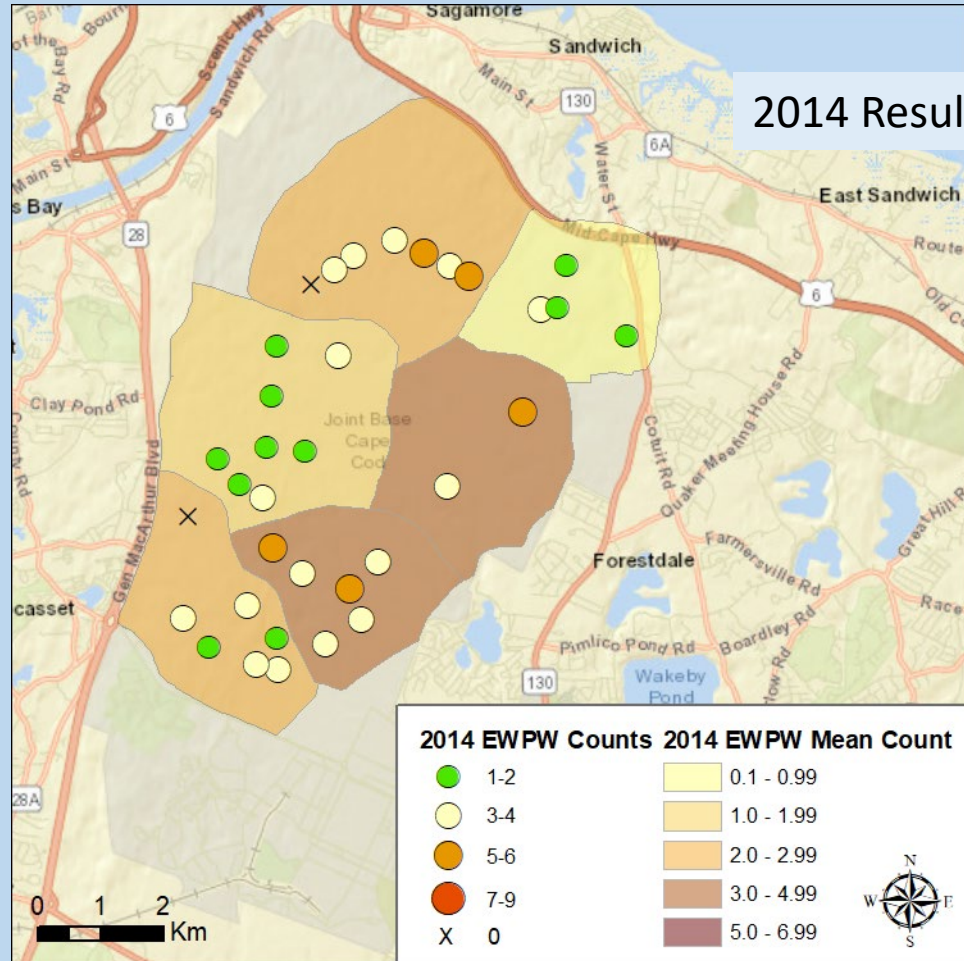
Eastern Whip-poor-will Monitoring: Northeast Nightjar Surveys

- Three nightjar surveys routes; 2014-2024
- 32 points total; 7.7 mile average length
- Good base and management coverage, but with some gaps (road, condition, effort, etc.)

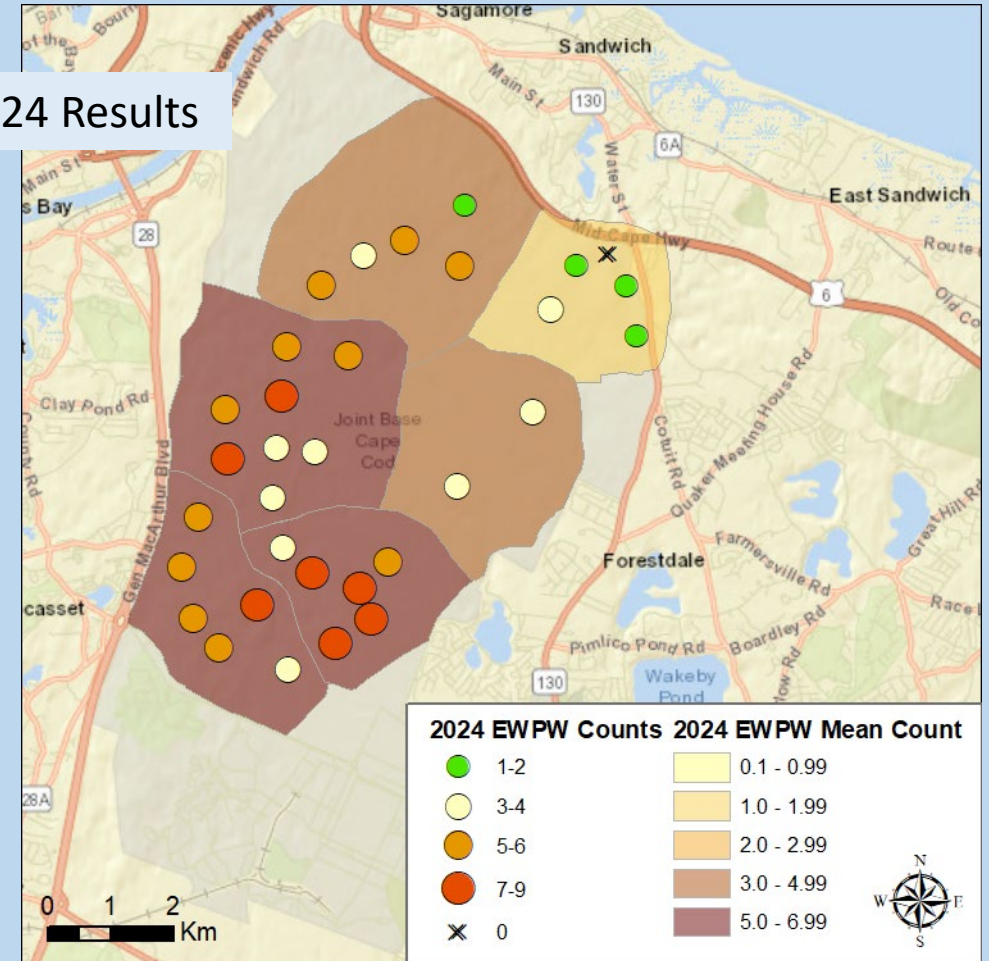


Eastern Whip-poor-will Monitoring: Northeast Nightjar Surveys

- Strong increases by route, zone, and base-wide
- Zone mean: 2.5 → 4.4 whips/point; regression slope 0.19, $p = 0.02$

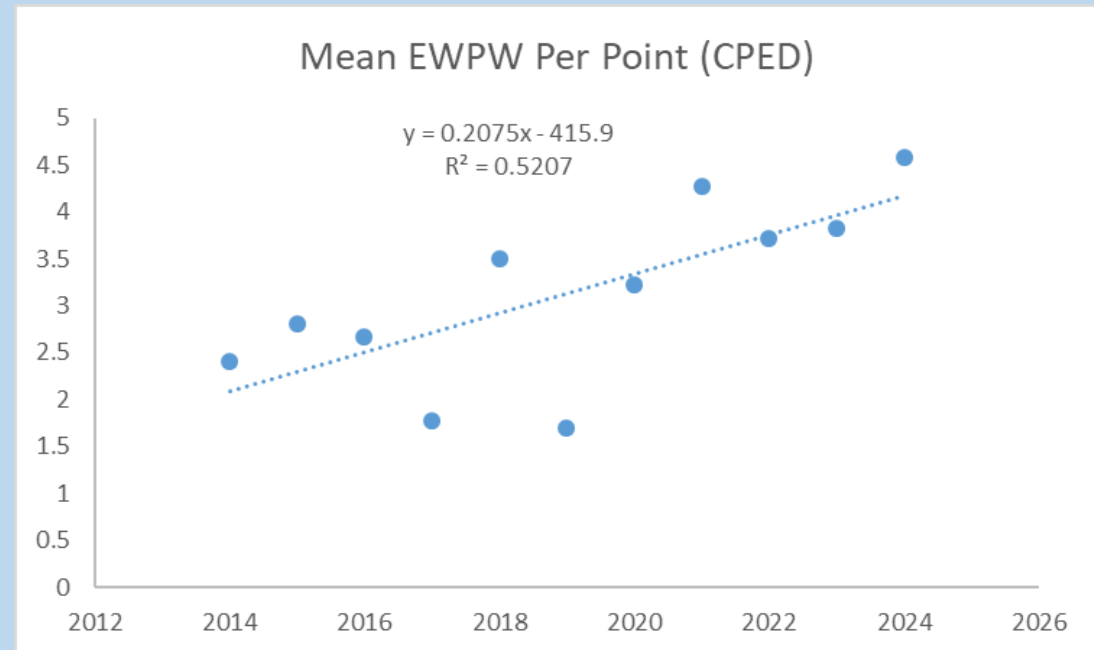
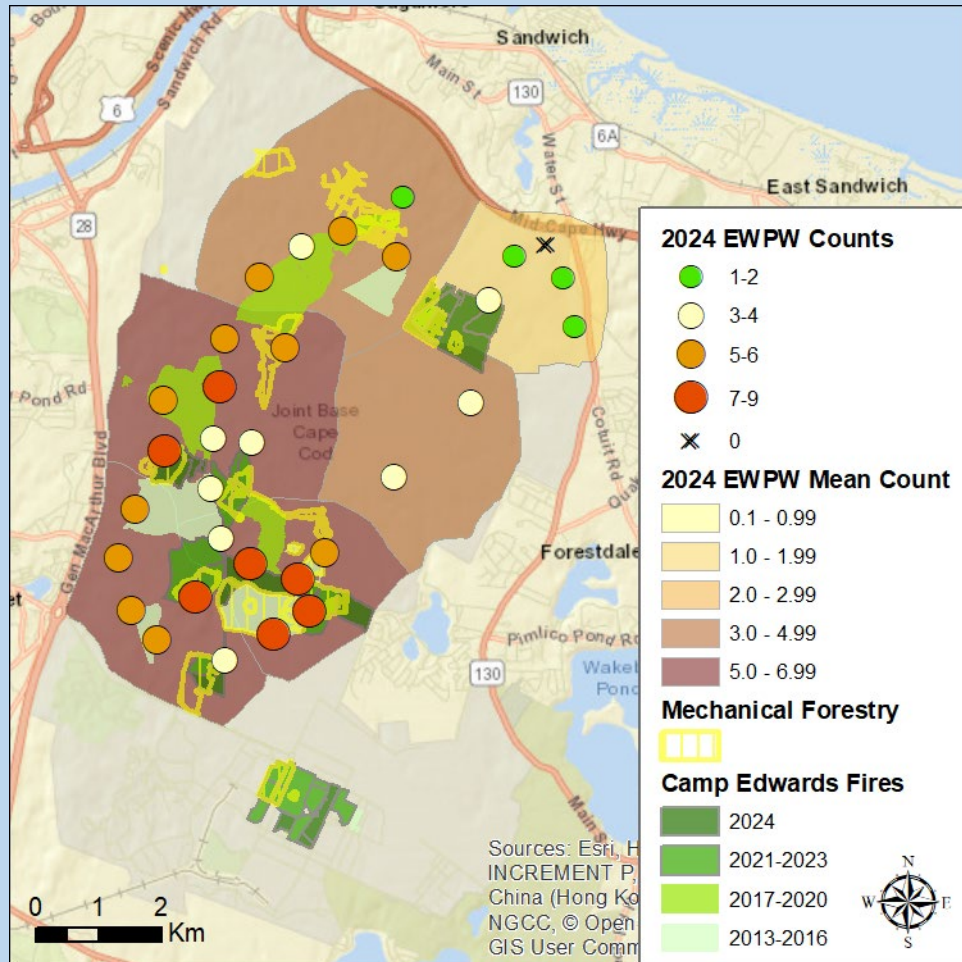


2024 Results



Eastern Whip-poor-will Monitoring: Northeast Nightjar Surveys

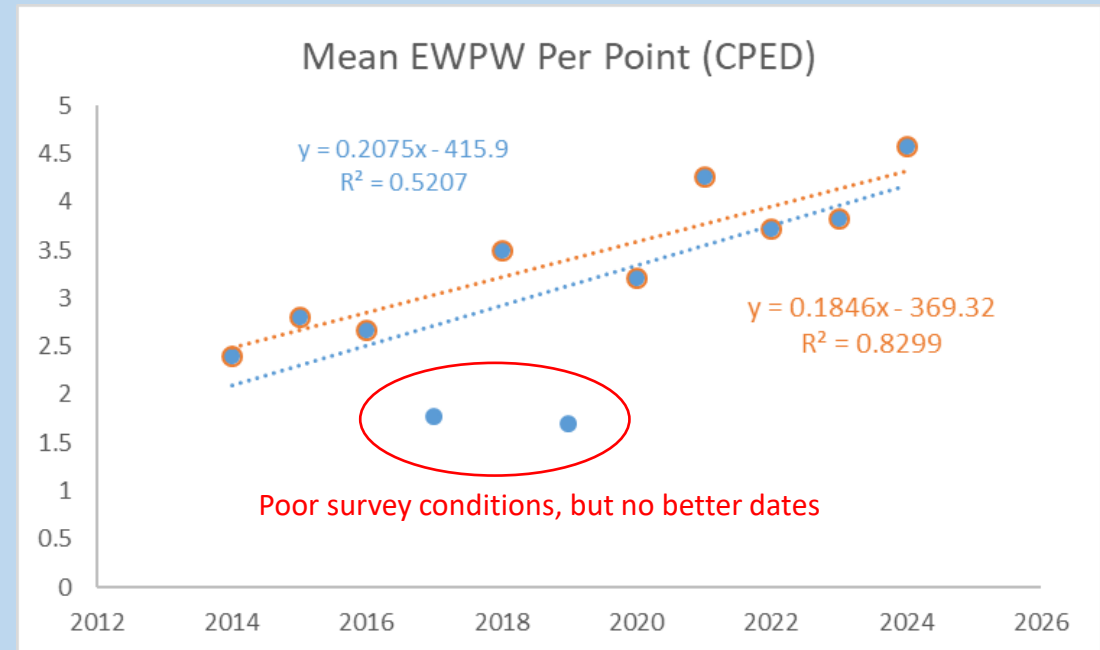
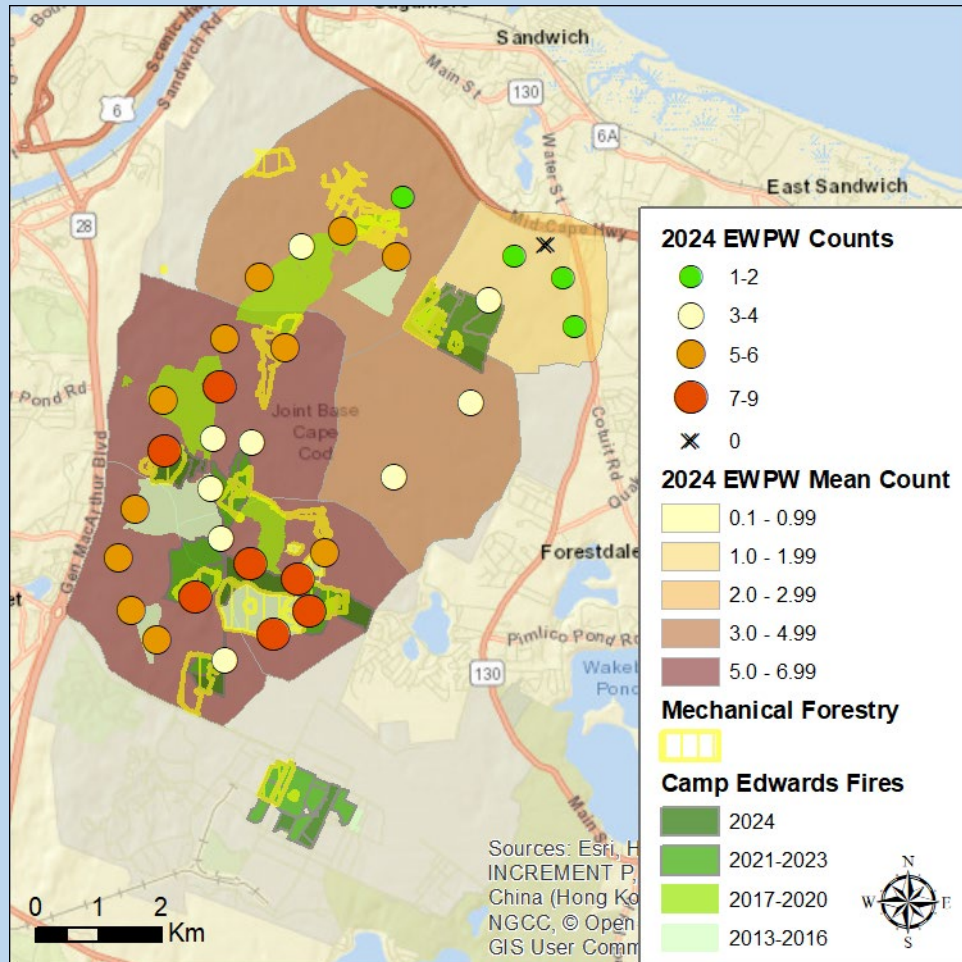
- Site-wide mean: 4.6 whips/point (range: 0 to 7.5*)
- Occupancy: 0.97 (mean: 0.91 for 2014-2024)



*double observer counts: analysis uses mean point count between observers

Eastern Whip-poor-will Monitoring: Northeast Nightjar Surveys

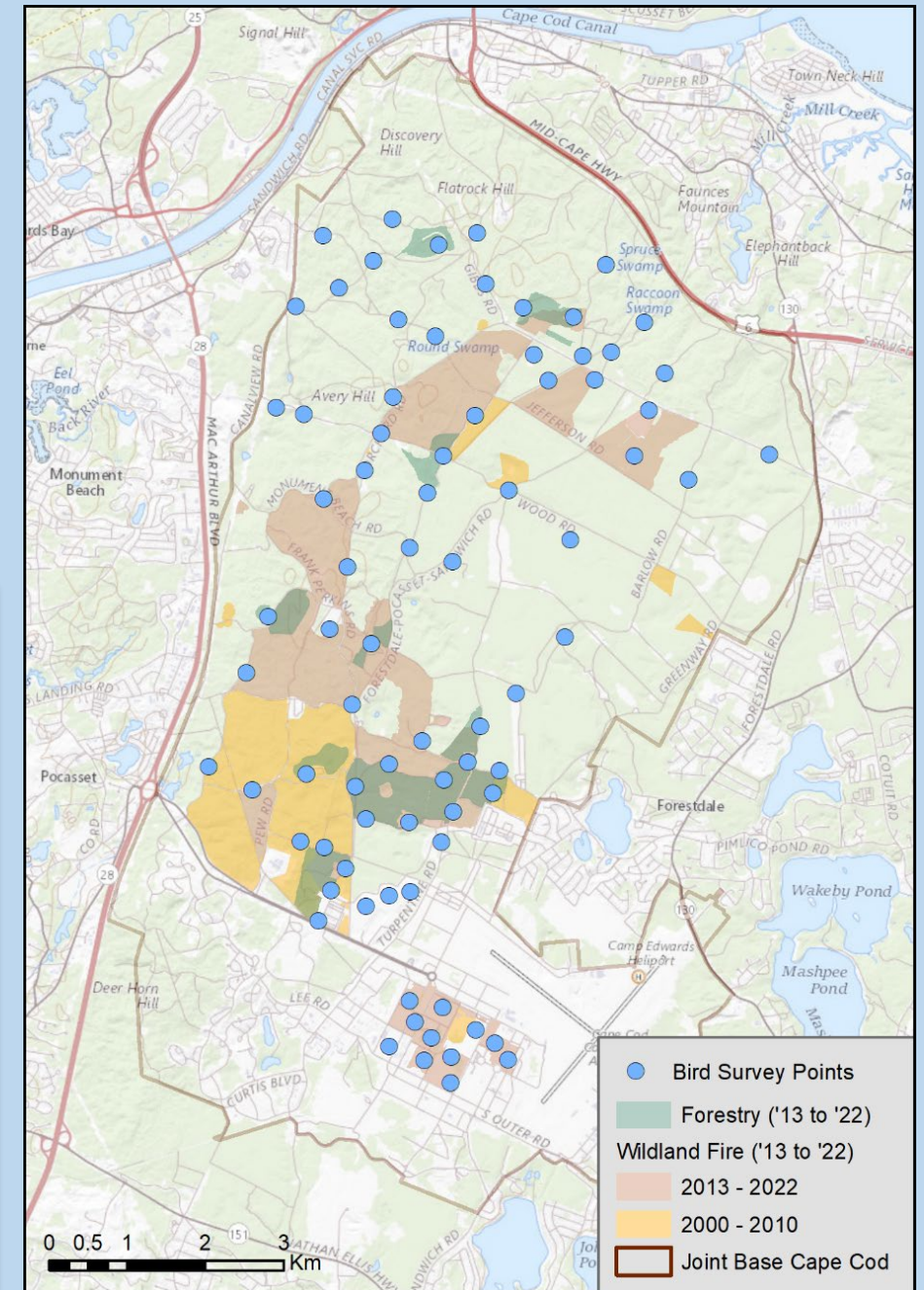
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Pine Barrens Conservation

- Ecologically informed stewardship
- Annual active management (averages)
 - Conservation forestry: 85 acres
 - Prescribed fire: ~400 acres



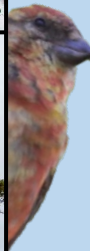
Basic standards

- In restoration mode flexibility and diversity are essential: scope/treatment diversity within and between projects, seasonal diversity, scale and intensity variation, responsive to conditions
- Avoid hard edges: thinning and tapering of treatments to support pine barrens species (dominated by transitional habitat associates)
- Be sensitive to scale depending on natural resources and habitat availability: grassland/heathland habitat, restoration sites, etc. need smaller scale treatments to avoid population impacts, but restoration needs to work at scale to address landscape
- Pine barrens are patchwork quilts: mimic disturbance patterns, provide patch diversity at variety of scales and have multiple treatments within a project

Patchwork Barrens Restoration



Red Crossbills love restored pine barrens



Frosted Elfin larvae found in restoration area



1988 Wildfire



2017 Preharvest



2018 Harvest



2019 Rx Burn



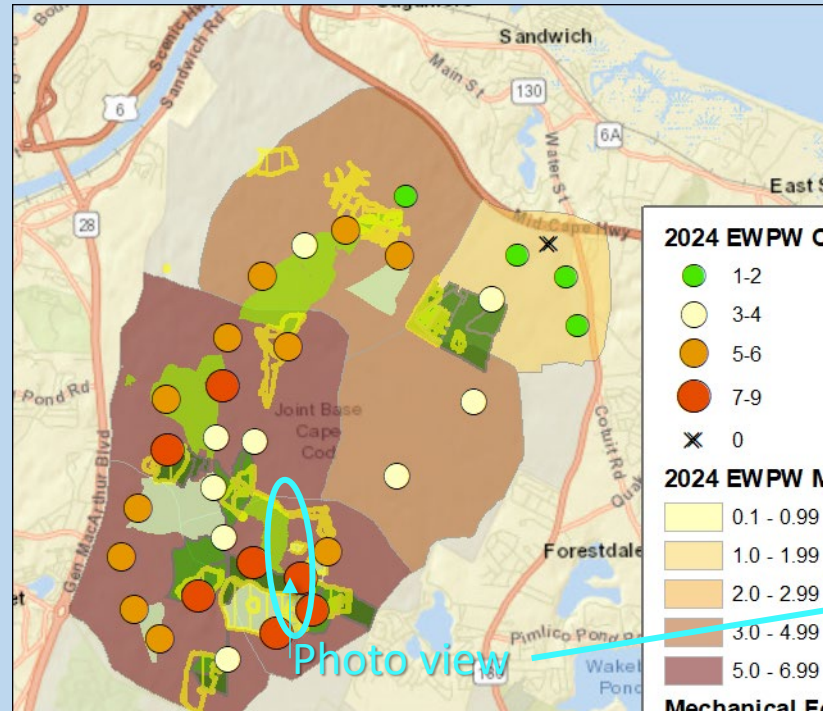
2022 Coppice Mgmt



2023 Buck Moth Flight

Example barrens restoration

- Restoration focus area with multiple Rx fires and mechanical projects anchored off 1980s wildfire scar with scattered battle positions
- Major biodiversity hotspot



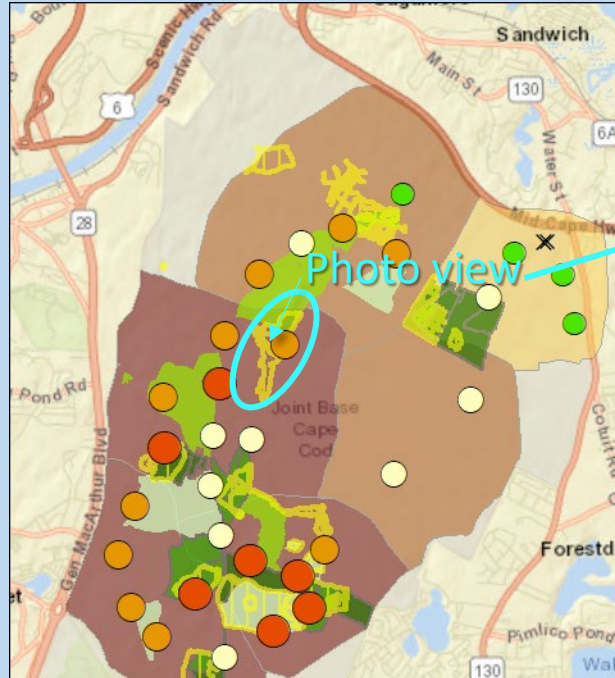
Plain Schizura Moth

Eastern Hognosed Snake



Example barrens restoration

- Restoration anchored into impact area; 5 harvest phases w/ variety of treatments, variation in burning, frost bottom
- Major biodiversity hotspot with Frosted Elfin colonization



Purple Tiger Beetle

Endemic Hudsonia & Pityopsis

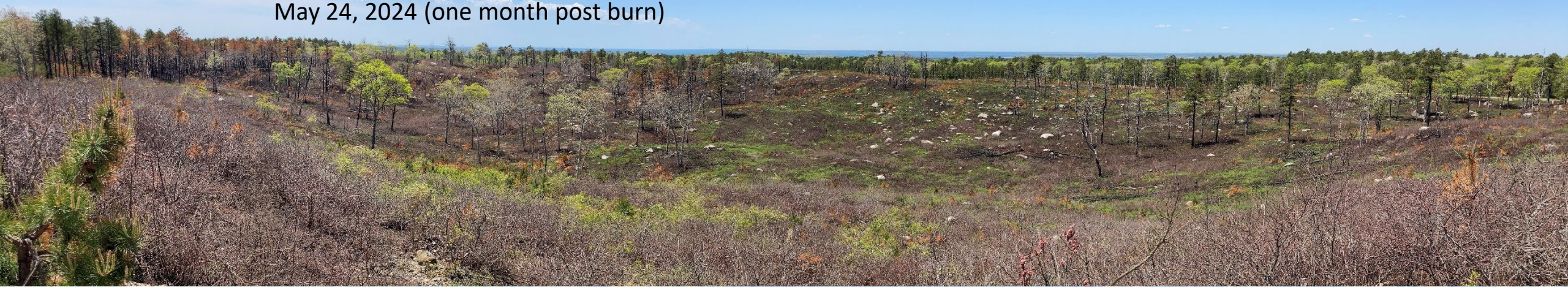




April 29, 2024 (6 days post burn)



May 24, 2024 (one month post burn)



August 21, 2024 (4 months post burn)











Questions?



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