



Integrating Climate Resilience and Biodiversity Conservation Through Ecosystem Management and Restoration at Camp Edwards

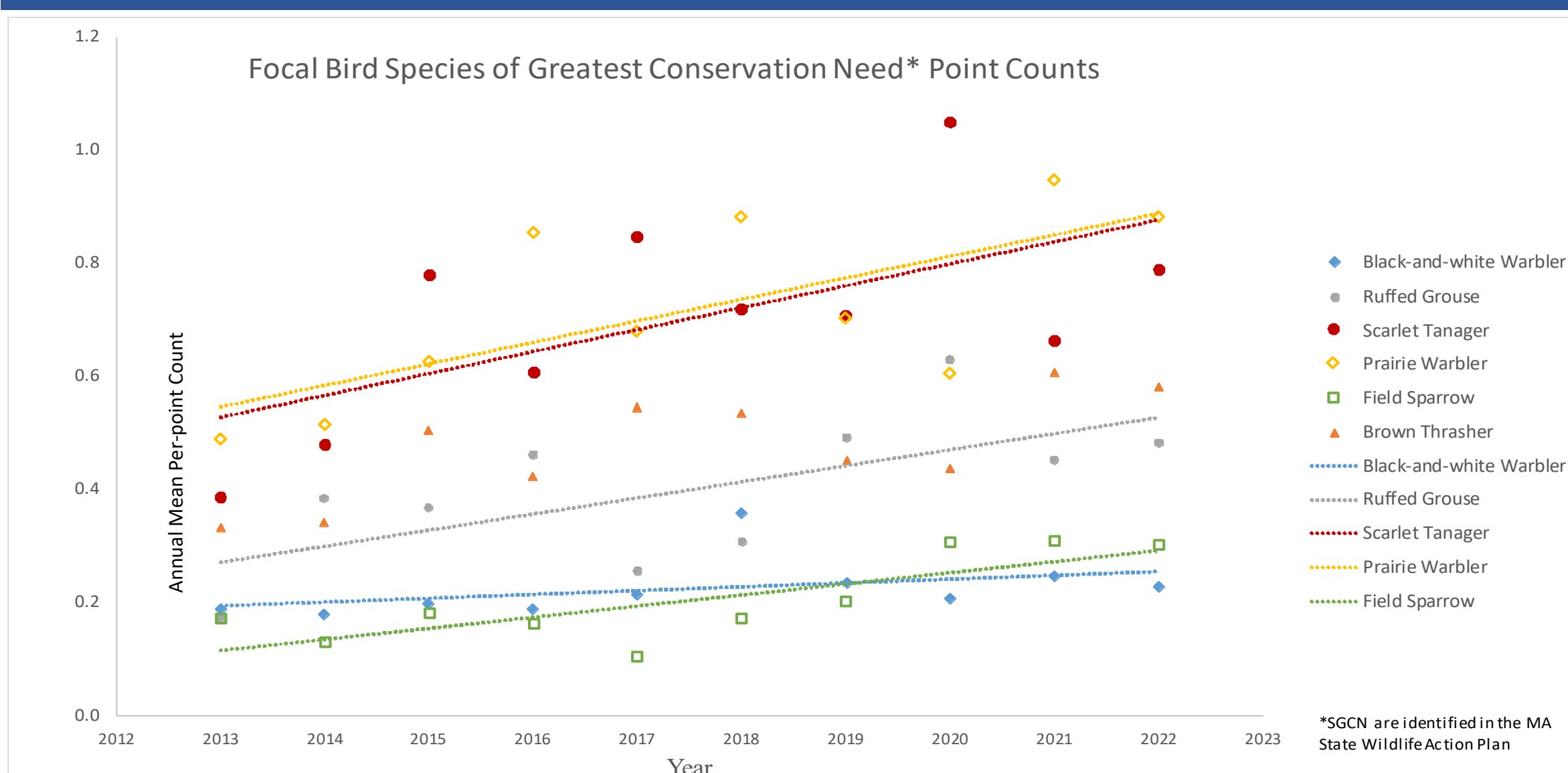


Planning and Major Objectives

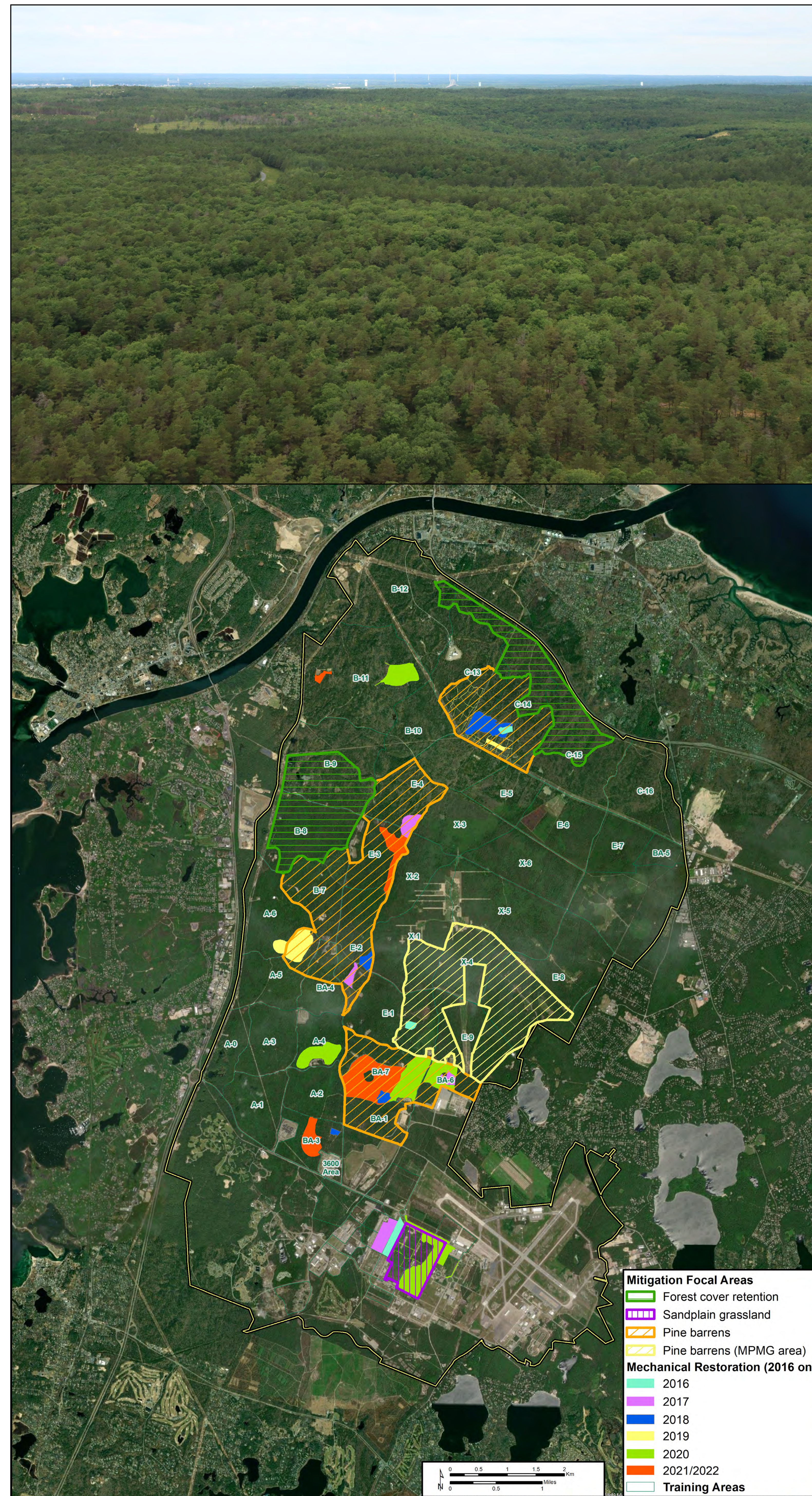
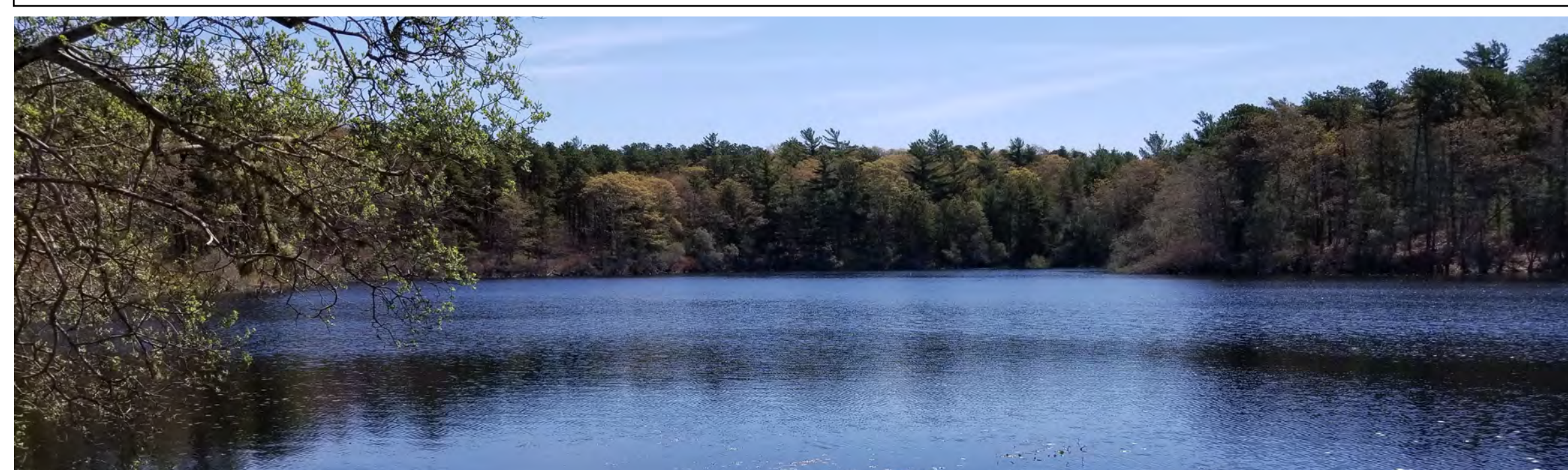
- Integration of management plans and efforts
 - Camp Edwards Integrated Natural Resources Management Plan
 - Massachusetts State Wildlife Action Plan
 - Cape Cod Climate Action Plan
 - Many other state and federal partnerships and plans
 - Resilience planning with Woodwell Climate Research Center
- Management for landscape and patch level diversity
 - Closed Canopy Forest Reserve designation
 - Pine Barrens Management Focal Areas
 - Management objectives informed by extensive research, monitoring, and partner engagement
 - Targets include:
 - Mature pine-oak forest: increasing Scarlet Tanager populations, etc.
 - Diverse pine barrens: healthy whip-poor-will and buckmoth populations
 - Grasslands, wetland, and other specialized habitats: healthy obligate species populations such as Acadian hairstreak and Grasshopper Sparrow

Restoration and Management Activities

- Averaging 85 acres/year of mechanical forestry
 - Variation in prescriptions creates stand diversity
 - Supports prescribed fire operations
 - Reduces restoration timelines significantly
 - Intentional stand structure and composition (vs passive)
 - Critical to restoration of habitat conditions including grassland, shrubland, savannah, woodland, and even old growth forest
- Averaging over 300 acres/year of prescribed fire
 - Natural disturbance critical to ecosystem function and health
 - Cost effective and flexible tool
 - Pyrodiversity = biodiversity
 - Restoration and long-term maintenance tool; less intense and more variable fire in "maintenance mode"
 - Extremely vigorous natural response in plants and animals



"Causes of declines for aerial insectivores are likely linked to habitat loss (i.e., agricultural intensification and forest maturation), declining insect populations, and changes in phenology spurred by climate change (North American Bird Conservation Initiative Canada 2019, Spiller and Dettmers 2019)." - Bakermans, et al 2022



Conserving Training Lands... ...for Soldiers and Wildlife



A focus on long-term sustainability ensures a resilient, healthy training area for all values and resources.

Listed and At-risk Species

• State-listed Species

	Endangered	Threatened	Species of Concern	Total
Mammals	4			4
Reptiles			2	2
Birds	1	3	2	6
Insects	1	7	16	24
Crustaceans	1	1		2
Plants	2	2		4
Total	9	13	20	42

- Barrens associates: 20
- Grassland/field/ROW: 9
- Wetland: 6
- Generalist: 1
- Road puddle (!): 2
- Forest/woodland: 4



Land use change over time provides opportunities and challenges for biodiversity management and climate resilience. Extensive clearing for agriculture and other purposes supported widespread habitat for barrens species, much of which has since been lost to forest development. That forest development, based on the total clear and subsequent release, is typically homogenous and overcrowded, leading to species loss and climate vulnerability. Camp Edwards and other Southeastern MA conservation areas have been able to work towards habitat restoration that both supports North Atlantic Coastal Pine Barrens and provides a variety of forest and woodland conditions that are increasingly resilient and supporting a wide variety of rare species.

