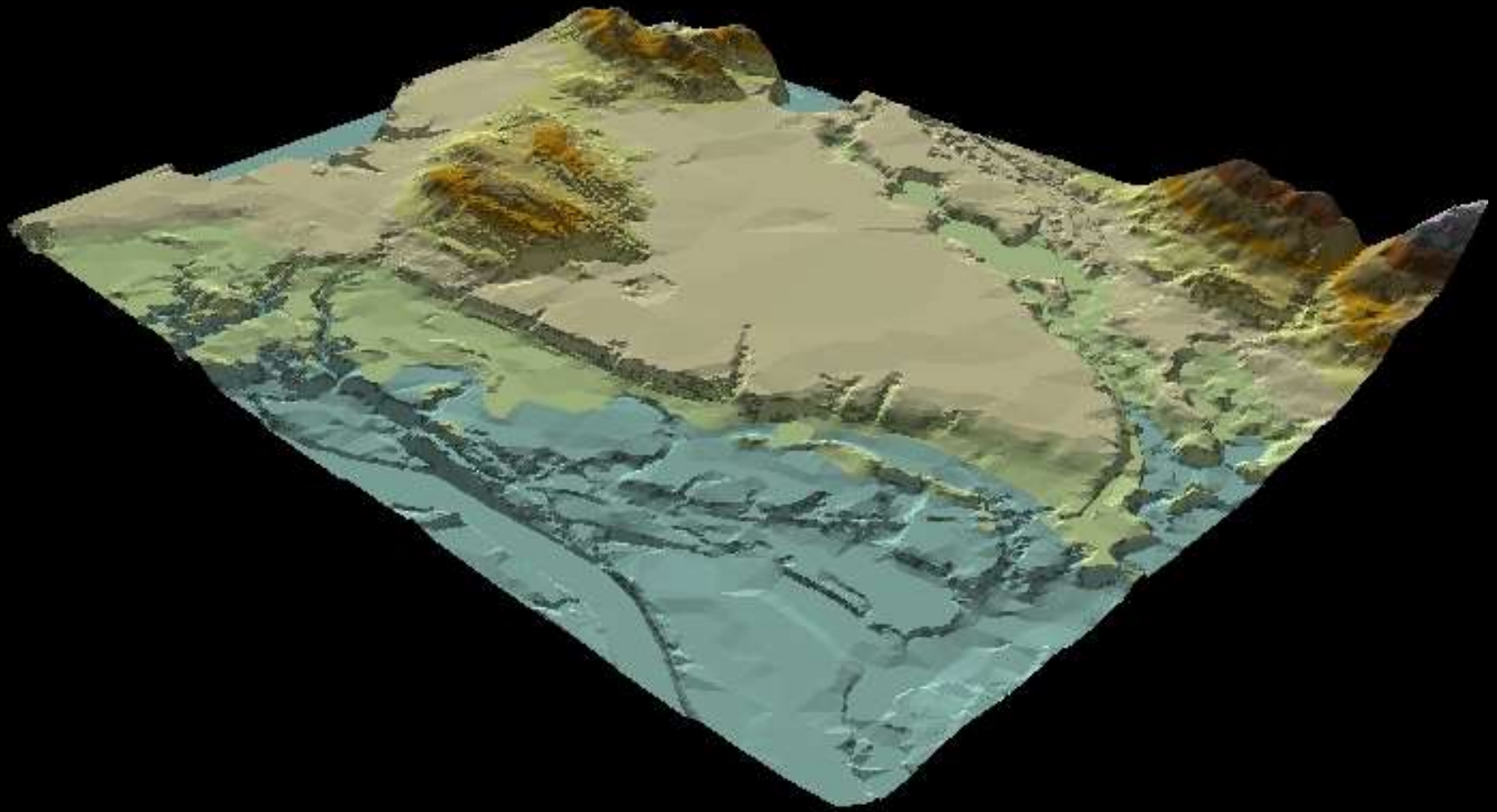
Montague Plain WMA

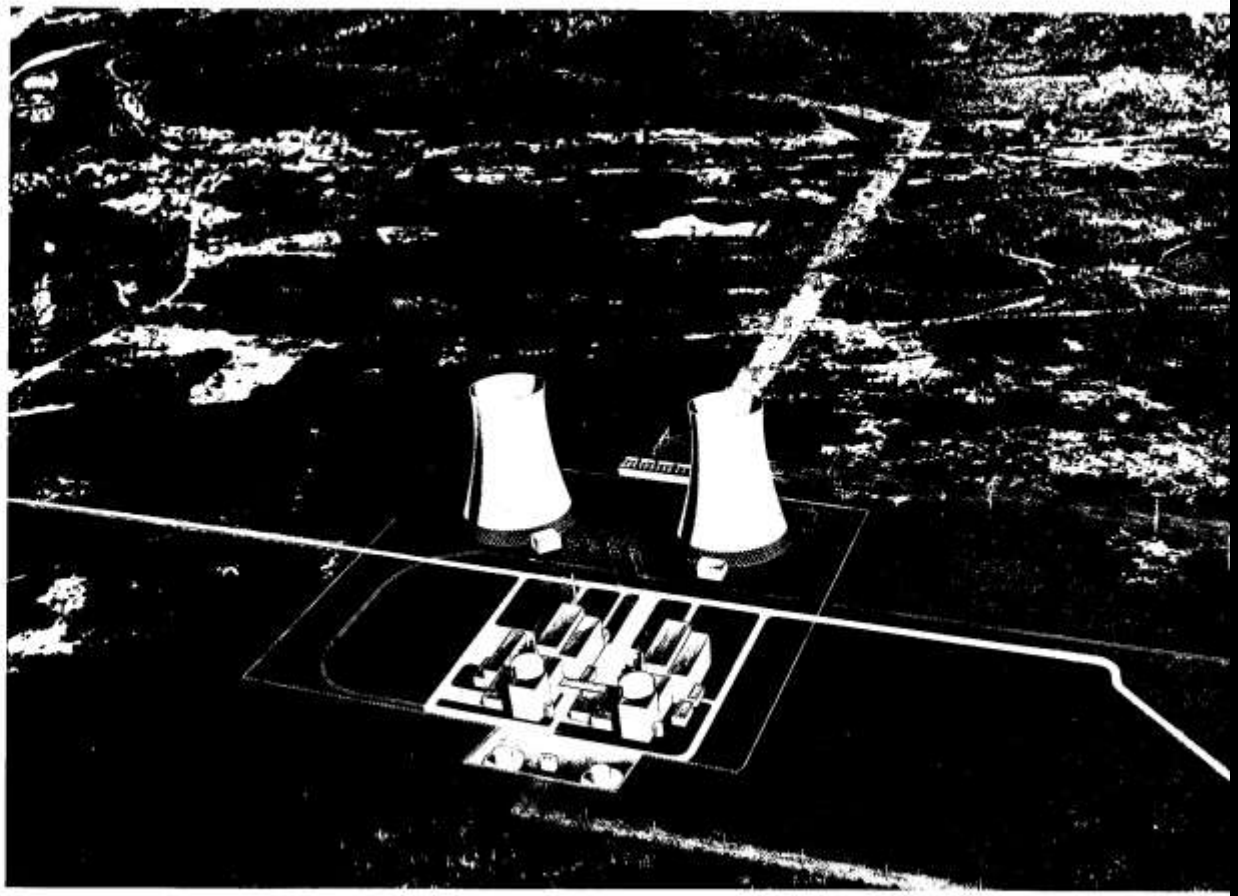
Restoration, Research and Management

Constitution and General Laws of Massachusetts

The stewardship of all wild amphibians, reptiles, birds, mammals, and freshwater and diadromous fishes in the state, as well as endangered, threatened, and special concern species, including native wild plants and invertebrates.


Turners Falls
Boat Ramp
Barton Cove
Barton Island
The Narrows
Deep Hole
County Voc-Tech Sch
Turners Falls Airport
West Mineral Hill
East Mineral Hill
Millers Falls
MILLERS R
CONNECTICUT
Pumping Station
Highland Cem
Wills Hill
Reservoir
Our Lady of Czestochowa Cem
Montague Plain
MONTAGUE STATE
WILDLIFE MANAGEMENT AREA
M O N T A G U E
Lake Pleasant
Green Pond
Radio Tower
Country Hill
RIVER



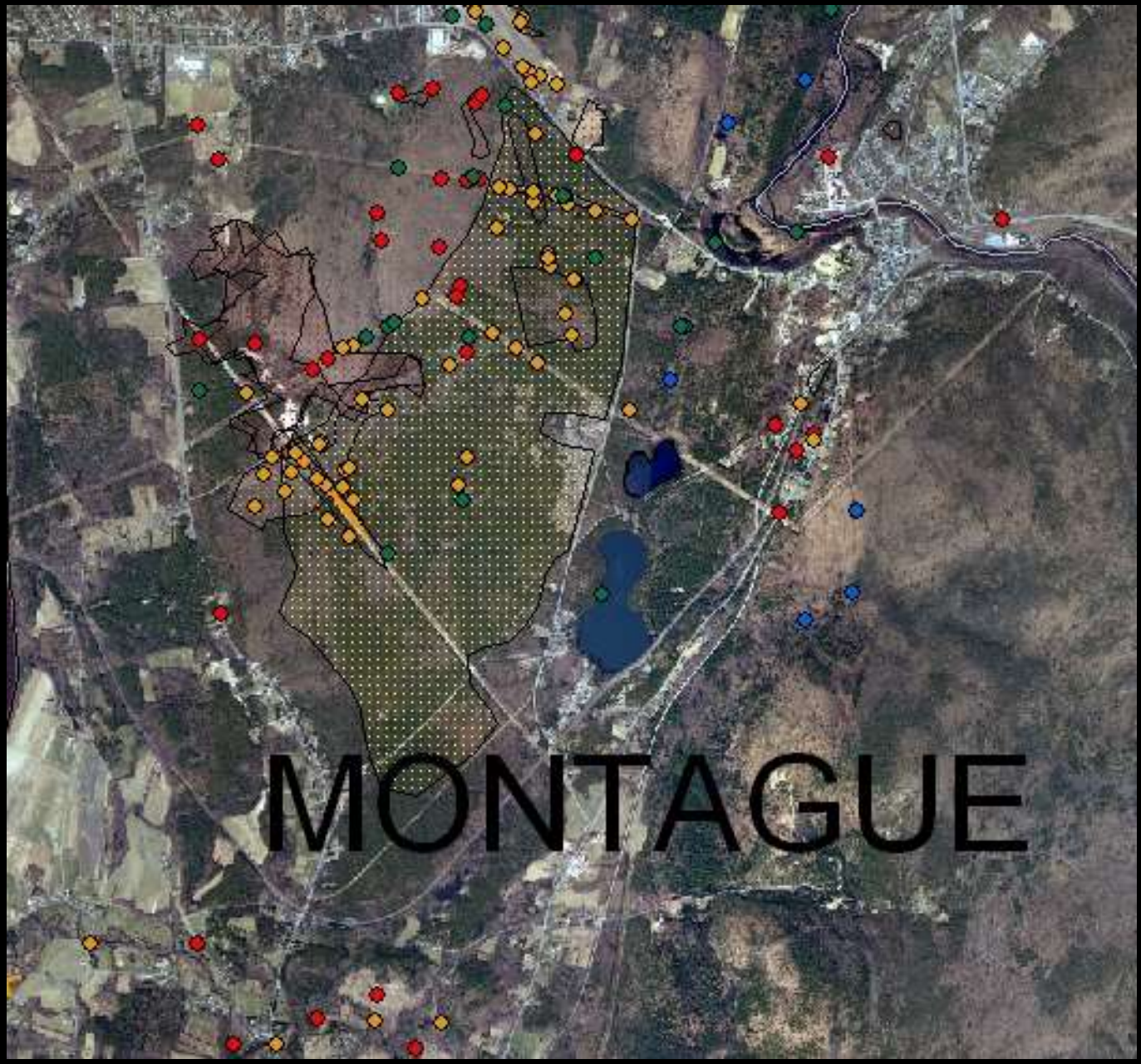



FIRE
TITAN II
4x4


30% OF THE SPECIES
PROTECTED BY MESA
BENEFIT FROM
CONDITIONS CREATED BY
WILDLAND FIRE

State Listed SPECIES BENEFITTING FROM CONDITIONS CREATED OR MAINTAINED BY FIRE

BIRDS	**9**
REPTILES	**2**
INVERTEBRATES	**36**
PLANTS	**89**
TOTAL	**136**


MONTAGUE

Chris Buelow
photo


Chris Buelow


John Callahan

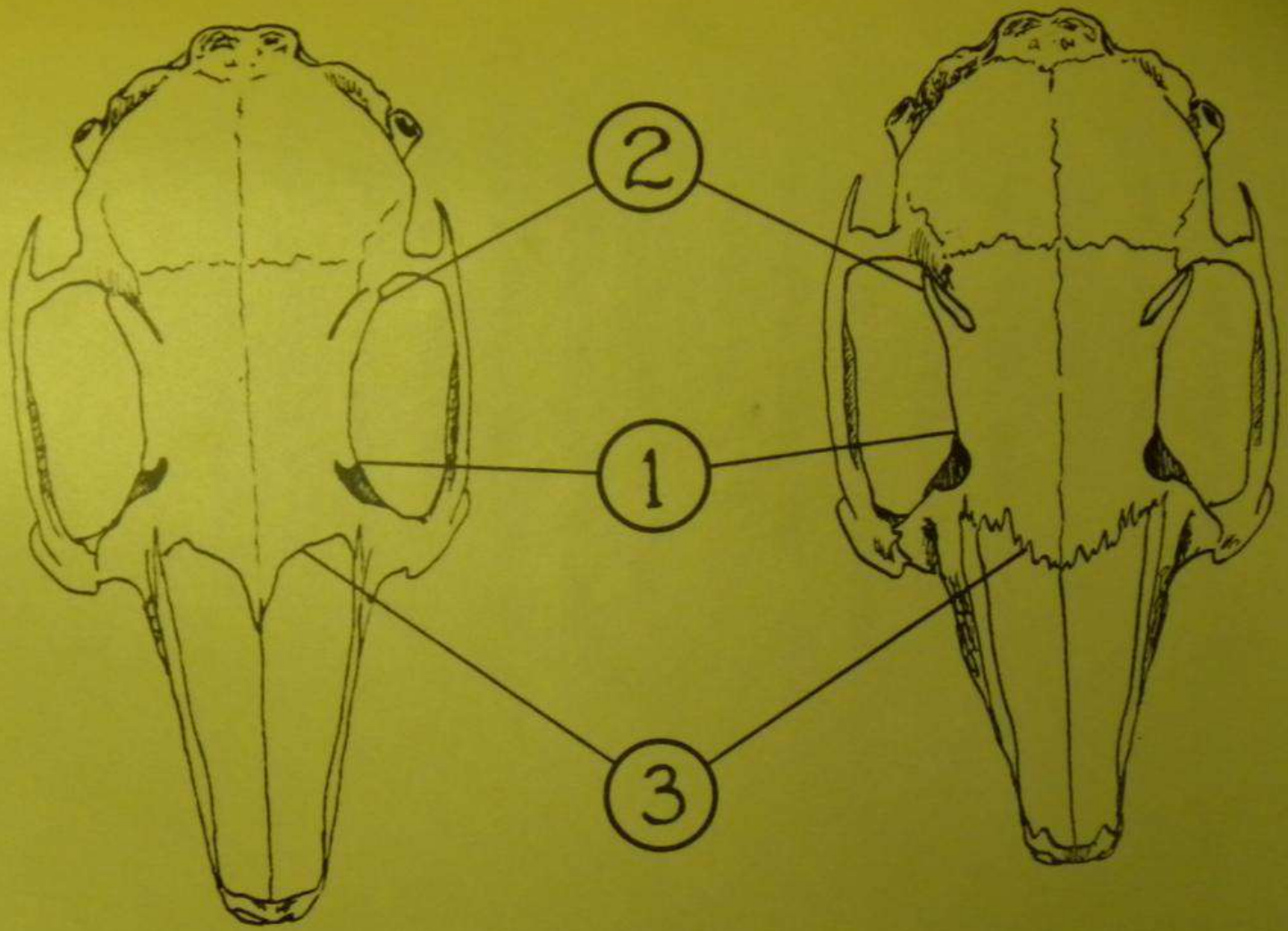

Bill Byrne Photo

"…our Eastern bird is 'a *woodland* species, inhabiting scrubby tracts of oak and pine.' This discovery- exceedingly interesting to scientists- is not important to gunners, the latter having practically nothing to do with the remaining handful of Eastern birds."

Brewster 1885 The Auk

Eastern

New England



Sylvilagus floridanus

Sylvilagus transitionalis

GAME SPECIES

WOODCOCK

RUFFED GROUSE

BOBWHITE

WILD TURKEY

BLACK BEAR

MOOSE

Buck Moth (*Hemileuca maia*), male

Photo by M.W. Nelson

© 2001 Natural Heritage & Endangered Species Program, Mass. Division of Fisheries & Wildlife

Mike Nelson

Frosted Elfin (*Callophrys irus*)

Photo by M.W. Nelson

© 2002 Natural Heritage & Endangered Species Program, Mass. Division of Fisheries & Wildlife


Low (Upright)
bindweed- E

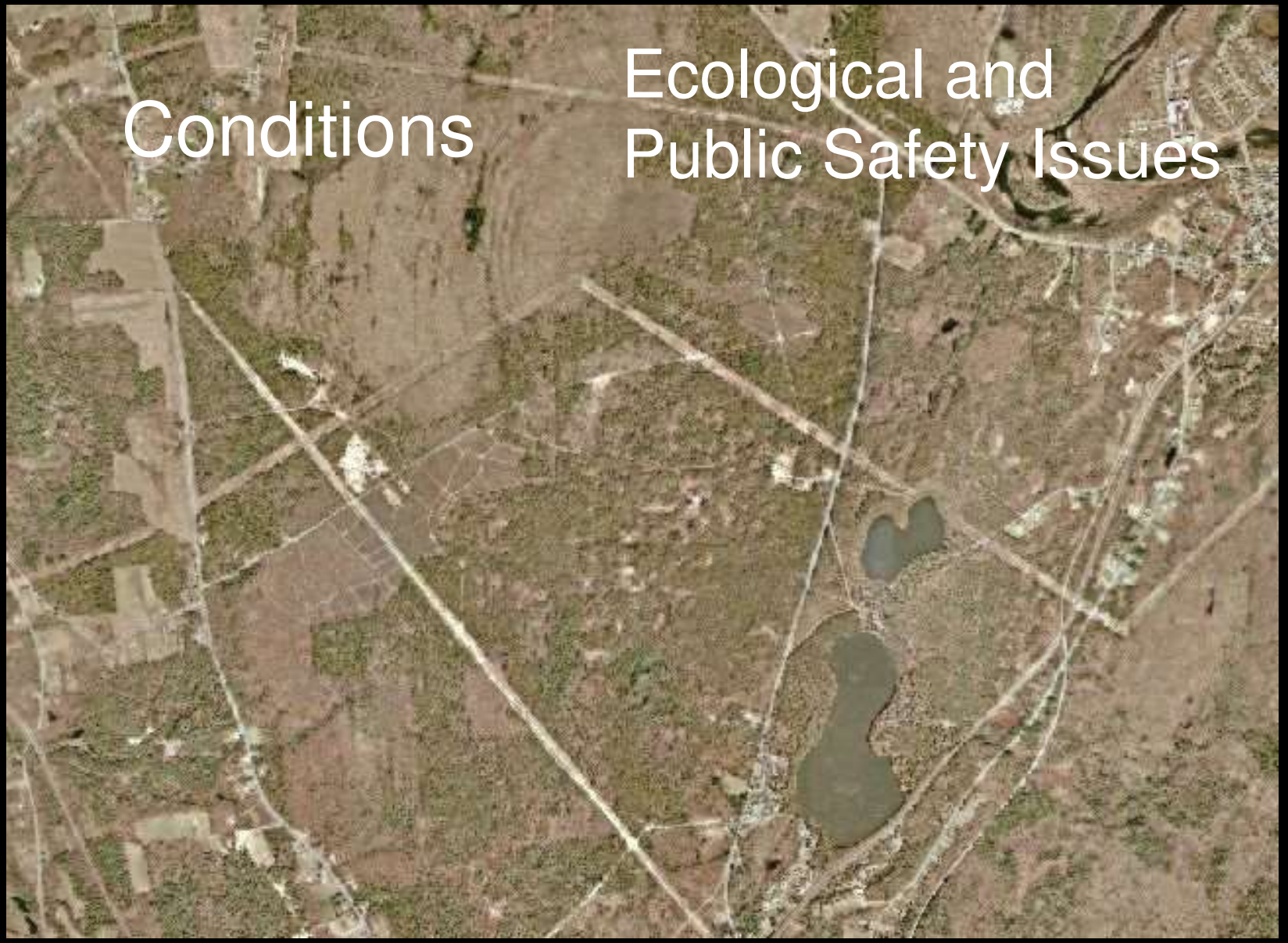

Nantucket shadbush


How did current
conditions develop?

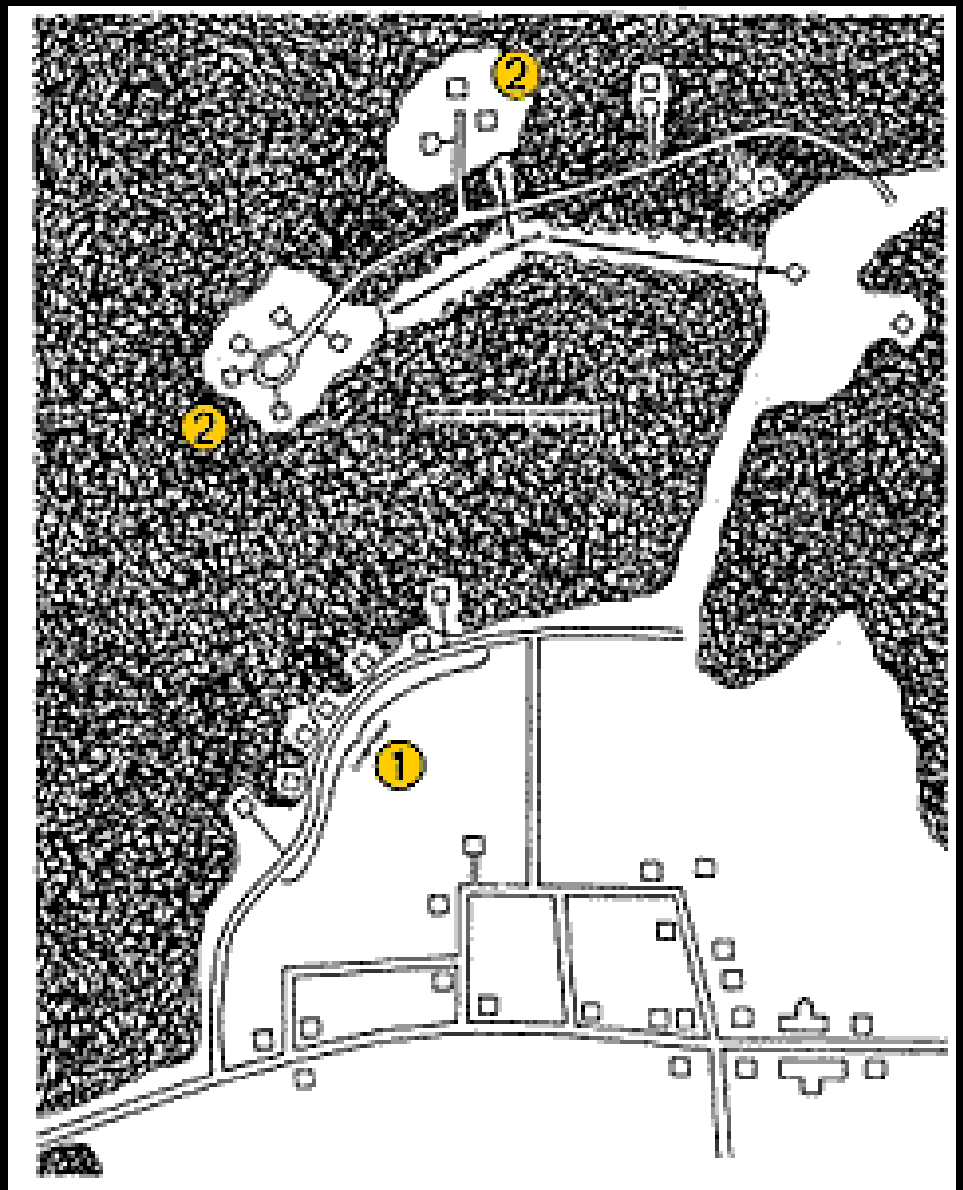
Controlling Site to Evaluate History: Vegetation Patterns of a New England Sand Plain

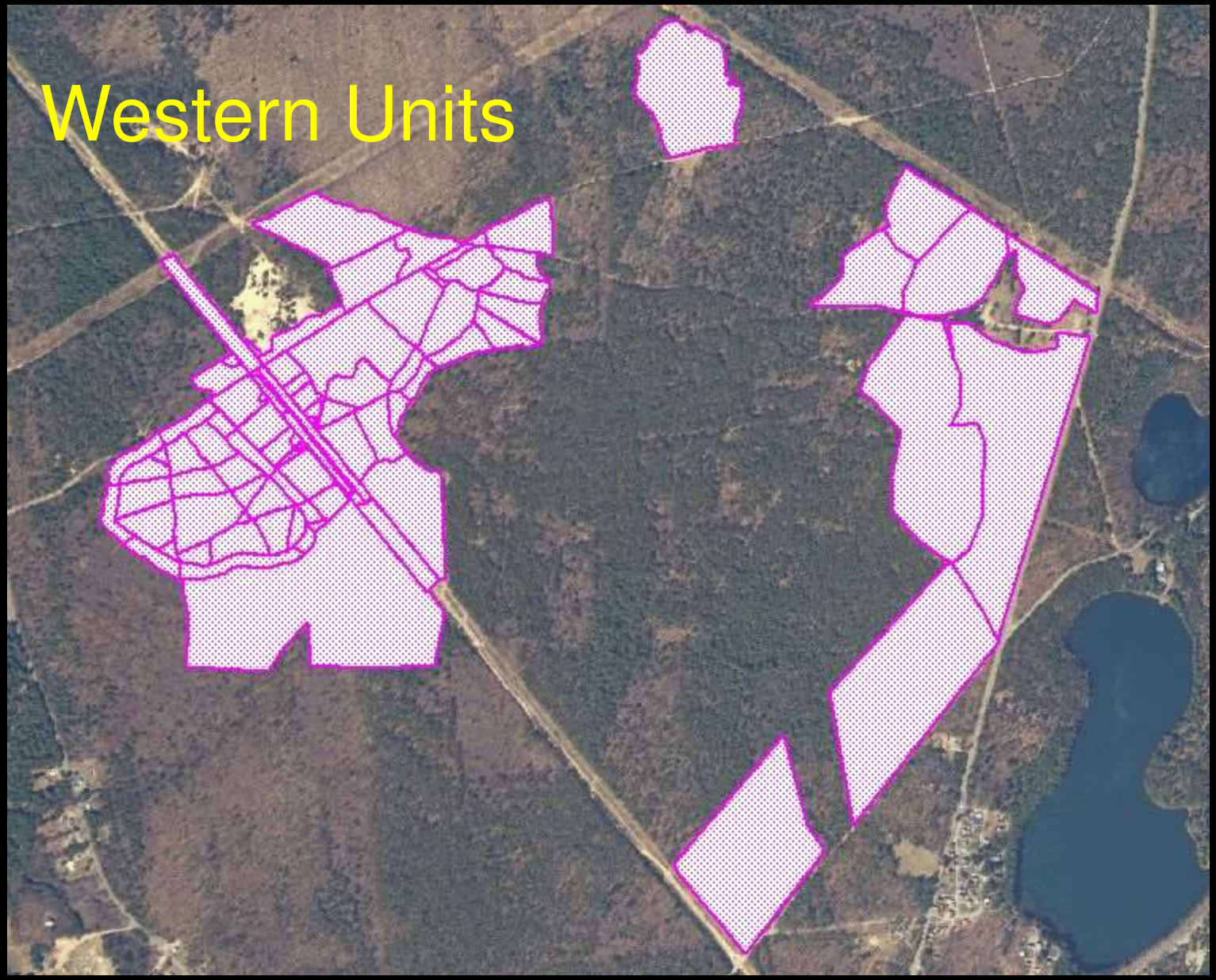
Glenn Motzkin; David Foster; Arthur Allen; Jonathan Harrod; Richard Boone

Ecological Monographs, Volume 66, Issue 3 (Aug., 1996), 345-365.

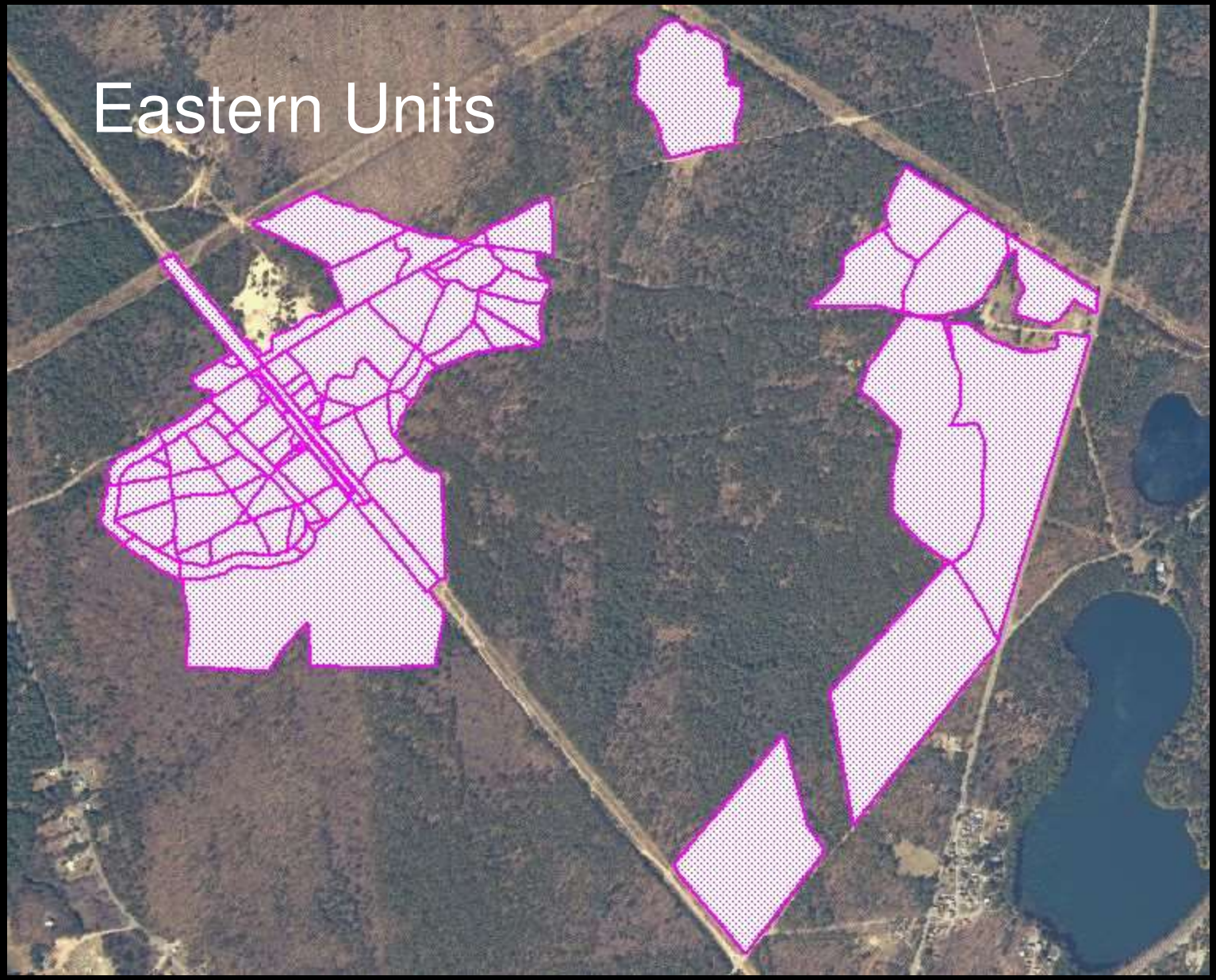

Conditions
Ecological and
Public Safety Issues

Wildland –Residential Interface




Western Units


Montague Plain
WMA


Eastern Units

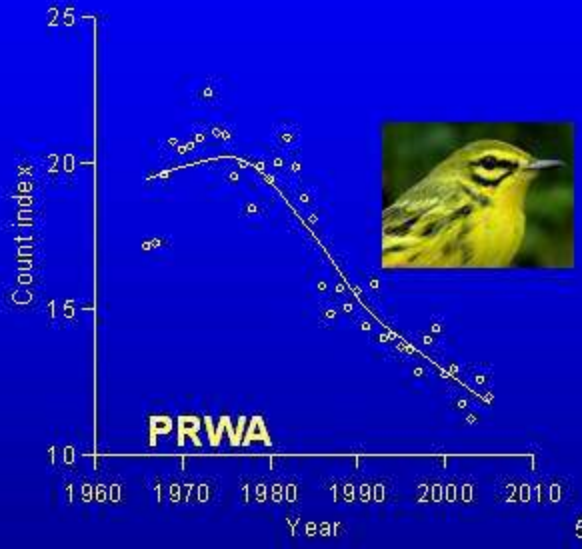
Characterizing Canopy Fuels as They Affect Fire Behavior in Pitch Pine," Master's Thesis by Matthew Duveneck

Determination of Springtime Foliar Moisture Content in Pitch Pine," Professional Master's Project by Peter P. Grima


Fuels
Birds
Herps
Invertebrates
Plants


Photo by Earl Wolf

Thinning benefits declining scrub-shrub birds



Results

- 3,351 detections 2004 - 2007
- 69 species
- 13 species abundant enough for analysis
  - American Robin
  - Black-and-white Warbler
  - Black-capped Chickadee
  - Chestnut-sided Warbler
  - Chipping Sparrow
  - Common Yellowthroat
  - Eastern Towhee
  - Field Sparrow
  - Gray Catbird
  - Hermit Thrush
  - Ovenbird
  - Pine Warbler
  - Prairie Warbler

Effects of Fuels Reduction and Habitat Restoration on Native Bee Communities in Massachusetts Pitch Pine-Scrub Oak Barrens

Joan C. Milam[1], David I. King[2] and Robert T. Brooks[2].
[1]Department of Natural Resources, University of Massachusetts, Amherst, MA
[2]Northern Research Station, US Forest Service, Amherst, MA

INTRODUCTION: Pitch pine-scrub oak barrens are a globally threatened, fire-dependent habitat that harbors numerous declining, rare, or imperiled plant and animal species. Pitch pine-scrub oak barrens have been reduced by 90% in western Massachusetts. Pitch pine-scrub oak barrens at the Montague Plains WMA require active management to reduce fire risk to adjacent property and to preserve their unique ecological characteristics, and these activities could reasonably be expected to impact native bees.

Given the importance of native bees from the perspective of both the conservation of biodiversity and the economic benefits of pollinator services, we are surveying bee communities on the Montague Plains to: 1. establish baseline information on bee communities, 2. determine how bees are affected by fuels reduction activities and habitat restoration, and 3. make recommendations for managing pitch pine-scrub oak barrens to benefit bee communities.

METHODS: We sampled bees from mid-April through September, 2008 at 30 sampling points ≥ 200 m apart distributed evenly among untreated pitch pine, treated pitch pine, and scrub oak barrens.

Pitch pine

Treated pitch pine

Scrub oak

We sampled bees with bee bowls (Russell et al. 2005) at 2-3 week intervals throughout the season. Six of the points were sampled each visit, the remainder were sampled once. For each sample, we placed 15 bowls, alternating white, florescent yellow and florescent blue, 10 m apart on linear transects. We collected bowls after 24 hrs. Bowls were supplemented with netting on an *ad-hoc* basis.

During each visit, we recorded the presence and species of any plants in flower on each transect, and within the study area as a whole. Also, we measured percent cover of all plant species on each transect using a point intercept method, as well as understory structure with a Robel pole and canopy closure using a sighting tube (James and Shugart 1970).

PRELIMINARY RESULTS: We captured ≈1,500 bees during the study. We are currently sorting and identifying specimens, however preliminary results indicate that bee captures were highest in treated pitch pine, lowest in untreated pitch pine, and intermediate in scrub oak.

Halictus ligatus

Augochlora pura

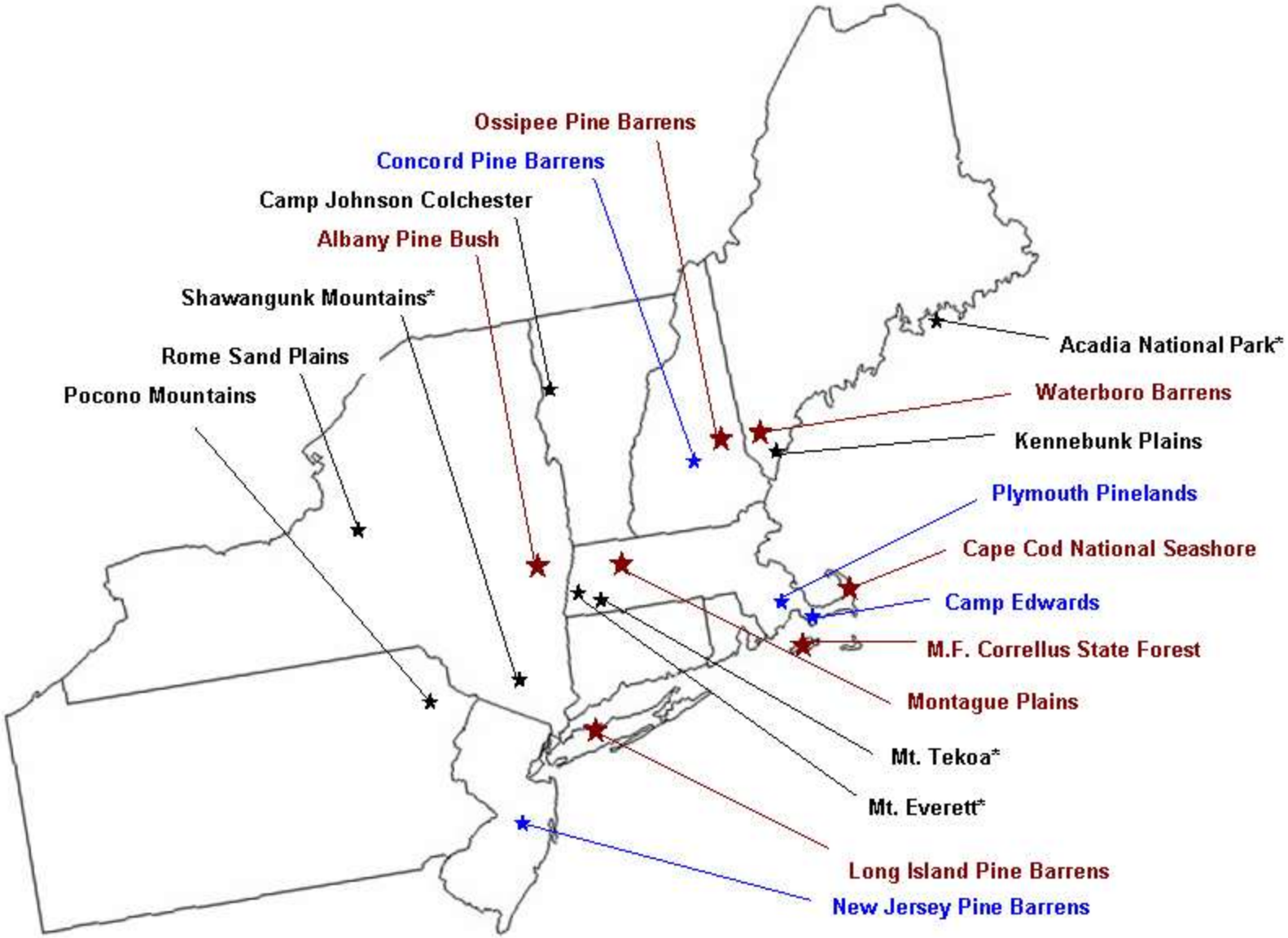
Nomada spp.

Megachile latimanus

FUTURE PLANS: Once the specimens have been identified, we will compare bee species richness, species composition, and the abundance of individual species among treatments, with particular attention to rare species and new state or regional records. We will also analyze species richness and abundance in relation to plant species composition and structure, as well as seasonality. Plans for next year include additional sweep sampling, as well as efforts to identify the ecological mechanisms responsible for community differences among treatments. These might include detailed field observations of foraging or nesting, as well as assessment of microclimatic conditions.

REFERENCES: James, F.C. and H.H. Shugart. 1970. A quantitative method of habitat description. American Birds 24:727-736. Russell, K.N., H. Ikerd , and S. Droege. 2005. The potential conservation value of unmowed powerline strips for native bees. Biological Conservation 124:133–148.

Acknowledgements: We thank the Joint Fire Science Program and the Massachusetts Natural Heritage and Endangered Species Program for their support.



* denotes Rock Outcrop Barrens; all other sites are Sand Plain Barrens

http://www.umass.edu/nebarrensfuels/

http://harvardforest.fas.harvard.edu/

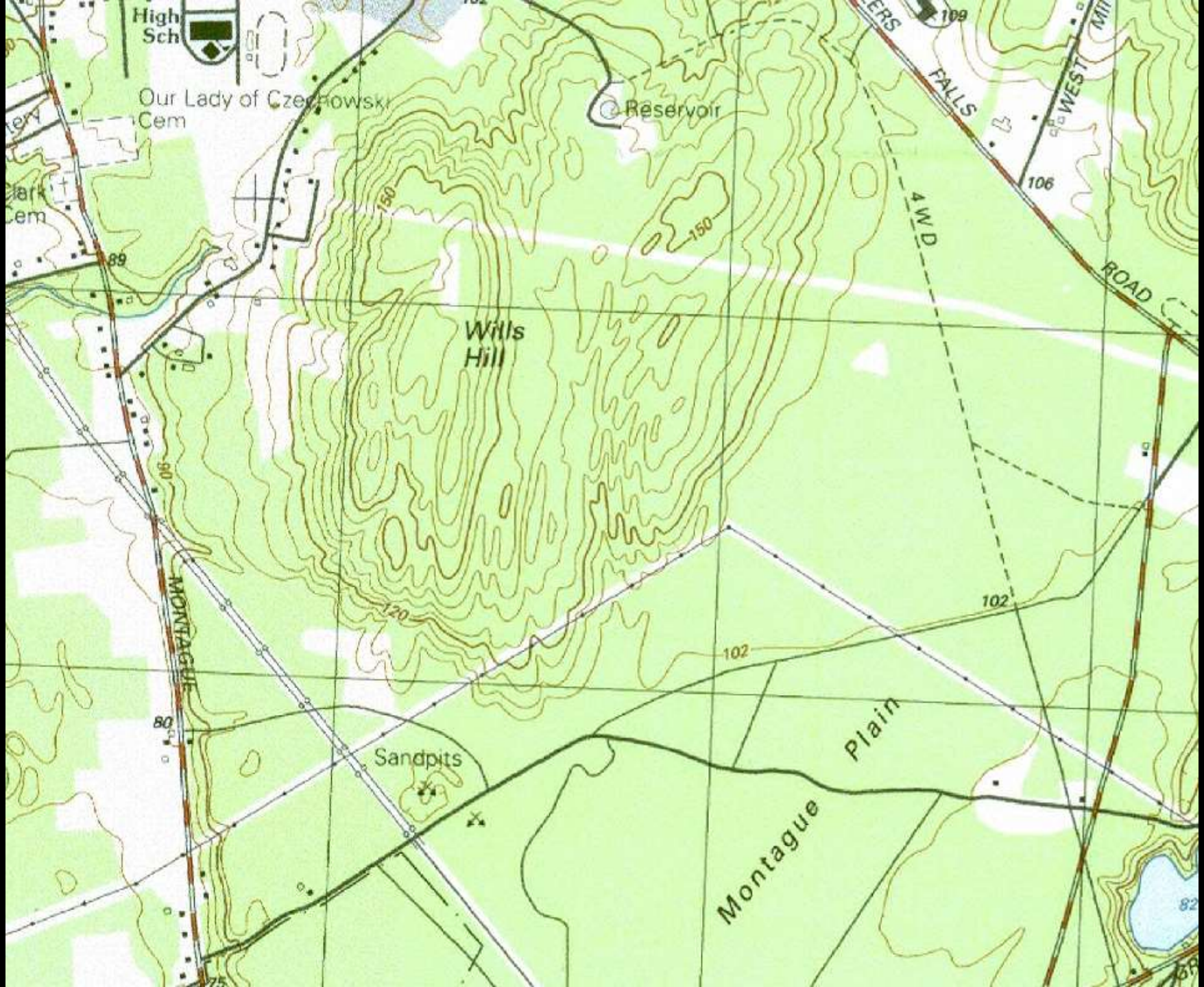
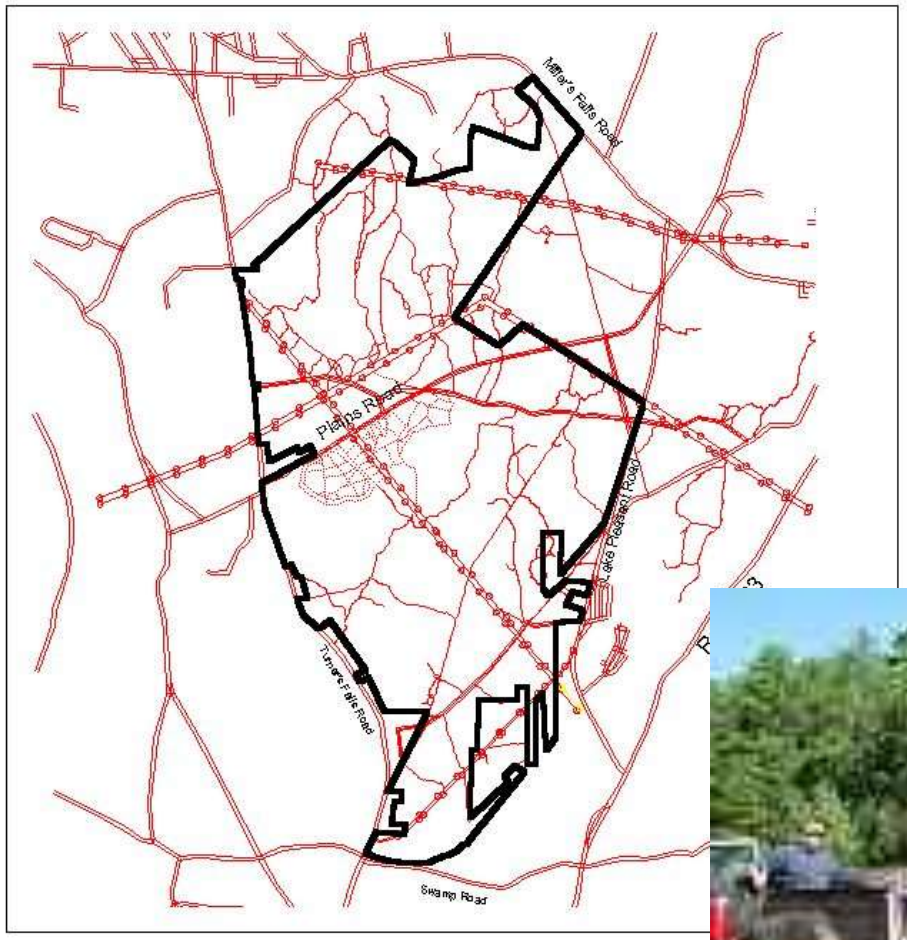

High Sch
Our Lady of Czechowski Cem
Reservoir
FALLS
WEST
ROAD
4WD
Wills Hill
MONTAGUE
Sandpits
Montague Plain
150
120
102
106
109
89
90
80

Figure 3: Roads and Trails of Montague Plain Wildlife Management Area



Community Wildfire Protection Plan


Massachusetts Forest Fire Control
STATE
3-6
Protecting
Your Wildlands
3-6

William A. Patterson III and graduate students

Glenn Motzkin

David King

Robert Brooks

Joan Milam

NRCS

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Restoration Ecologist
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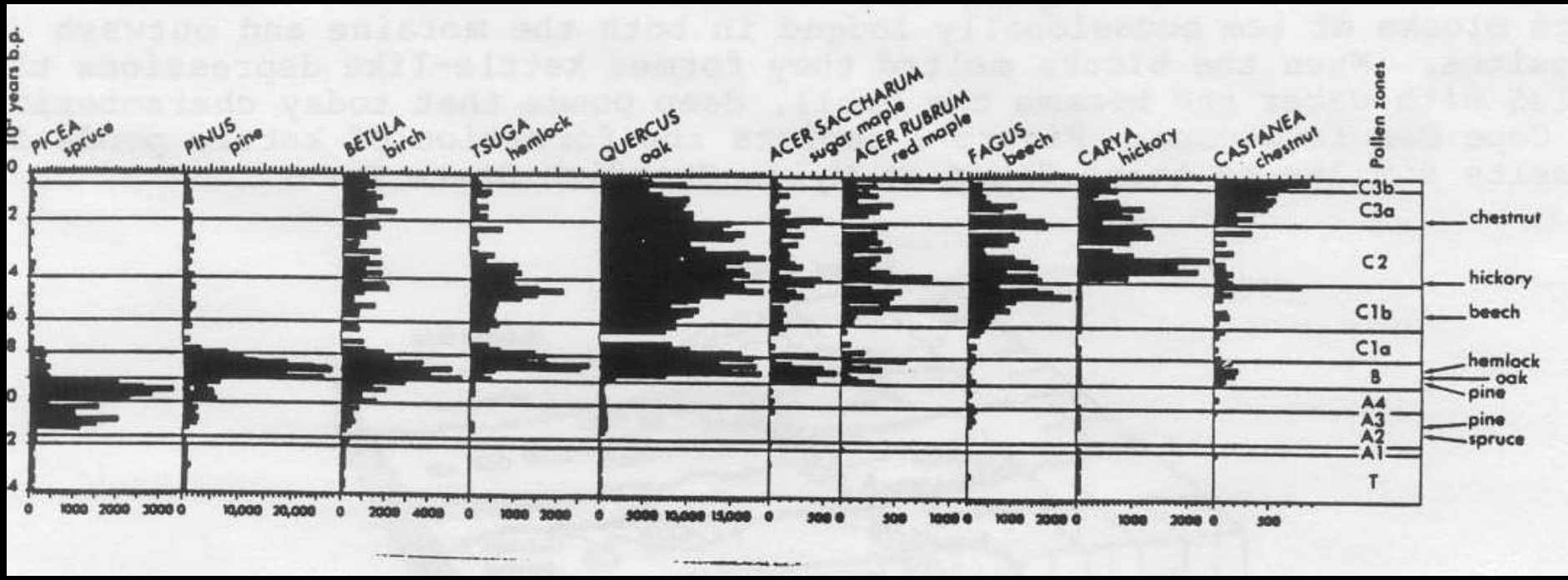
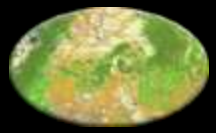
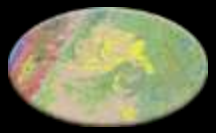

10³ years b.p.
PICEA spruce
PINUS pine
BETULA birch
TSUGA hemlock
QUERCUS oak
ACER SACCHARUM sugar maple
ACER RUBRUM red maple
FAGUS beech
CARYA hickory
CASTANEA chestnut
Pollen zones
C3b
C3a
C2
C1b
C1a
B
A4
A3
A2
A1
T
chestnut
hickory
beech
hemlock
oak
pine
pine
spruce

LANDFIRE™





Vegetation and Fuels