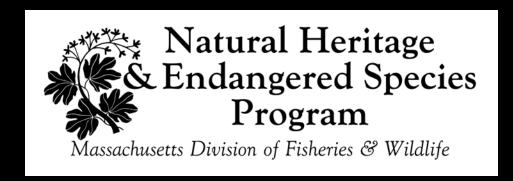


# Fire Influenced Communities in the Ware River and Quabbin Watersheds

Chris Buelow, Restoration Ecologist



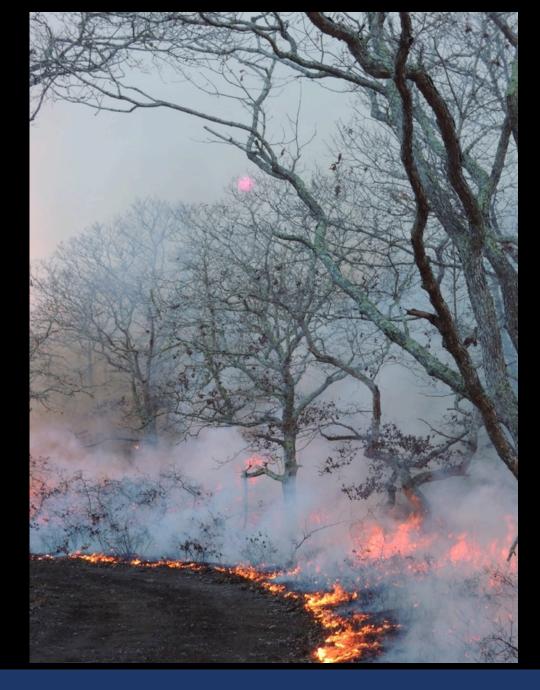


The overall goal of the Program is the protection of the state's wide range of native biological diversity.

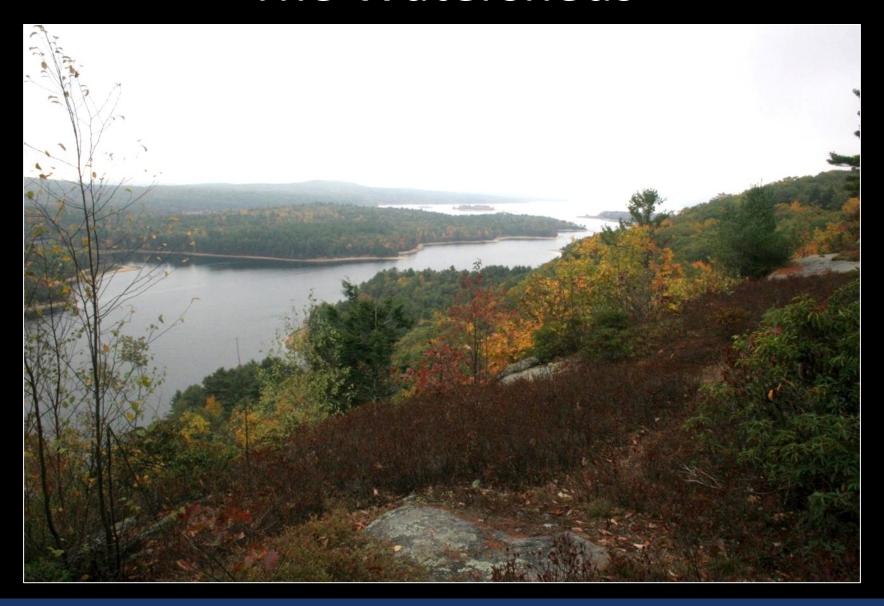
The Program's highest priority is protecting the vertebrate, invertebrate, and native plants that are officially listed as Endangered, Threatened or of Special Concern in Massachusetts.

# Restoration Ecologist

Identify and Manage the Landscapes that support the most vulnerable species and natural communities in the Commonwealth.



# The Watersheds



### Fire-Influenced Communities: Barrens



Common Name	Species Name	Status	Habitat Type	Link to Factsheet
New England Buck Moth	Hemileuco maio	SC	Pitch Pine-Scrub Oak Woodland	NHESP FACTSHEET
Pink Sallow Moth 1	Psectragiaea carnosa	5C	Sandplain Heathland	NHESP FACTSHEET
Melsheimer's Sack Bearer <sup>2</sup>	Cicinnus melsheimeri	T	Pitch Pine-Scrub Oak Woodland	NHESP FACTSHEET
Slender Clearwing Sphinx <sup>1</sup>	Hemaris gracilis	sc	Sandplain Heathland	NHESP FACTSHEET
Twelve-spotted Tiger Beetle	Cicindela duodecimguttata	SC	Outwash	NHESP FACTSHEET
Purple Tiper Beetle	Cicindela purpurea	SC SC	Sandplain Grassland/Heathland	NHESP FACTSHEET
Two-striped Owlet Moth	Macrochilo bivittata		Acidic Sedge Marsh	NHESP PACISHEET
		WL		
Widow Underwing Moth <sup>1</sup>	Cotocola vidua	WL	Upland Forest	
Fingered Lemmeria 1	Lemmeria digitalis	WL	Wetlands	-
Three-lined flower Moth *	Schinia trifascia	WL	Sandplian Grassland	
Red-Humped Caterpillar Moth 1	Schlaura concinna	WL	Barrens	
Coneflower Borer Moth 1	Poipema nelta	WL	Wet Meadows	-
Pine Tussock Moth 1	Dasychira pinicola	WL	Barrens	
Zabulon Skipper <sup>1</sup>	Poanes zabulon	WL	Grassland	
Broad-winged Skipper <sup>1</sup>	Poones viator	WL	Marshes	-
Silvery Blue 1	Glaucopsyche lygdamus	WL		
Black Dash 1	Euphyes conspicua	WL	Sedge Meadows	
Maine Snaketail <sup>1</sup>	Ophiogomphus mainensis	WL	Flowing Gravel Streams	
Triangle Floater 1	Alesmidenta unduleta	WL	Flowing Gravel Streams	NHESP FACTSHEET
Bottlebrush Borer Moth <sup>1</sup>	Papaipema cerina	CI	Talus (Elymus)	
Common Checkered Skipper <sup>1</sup>	Pyrgus communis	CI	Meadows	
Fiery Skipper 1	Hylephila phyleus	0	-	
Giant Swallowtail	Papilio cresphontes	ci		
				,
Common Checkered Skipper <sup>1</sup>	Pyrgus communis	CI		
Variegated Fritillary <sup>1</sup>	Euptoieta claudia	CI		
Gold-spotted Ghost Moth <sup>1</sup>	Sthenopsis ouratus	CI		
Say's Cicada	Oksnegana rimosa	CI	Barrens	
Eastern Whip-poor-Will 1	Coprimulgus vociferus	SC	Pitch Pine-Scrub Oak Woodland	NHESP FACTSHEET
Grasshopper Sparrow <sup>1</sup>	Ammodramus sevennarum	T	Sandplain Grassland	NHESP FACTSHEET
Least Bittern	Ixobrychus exilis	E	Emergent Marsh/Shrub Marsh	NHESP FACTSHEET
New England Blazing Star <sup>5</sup>	Liotris scoriosa var. novae-angliae	SC	Sandplain Grassland	NHESP FACTSHEET
Purple Milkweed <sup>1</sup>	Asclepias purpurea	£	Sandplain Grassland	NHESP FACTSHEET
Wild Lupine 1	Lupinus perennis	WL	Sandplain Grassland	
Arethusa	Arethusa bulbosa	Y	Peat Bog	NHESP FACTSHEET
Arethusa  Large Whorled Pogonia	Arethusa bulbosa Isotria verticiflata	T WL	Peat Bog Open Oak Woodland	NHESP FACTSHEET
	Isotnia verticiflata  Claytonia virginica	WL E	Open Oak Woodland Rich Alluvial	NHESP FACTSHEET  NHESP FACTSHEET
Large Whorled Pogonia	Isotria verticillata	WL	Open Oak Woodland	
Large Whorled Pogonia  Narrow-leaved Spring Beauty <sup>1</sup>	Isotnia verticiflata  Claytonia virginica	WL E	Open Oak Woodland Rich Alluvial	
Large Whorled Pogonia  Narrow-leaved Spring Beauty <sup>1</sup> Butternut	Isotria verticillata Claytonia virginica Jugians cinerea	WL E WL	Open Oak Woodland Rich Alluvial Talus and Rich Pastureland	
Large Whorled Pogonia Narrow-leaved Spring Beauty   Butternut Magle-leaved Goosefoot	Isotria verticillata Claytonia virginica Juglans cinerea Chenopodium simplex	WL E WL	Open Oak Woodland Rich Alluvial Talus and Rich Pastureland Talus	NHESP FACTSHEET
Large Whorled Pogonia Narrow-leaved Spring Beauty <sup>1</sup> Butternut Maple-leaved Goosefoot Wood Turtle	Isotria verticillata Cisytonia virginica Juglians cinerea Chenopodium simplex Glyptemys insculpta	WL E WL SC	Open Oak Woodland Rich Allovial Talus and Rich Pastureland Talus Riparian	NHESP FACTSHEET
Large Whorled Poponia Narrow-leaved Spring Beauty <sup>1</sup> Butternut Mapile-leaved Goosefoot Wood Turtle Eastern Box Turtle	toceria verticillata Cizytonia virginica Auglians cinerea Chenopodium simplex Giyatemys insculpta Terrapone caralina	WL E WL SC SC	Open Oak Woodland Rich Alluvial Talus and Rich Pastureland Talus Riparian Outwash (nesting)	NHESP FACTSHEET  NHESP FACTSHEET  NHESP FACTSHEET
Large Whorled Poponia Narrow-leaved Spring Beauty <sup>1</sup> Butternut Mapile-leaved Goosefoot Wood Turtle Eastern Box Turtle Bridle Shiner	horna verticillata Claytoria virginica Juglians cinerca Chenopodium simplex Glyptomys insculpta Terrapone carolina Notropia bifrenatis reemidottylium scalatum	WL E WL SC SC SC	Open Oak Woodland  Rich Allowid  Talks and Rich Pastureland  Talks  Riparian  Outnook (nesting)  508 Waters	NHESP FACTSHEET  NHESP FACTSHEET  NHESP FACTSHEET  NHESP FACTSHEET
Large Whorled Progenia Narrow-loaved Spring Beauty <sup>1</sup> Butternut Maple-loaved Goosefoot Wood Turtle Eastern Box Turtle Bridle Shiner Four-load Salamander	Isotria verticilista Cizysonia virginica Augitas cinerea Chenapadium simplex Glystemys insculpta Terrapene carolina Netropols byfrenatus	WL E WL SC SC SC SC SWAP	Open Qui Woosland Rich Albuid Talus and Rich Fastureland Talus Réparian Outwesh (mesting) 501 Waters Westlands with Sphagnum	NHESP FACTSHEET  NHESP FACTSHEET  NHESP FACTSHEET  NHESP FACTSHEET
Large Whorled Progenia Narrow-loaved Spring Beauty <sup>1</sup> Butternut Maple-leaved Goosefoot Wood Turste Eastern Box Turste Bridle Shiner Four-foed Salamander Sportsed Turste	Rotria verticilata Cisystosa virginica Anglians cinerra Chenspodium simplex Glyptonya sinculpta Terrapene caralina Accordin Edymenta Hermidocylium sucidum Hermidocylium sucidum Commya guttata	WL E WL SC SC SC SC SWAP	Open Cult Woodland Rich Albuid Talus and Rich Pastureland Talus Rigarian Outwich (meting) 501 Waters Westlands with Sphagnum Westlands	NHESP FACTSHEET  NHESP FACTSHEET  NHESP FACTSHEET  NHESP FACTSHEET
Large Whorled Progonia Narrow leaved Spring Bourty   Butternut Mayle haved docefeet Weed Turtle Eastern Box Turtle Bride Silamander Sported Turtle Black Rozer Eastern Hospinos Snake	botiva verticillata Cityrianta virginica Angines cinerea Chengodium simples Chengodium simples Golgerowa simulata Termpone caralina Notropia bifrimatura Clemenya palimentura Tercinologia paterinhos	WL E WL SC SC SC SC SWAP SWAP SWAP	Open-Qui Woodland Rich Alturul Rich Alturul Rich Alturul Rich Alturul Rich Pathureland Tallus Reparier Outwook (nesting) Still Waters Westland with Sphagnum Westland Landicage Mosaic Sandglain	NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET
Large Whorled Progonia Narrow leaved Spring Bourly <sup>1</sup> Butternst Mayle leaved Goorlead Eastern Box Turdle Bridle Shiner Four-tood Salemander Sported Turtle Basic Racer Eastern Hoppious Shake <sup>1</sup> Ruffled Grosse	Botiva verticililata Cisystania virginica Angilinis cinerera Chenspoolium simplera Glysteneya simplera Glysteneya simplera Glysteneya simplera Cisysteneya simplera Cisysteneya simplera Cisysteneya simplera simplera Cisystania Cisys	WL E WL WL SC SC SC SC SWAP SWAP SWAP	Open Cult Woodland Rich Altwisd Rich Altwisd Rich Altwisd Rich Pattureland Tallus Rich Restrict Rich Restrict Stati Waters Wettland with Sphagnum Wettland Waters Wettland Wettland Woodland/Shrubland Woodland/Shrubland	NHESP FACTSHEET  NHESP FACTSHEET  NHESP FACTSHEET  NHESP FACTSHEET
Large Whorled Pregonia Narrow-leaved Spring Boarty 1 Butternt Mapin-leaved Goorfoot Wood Turtle Bridle Stiner Four-food Salamander Soprated Turtle Black Race Black Race Black Race Black Race Black Race Black Race American Kestrel American Kestrel	Botria verticillata Claystania virginica Anglinic Genera Chenapodium simplica Glystemy innouleta Glystemy innouleta Ferrepore caroline Notingila lightematus Ferredoct gritum acutatum Clemnya gestata Culder caratictum Conder caratictum Bonata umbellus Falica paniversis	WL E WL WL SC SC SC SWAP SWAP SWAP SWAP SWAP	Open Gali Woodland Rich Allovid Talina and Rich Pastureland Talina Riparian	NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET
Large Whorled Progonia Narrow-leaved Spring Beauty <sup>1</sup> Betternut Maple-leaved disourced Wood Turtle Bridle Shiner Four-toed Salamander Sportsel Turtle Black Ricer Eastern Reprint Salamander American Kestrel Prairie Wartle	Rotriu verticilatu Claystatu virginicu Angliers cineres Chenopodium simploru Glypcenya innculptu Glypcenya innculptu Ferrapenic caracina Notropia Sifematu Permahotryfium suciatum Cemmya gustatu Cemmya gustatu Centerpodi piterinicus Ananous amietikus Falko sparverius Dendroica discolor	WL E WL SC SC SC SWAP SWAP SWAP SWAP SWAP	Open Gai Woodland Rich Allovid Rich Allovid Falsa and Rich Pathereland Tales Riparian Observation (resting) Still Waters Wetlands with Sphagnum Wetlands with Sphagnum Wetlands with Sphagnum Wetlands Grassland/Shrubland Grassland/Shrubland Grassland/Shrubland Ony Shrubland	NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET
Large Whorled Progonia Narrow-leaved Spring Beauty   Butterrut Magin leaved discrete Magin leaved discrete Eastern Box Turtle Bride Stalmander Sported Turtle Black Racer Eastern Hognese Snake   Black Racer American Katrel Prant Warbler Eastern Towhee	bornia verticcillata Cityrianta virginica Anglians cirerea Chengodium simples Chengodium Chen	WL E WL SC SC SC SWAP SWAP SWAP SWAP SWAP SWAP SWAP	Open-Dail Woodland Rich Alturul Rich Alturul Rich Alturul Rich Alturul Rich Alturul Rich Alturul Rich Pastureland Talus Raparian Outwesh (meting) Sold Woren Wettlands with Sphagnum Wettlands with Sphagnum Wettlands with Sphagnum Woodland/Shrubland Grassland/Shrubland Grassland/Shrubland Shrubland Shrubland Shrubland Shrubland	NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET
Large Whorled Pregonia Narrow-leaved Spring Bourty   Sutternut Magine Invent Governor Magine Inventor Magi	botiva verticililata Cityrianta virginica Anginas cinerea Chenapoulium simples Golgeroma incusida Terrapone carolina Notropia biformatia Premiolocylium sucutum Clemenya simples Goldere constituto Commyna paterinica Commyna paterinica Reseau amelicilia Falso sparverius Dendrovias discoler Palpila crystrophitalimus Scalapaa minier	WL E WL WL SC SC SC SC SWAP SWAP SWAP SWAP SWAP SWAP SWAP	Open-Qui Woodland Rich Alturul Rich Robert Rich	NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET
Large Whorled Pregonia Narrow-leaved Spring Bourly   Butternit Mapile Sowell George Mapile Sowell George Eastern See Turdle Bindle Shiner Four-tood Salemander Sported Furtle Bindle Shiner Eastern See Turdle Bindle Shiner Four-tood Salemander Sported Furtle Bindle Shiner Eastern Segmons Shake   Ruffled Grouse American Kestrol Prairie Windler Eastern Vendler Eastern Windler Eastern	botiva verticililata Claystania virginica Anglinis cinerea Chenspooluum simplex Glystenya simplex Glystenya simplex Glystenya simplex Chenspooluum simplex Glystenya simplex Remoder planta scattleria Clemnya guritata Clemnya chilinia chilinia Clemnya chilinia Cl	WE E WE WE SC SC SC SC SWAP SWAP SWAP SWAP SWAP SWAP SWAP SWAP	Open Cusi Woodland Rich Aftwisd Rich Aftwisd Rich Aftwisd Rich Pastureland Tallus Rich Restrict Rigarian Outwood (nesting) Soll Worlers Westlands with Sphagnum Westland Westland Woodland/Shrubland Grassland/Shrubland Grassland/Shrubland Ony Shrubland Dny Shrubland Ony Shrubland	NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET
Large Whorled Pregoria Narrow leaved Spring Beauty 1 Betternet Mapin leaved Goorfeot Wood Turtle Bridle Stoner Four-toed Salamander Soprated Turtle Black Race Black	Botini verticillata Claystania virginica Anglinis cinceres Chenapoulum simplex Glystemy innouleta Glystemy innouleta Frempenc caroline Notingila lightematus Fremdet Epilium acutatum Clemnya gestata Colleder carastictum Colleder carastictum Colleder carastictum Banasia umbellus Falica paraverius Demderca discoler Figilia epitinpaktivinus Schalpac memer Spilia epitinpaktivinus Schalpac memer Spilia epitinpaktivinus Schalpac memer Spilia epitinpaktivinus	WE E WE SC SC SC SC SWAP SWAP SWAP SWAP SWAP SWAP SWAP SWAP	Open Cust Woodland Rich Alloviul Rich Alloviul Falos and Rich Pratureland Falos Rich Alloviul Falos Rich Restaureland Rich Restaureland Rich Restaureland Rich Restaureland Rich Restaureland Westlands Westlands Westlands Westlands Woodland/Shrubland Grassland/Shrubland Grassland/Shrubland Dry Shrubland Dry Shrubland Ory Shrubland	NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET
Large Whorfed Progonia Narrow leaved Spring Beauty   Butternut Maple leaved Goorlean Maple leaved Goorlean Maple leaved Goorlean Maple leaved Goorlean Eastern Box Turtile Eastern Box Turtile Brick Shiener Four-took Sidmanador Spotted Turtile Black Racer Eastern Register Snake   Black Racer Eastern Register Snake   Parist Worldow Frantis Worldow Eastern Towahee American Krootlook Frantis Worldow Eastern Modelouk	borna verticillata Cityriania virginica Angines cinerea Chengenes cinerea Contrarea	WL  WL  SC  SC  SC  SWAP	Open Dail Woodland Rich Allowid Rich Allowid Rich Allowid Rich Allowid Rich Particuland Rich Particuland Rigorian Outwark (nesting) Still Wilder Westlands with Sphagnum Westland Landscape Mosaic Sandpland Constitution Sinchidand Cony Shriddand Ony Shriddand	NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET
Large Whorled Pregoria Narrow leaved Spring Beauty 1 Betternet Mapin leaved Goorfeot Wood Turtle Bridle Stoner Four-toed Salamander Soprated Turtle Black Race Black	Botini verticillata Claystania virginica Anglinis cinceres Chenapoulum simplex Glystemy innouleta Glystemy innouleta Frempenc caroline Notingila lightematus Fremdet Epilium acutatum Clemnya gestata Colleder carastictum Colleder carastictum Colleder carastictum Banasia umbellus Falica paraverius Demderca discoler Figilia epitinpaktivinus Schalpac memer Spilia epitinpaktivinus Schalpac memer Spilia epitinpaktivinus Schalpac memer Spilia epitinpaktivinus	WE E WE SC SC SC SC SWAP SWAP SWAP SWAP SWAP SWAP SWAP SWAP	Open Cust Woodland Rich Alloviul Rich Alloviul Falos and Rich Pratureland Falos Rich Alloviul Falos Rich Restaureland Rich Restaureland Rich Restaureland Rich Restaureland Rich Restaureland Westlands Westlands Westlands Westlands Woodland/Shrubland Grassland/Shrubland Grassland/Shrubland Dry Shrubland Dry Shrubland Ory Shrubland	NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET
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Large Whorled Pregonia Narrow loaved Spring Bourly <sup>1</sup> Butternit Mayle loaved Goorleot Mayle Spring Four tool Salemander Sported Turtle Bande Sheer Eastern Rognous Snake <sup>1</sup> Ruffled Grosse American Kestrol Prarie Windler Eastern Violation Eastern Windler Eastern	botiva verticilitata Cityrianta virginica Angilista cirerea Chenquodului simplica Angilista cirerea Chenquodului simplica Golgerenya incucidea Terraporic carolina Netropia biplimatisa Terraporic carolina Celeminga petrita Colleter constituera Celeminga petrita Goldere constituera Tetracolui platerimora Annata umbellica Falcia parverius Dendiroca decoler Figlio expliroquitate/inimus Scolagous minior Spicirelle pusalta Starviella magina Teassatomira regliem Verminiora quiamotirar	WL  WL  SC  SC  SC  SWAP	Open-Qui Woodland Rich Altworld Rich Altworld Rich Altworld Fallus and Rich Pattureland Tallus Reparties Outwork (nesting) Still Worlers Westlands with Sphagnum Stratiand Ory Shruddard Ony Shruddard Ony Shruddard Ony Shruddard Ony Shruddard Shruddard Shruddard Shruddard Shruddard Shruddard Shruddard Shruddard	INNESP PACTIVITY  NORSP
Large Whorfed Progonia Narrow leaved Spring Beauty   Butternut Maple leaved Goorlean Maple leaved Goorlean Maple leaved Goorlean Maple leaved Goorlean Eastern Box Turtile Eastern Box Turtile Brick Shiener Four-took Sidmanador Spotted Turtile Black Racer Eastern Register Snake   Black Racer Eastern Register Snake   Parist Worldow Frantis Worldow Eastern Towahee American Krootlook Frantis Worldow Eastern Modelouk	botiva verticilitata Cityrianta virginica Angilista cirerea Chenquodului simplica Angilista cirerea Chenquodului simplica Golgerenya incucidea Terraporic carolina Netropia biplimatisa Terraporic carolina Celeminga petrita Colleter constituera Celeminga petrita Goldere constituera Tetracolui platerimora Annata umbellica Falcia parverius Dendiroca decoler Figlio expliroquitate/inimus Scolagous minior Spicirelle pusalta Starviella magina Teassatomira regliem Verminiora quiamotirar	WILL  E WILL  WILL  SC SC SC SWAP SWAP SWAP SWAP SWAP SWAP SWAP SWAP	Open-Qui Woodland Rich Altworld Rich Altworld Rich Altworld Fallus and Rich Pattureland Tallus Reparties Outwork (nesting) Still Worlers Westlands with Sphagnum Stratiand Ory Shruddard Ony Shruddard Ony Shruddard Ony Shruddard Ony Shruddard Shruddard Shruddard Shruddard Shruddard Shruddard Shruddard Shruddard	NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET  NOESP FACTSHEET
Large Whorled Pregonia Narrow loaved Spring Bourly <sup>1</sup> Butternit Mayle loaved Goorleot Mayle Spring Four tool Salemander Sported Turtle Bande Sheer Eastern Rognous Snake <sup>1</sup> Ruffled Grosse American Kestrol Prarie Windler Eastern Violation Eastern Windler Eastern	botiva verticilitata Cityrianta virginica Angilista cirerea Chenquodului simplica Angilista cirerea Chenquodului simplica Golgerenya incucidea Terraporic carolina Netropia biplimatisa Terraporic carolina Celeminga petrita Colleter constituera Celeminga petrita Goldere constituera Tetracolui platerimora Annata umbellica Falcia parverius Dendiroca decoler Figlio expliroquitate/inimus Scolagous minior Spicirelle pusalta Starviella magina Teassatomira regliem Verminiora quiamotirar	WILE  F  WILE  SC  SC  SWAP	Open-Qui Woodland Rich Altworld Rich Altworld Rich Altworld Fallus and Rich Pattureland Tallus Reparties Outwork (nesting) Still Worlers Westlands with Sphagnum Stratiand Ory Shruddard Ony Shruddard Ony Shruddard Ony Shruddard Ony Shruddard Shruddard Shruddard Shruddard Shruddard Shruddard Shruddard Shruddard	INNESP PACTIVITY  NORSP
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# The Ecological Significance

of

### Pyrogenic Communities

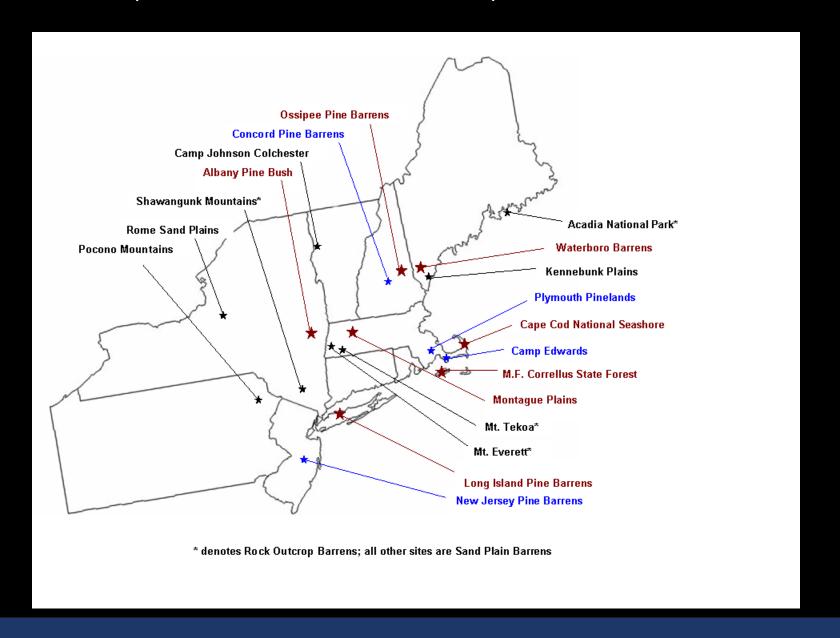
 Globally Rare Natural Communities of the Highest DFW Conservation Priority

Supporting a long list of rare,
 endangered and highly specialized

plants and animals



#### Most are Globally Rare Natural Communities that only occur on the Northeast Coastal Plain



### The Foundation of a Barrens Community



### Barrens Communities Establish on the Landscape



## Sandplain Grassland



## Heathlands



### Pitch Pine – Scrub Oak Barrens (Pine Barrens)



### Oak Glade Community



Presettlement tree density was largely a function of fire frequency and severity. Presettlement oaks tended to be large on average, but stand basal areas were low-to-moderate as a result of tree sparseness.























# Historic Fire



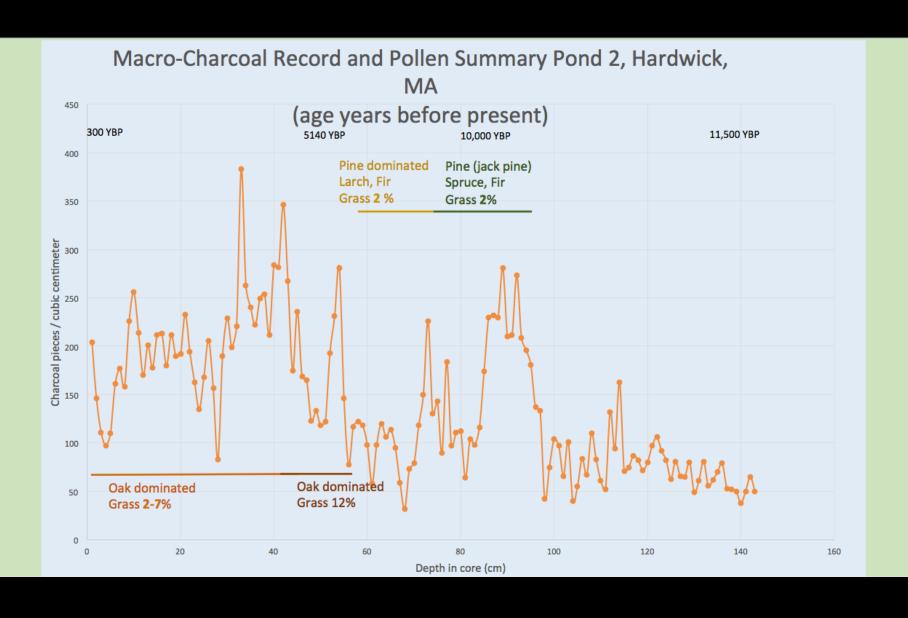
### Fire as a Tool



Anthropogenic Fire was widespread and frequent throughout much of the eastern United States before First Contact.

- Soil profiles
- Written accounts
- Charcoal/Pollen analysis
- Fire Scars
- Witness Trees

- Land Clearing for Agriculture
- Maintenance of open areas (fallow fields)
- Hunting
- Invigorate berry production
- Pest Management
- Create habitat





Step 1: A High Integrity Fire-Influenced Community



Step 2: Over time fuel builds in the community. This fuel begins to retain water, collect nutrients and regulate temperatures.



Step 3: The new fuel load creates conditions for fast-growing, non-fire adapted species such as white pine to establish



Step 4: A fire event occurs, killing the non-fire adapted species and removing the built-up fuel. The process starts over again.



Alternative Step 4: No fire occurs, and community is lost to generalist species

### Conservation Status of Fire Adapted Communities



### Land Conservation is not Enough

Disturbance Dependent (Primarily Fire)

Need Active Management

 Fire Influenced Communities on Protected Land have 1 of 2 fates: be managed and continue as barrens, or, without management succeed into generalist forests

#### How do we Restore and/or manage these Communities?



### "An Ordinary Forest"



#### Returning structure to State of Regular Disturbance





#### **Restoration Tools**





#### Restoration in Process



#### Maintenance



#### The Significance of Swift River-Ware River Barrens

#### <u>Total Potential Acreage on Protected Lands across Central System:</u>

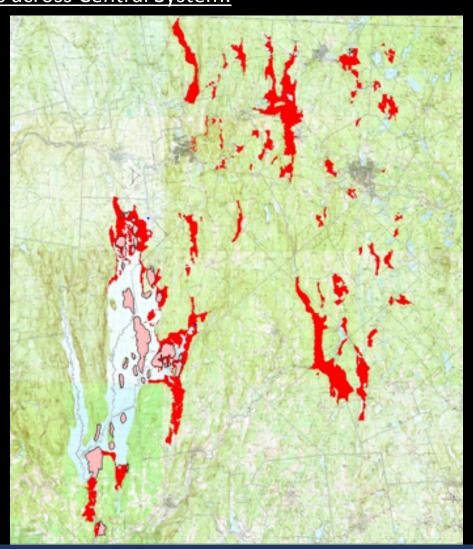
Quabbin Watershed (DCRW): 13,500 ac Ware River Watershed (DCRW): 6,500 ac Muddy Brook Complex (DFW): 1000 ac Birch Hill/Otter River (ACOE/DCR): 4,000 ac Herm Covey WMA (DFW): 1,000 ac

#### Comparable Inland Barrens Sites:

Montague Plains WMA, MA: 1,000-acres Waterborough Barrens, ME: 2,500-acres Albany Pine Bush, NY: 4,000-acres Ossipee Pine Barrens, NH: 6,000-acres

#### **Cooperative Management is Essential:**

Understand other organizations goals
Show how your proposed management supports those goals.



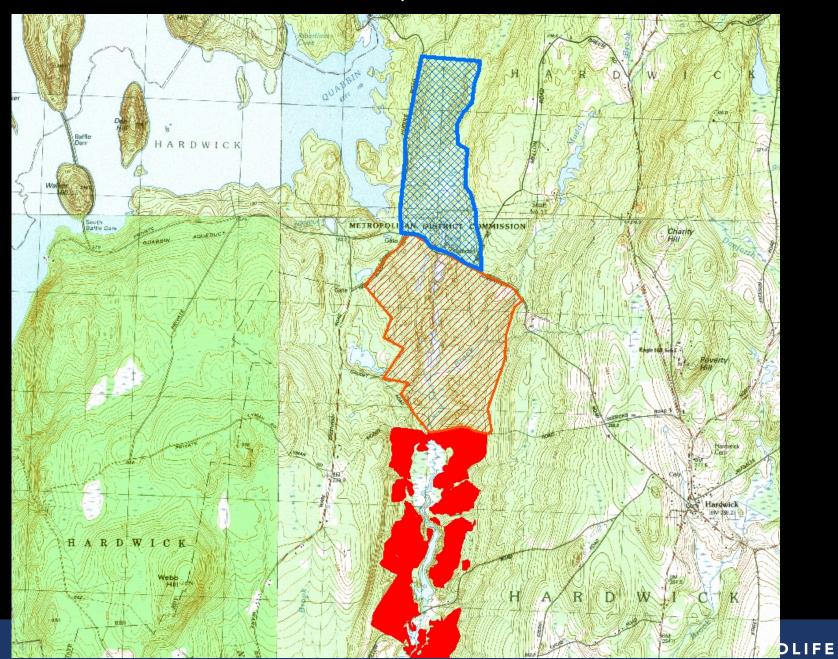
#### Greenwich Road/Gate 43 Area



#### Greenwich Road/Gate 43 Area



#### Greenwich Road/Gate 43 Area



#### Muddy Brook WMA



#### Monitoring

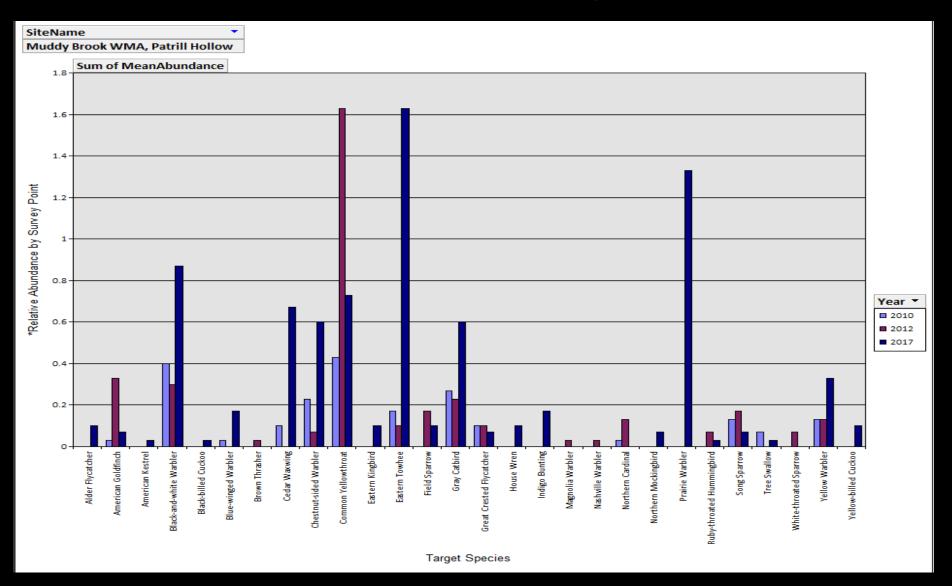


### Monitoring

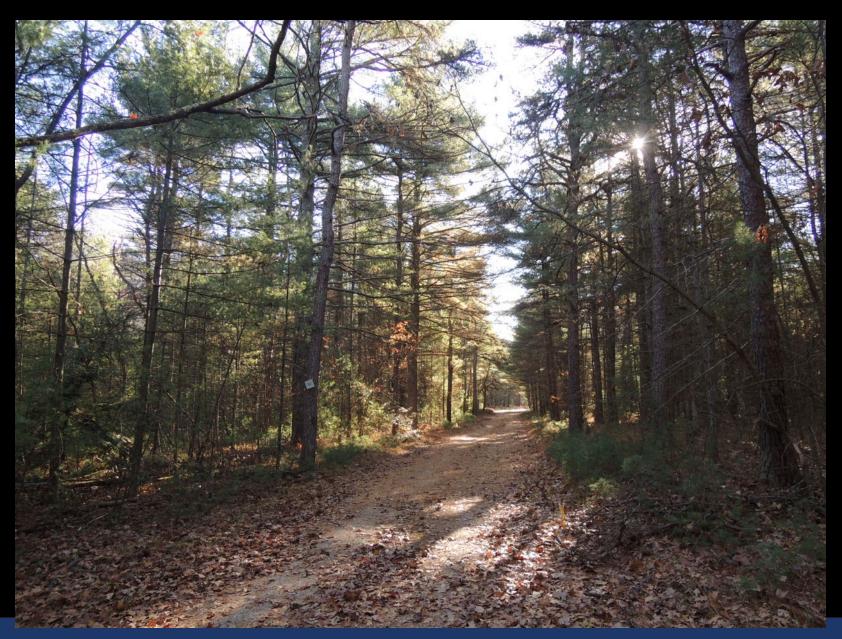




# Monitoring







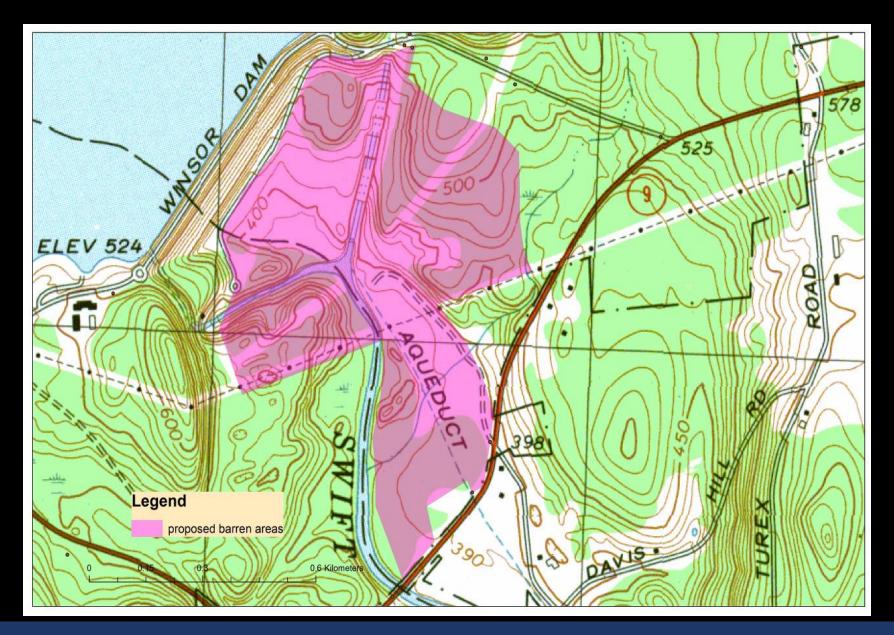




#### Gays Hill Area



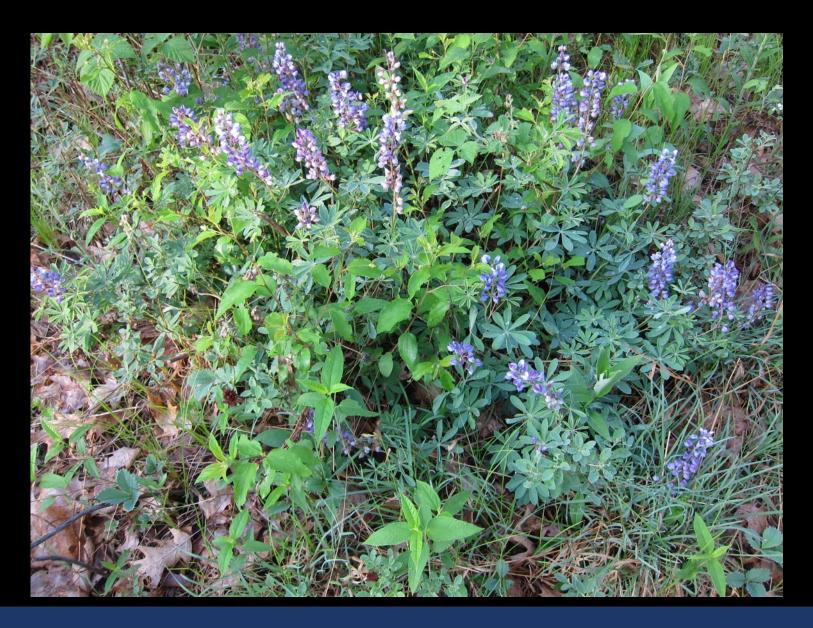
#### Windsor Dam

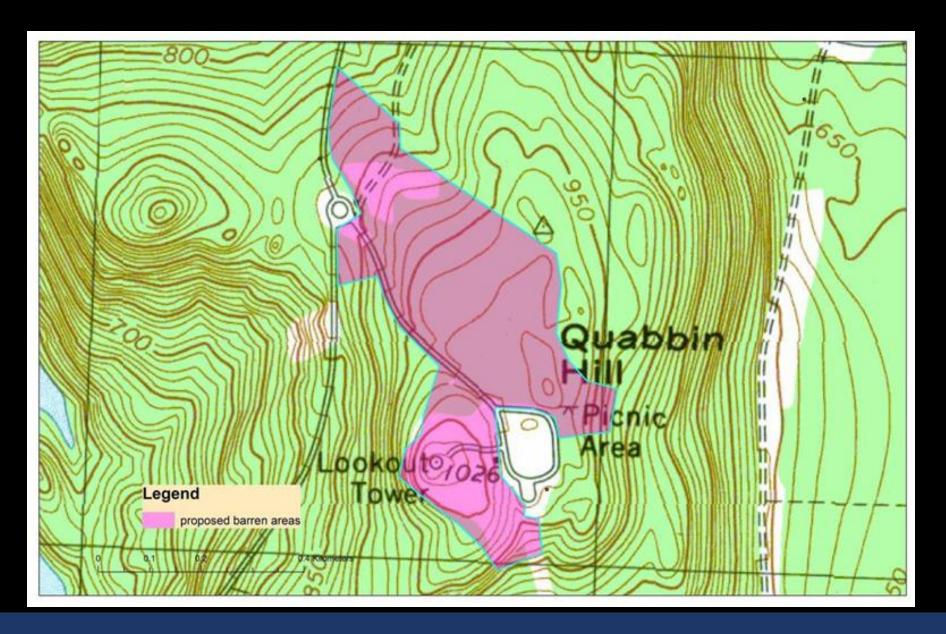


#### Windsor Dam



#### Windsor Dam

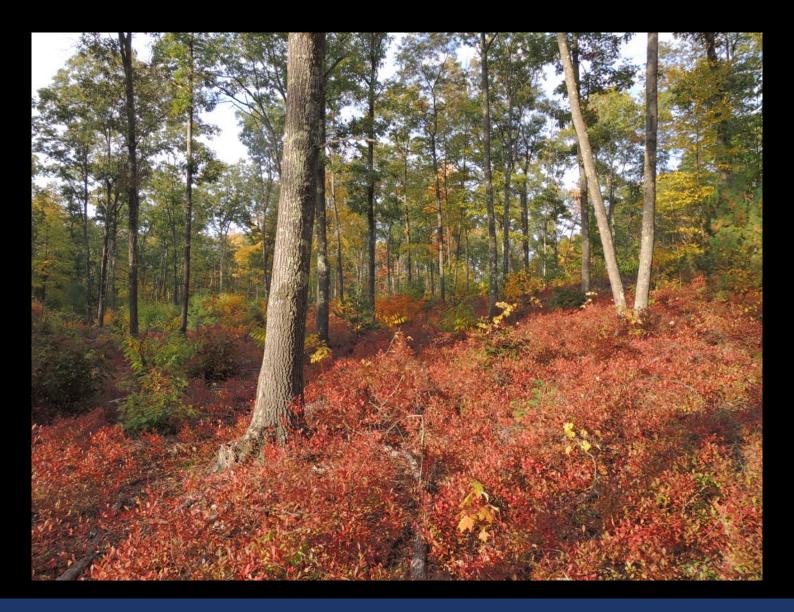








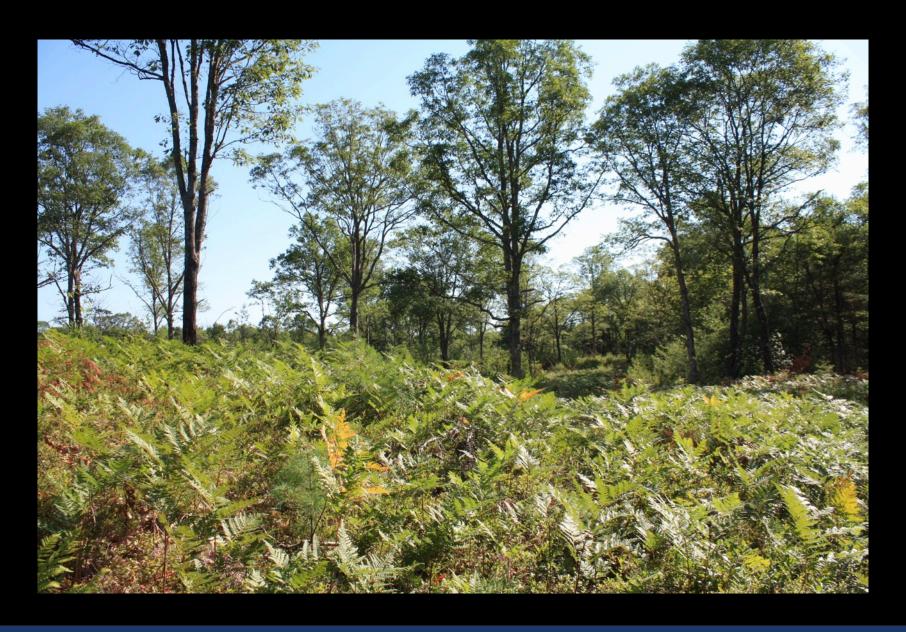
























# Questions

