



# FACT SHEET

## Effective Establishment of Native Grasses on Roadside in New England

### RESEARCH PROJECT TITLE

Effective Establishment of Native Grasses on Roadside in New England

### STUDY TIMELINE

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### MORE INFORMATION

[NETC Coordinator will add link to the final report on NETC website](#)

The New England Transportation Consortium, a cooperative effort of the transportation agencies of the six New England States, funded this research. Through the Consortium, the states pool professional, academic and financial resources for transportation research leading to the development of improved methods for dealing with common problems associated with the administration, planning, design, construction, rehabilitation, reconstruction, operation and maintenance of the region's transportation system.

The NETC is hosted by the University of Vermont Transportation Research Center



TRANSPORTATION RESEARCH CENTER

### What was the Problem?

Grass species selection plays a critical role in roadside plantings, providing safe clear zones and effective control of slope erosion. Cool-season introduced turf grasses have been used for decades as a quick cover along roads. However, recent policy requires the use of native plants as the first choice in roadside revegetation efforts. While a considerable amount of literature exists on the subject of native plant establishment for other regions of the U.S., research on roadside native plantings for the New England region remains sparse. The overall goal of this project was to build a comprehensive knowledge-base for a gradual transition toward well-planned, sustainable native roadside vegetation cover that will support transportation goals of safety and infrastructure reinforcement while providing economic, ecological and aesthetic advantages.

### What was done?

Native plant selection and effective protocols for establishment and maintenance of natives along roadsides were developed for the local conditions of New England. Three demonstration sites with multiple trials were planted and evaluated along highways in Connecticut. At the conclusion of the project, a manual was produced to fill current information and technology gaps on the utilization of native grasses for roadside plantings in New England based on literature reviews, interviews with experts and practitioners, and field experiences obtained during the establishment of the regional demonstration trials. The manual provides guidelines for species selection and describes 39 species of grasses and grass-like plants and 96 species of forbs suitable for roadside plantings in New England. It outlines specific factors that are important for making decisions regarding plant selection and establishment methods and provides a checklist for site characteristics that should be considered during site assessment. The manual discusses various protocols for establishment of native species, including site preparation, seeding techniques, and post-establishment monitoring and maintenance. This document is designed for use by highway department employees and contractors to assist in selection of appropriate strategies for the transition and implementation of these new approaches to plantings.

### What are the next steps?

The transition toward establishment of native plant communities along New England roadsides will change decades old policies. A gradual implementation of this transition over several years will insure a successful change in practices.

It should focus on:

- Establishing new native plantings following construction
- Augmenting existing roadside native plant communities
- Educating DOT personnel concerning the benefits of the policy change
- Creating native vegetation roadside management positions
- Most importantly, developing local seed sources, which currently are absent in the region

### What are potential impacts?

The shift toward native species manifests proactive environmental stewardship and provisions for healthy ecosystems. The use of native species provides long-term defense against invasive and noxious weeds, while reducing maintenance costs associated with managing weedy vegetation. Many native grasses have deep, extensive root systems and longer lifespans than cool-season grasses; they can improve long-term slope stability and increase regional biodiversity. Native species have evolved with local climates and soils conditions, generally require less maintenance after establishment, and persist longer. The adoption of the protocols developed during this project and described in the manual will provide effective paths toward initiating the transition from current vegetation practices to those prescribed in this manual.



## New England Native Grasses of Short to Medium Statue

John Campanelli, Dawn Smith and Julia Kuzovkina



The list contains the eco-regional list of grasses suitable for roadside plantings, meadows, and residential gardens.

Common Name	Scientific Name	Height	Fertility Requirement	Active Growth Period	Bloom Time	Root Depth (minimum)	Growth Form	Growth Rate	Shade Tolerance	Drought Tolerance	Salinity Tolerance	Soil pH	Lifespan
<b>Winter bentgrass</b>	<i>Agrostis hyemalis</i>	Up to 3.5'	Medium	Spring, summer, fall	Mid-spring	8"	Bunch	Moderate	Intermediate	Low	Medium	5.0-7.5	Short
<b>Autumn bentgrass</b>	<i>Agrostis perennans</i>	Up to 3 1/2'	Medium	Spring, summer, fall	Midsummer	8"	Bunch	Moderate	Intermediate	Low	None	5.5-7.5	Short
<b>Rough bentgrass</b>	<i>Agrostis scabra</i>	Up to 3'	Low	Spring	June-Nov	12"	Bunch	Moderate	Intolerant	Low	Low	6.0-8.0	Moderate

Common Name	Scientific Name	Height	Fertility Requirement	Active Growth Period	Bloom Time	Root Depth (minimum)	Growth Form	Growth Rate	Shade Tolerance	Drought Tolerance	Salinity Tolerance	Soil pH	Lifespan
<b>Big bluestem</b>	<i>Andropogon gerardii</i>	5'-7'	Low	Summer	Aug-Oct	20"	Bunch	Moderate	Intolerant	High	Medium	6.0-7.5	Long
<b>Broomsedge bluestem</b>	<i>Andropogon virginicus</i>	1 1/2'-3'		Summer	Late spring	14"	Bunch	Slow	Intolerant	High	Low	4.9-7.0	Moderate
<b>Fringed brome</b>	<i>Bromus ciliatus</i>	Up to 4'	Low	Spring, summer	Spring	16"	Bunch	Moderate	Tolerant	Low	Low	5.5-7.5	Long
<b>Tufted hair-sedge</b>	<i>Bulbostylis capillaris</i>	Up to 1'	Low		June-Aug			Intermediate	High				
<b>Canada bluejoint</b>	<i>Calamagrostis canadensis</i>	Up to 5'	Medium	Spring	June-Aug	16"	Rhizomatous	Moderate	Intolerant	Low	None	4.5-8.0	Long
<b>Blunt broom sedge</b>	<i>Carex scoparia</i>	8"-36"	Medium	Spring, summer	July-Aug	8"	Bunch	Moderate	Tolerant	None	Low	4.6-6.9	Long
<b>Tussock sedge</b>	<i>Carex stricta</i>	Up to 3'	Medium	Spring	May-June	18"	Bunch	Moderate	Tolerant	Low	None	3.5-7.0	Long
<b>Swan's sedge</b>	<i>Carex swanii</i>	1'-3'			May-June		Rhizomatous		Intermediate	Low			
<b>Common fox sedge</b>	<i>Carex vulpinoidea</i>	Up to 3'	Medium	Spring	June-Aug	16"	Bunch	Moderate	Intermediate	Low	None	6.8-8.9	Long
<b>Redtop panicgrass</b>	<i>Coleataenia longifolia ssp rigidulum</i>	Up to 4'	Low	Summer	Aug-Oct	6"	Bunch	Moderate	Intolerant	Low	Low	5.0-7.5	Long
<b>Shining flatsedge</b>	<i>Cyperus bipartitus</i>	Up to 5'	Medium	Spring, summer, fall	Mid-summer	14"	Bunch	Rapid	Intolerant	Low	None	4.5-6.5	Short
<b>Flattened oatgrass</b>	<i>Danthonia compressa</i>	Up to 2 1/2'	Low	Spring	Late spring	10"	Bunch	Moderate	Tolerant	Medium	None	4.8-7.0	Moderate
<b>Poverty grass</b>	<i>Danthonia spicata</i>	6"	Low	Spring	May-July	6"	Bunch	Rapid	Intolerant	High	None		Short
<b>Wavy hair grass</b>	<i>Deschampsia flexuosa</i>	12"	Low	Spring, summer	Late spring	8"	Bunch	Moderate	Tolerant	Medium	None	4.8-6.8	Short
<b>Deertongue</b>	<i>Dicanthelium clandestinum</i>	1'-3'	Low	Spring, summer	Early summer	16"	Bunch	Slow	Intolerant	High	Low	4.0-7.5	Long
<b>Canada wildrye</b>	<i>Elymus canadensis</i>	3'-6'	Medium	Spring, summer, fall	June-Aug	16"	Bunch	Rapid	Tolerant	Medium	Medium	5.0-7.9	Short
<b>Riverbank wildrye</b>	<i>Elymus riparius</i>	3'-5'	Medium	Spring, summer	Mid-summer	10"	Bunch	Moderate	Tolerant	Low	None	4.5-7.2	Moderate
<b>Virginia wild-rye</b>	<i>Elymus virginicus</i>	3'-6'	Medium	Spring	Early spring	12"	Bunch	Moderate	Tolerant	Medium	None	5.0-7.4	Short
<b>Tufted love grass</b>	<i>Eragrostis pectinacea</i>	Up to 2'		Summer	Mid-summer to early fall				Intolerant	High			
<b>Purple lovegrass</b>	<i>Eragrostis spectabilis</i>	1'-3'	Low	Spring	Aug-Oct	4"	Bunch	Moderate	Intolerant	High	Intolerant	4.0-7.5	Moderate
<b>Creeping red fescue</b>	<i>Festuca rubra</i>	1'-2'	High	Spring, fall	June-July	12"	Rhizomatous	Moderate	Tolerant	Medium	Low	5.0-8.0	Long
<b>Red fescue</b>	<i>Festuca rubra ssp pruinosa</i>	Up to 2'	High	Spring, fall	Mid-spring	12"	Rhizomatous	Moderate	Tolerant	Medium	Low	5.0-7.5	Long

Common Name	Scientific Name	Height	Fertility Requirement	Active Growth Period	Bloom Time	Root Depth (minimum)	Growth Form	Growth Rate	Shade Tolerance	Drought Tolerance	Salinity Tolerance	Soil pH	Lifespan
<b>Soft rush</b>	<i>Juncus effusus</i>	Up to 4'	Medium	Spring	July-Sept	24"	Bunch	Moderate	Intolerant	Medium	Low	5.5-8.8	Long
<b>Path rush</b>	<i>Juncus tenuis</i>	4"-24"	Low	Spring, summer	May-June	6"	Bunch	Slow	Intermediate	Low	Low	4.5-7.0	Moderate
<b>Rice cutgrass</b>	<i>Leersia oryzoides</i>	Up to 3'	Medium	Summer	June-Oct	14"	Rhizomatous	Moderate	Intolerant	Low	None	5.1-8.8	Moderate
<b>Mexican muhly</b>	<i>Muhlenbergia mexicana</i>	Up to 3'	Medium	Spring, summer, fall	Late summer	8"	Rhizomatous	Moderate	Intermediate	Low	None	5.5-7.5	Short
<b>Switchgrass</b>	<i>Panicum virgatum</i>	4'-6'	High	Summer	July-Sept	12"	Bunch	Rapid	Intolerant	Medium	Medium	4.5-7.5	Long
<b>Little Bluestem</b>	<i>Schizachyrium scoparium</i>	Up to 3'	Low	Summer, fall	Summer	14"	Bunch	Moderate	Intolerant	High	None	5.0-8.4	Long
<b>Woolgrass</b>	<i>Scirpus cyperinus</i>	Up to 5'	Medium	Spring	Aug-Sept	12"	Bunch	Moderate	Intermediate	Low	None	4.8-7.2	Long
<b>Sand dropseed</b>	<i>Sporobolus cryptandrus</i>	Up to 5'	Low	Spring	June-Oct	18"	Bunch	Moderate	Intolerant	High	Medium	6.6-8.0	Short
<b>Purpletop</b>	<i>Tridens flavus</i>	2'-5'	Low	Summer	Aug-Sept	10"	Bunch	Moderate	Intolerant	High	None	4.5-6.5	Short



# New England Native Forbs of Short to Medium Statue

John Campanelli, Dawn Smith and Julia Kuzovkina



The list contains the eco-regional list of plants suitable for roadside plantings, meadows, and residential gardens.

Common Name	Scientific Name	Bloom Time	Bloom Color	Pollinator Ranking*	Height	Light Needs
Common Yarrow	<i>Achillea millefolium</i>	July-Sept	white pink red		Up to 3'	FS, PS
Black snakeroot	<i>Actaea racemosa</i>	June-Aug	white	VH	3'-8'	PS, S
White snakeroot	<i>Ageratina altissima</i>	July-Oct	white		Up to 4'	PS, S
Pearly everlasting	<i>Anaphalis margaritacea</i>	July-Sept	yellow		Up to 3'	FS, PS
Canadian anemone	<i>Anemone canadensis</i>	May-Aug	white		Up to 2'	FS, PS
Wood anemone	<i>Anemone quinquefolia</i>	April-May	white		3"	PS, S

Common Name	Scientific Name	Bloom Time	Bloom Color	Pollinator Ranking*	Height	Light Needs
Thimbleweed	<i>Anemone virginiana</i>	June-Aug	greenish-white		2'-3'	FS, PS, S
Red columbine	<i>Aquilegia canadensis</i>	April-June	red, yellow		Up to 2'	FS, PS, S
Poke milkweed	<i>Asclepias exaltata</i>	June-July	white		Up to 5'	PS, S
Swamp milkweed	<i>Asclepias incarnata</i>	June-Aug	purple, greenish-white	VH	Up to 5'	Full Sun
Common Milkweed	<i>Asclepias syriaca</i>	June-Aug	pale purple	VH	Up to 5'	FS, PS
Butterfly milkweed	<i>Asclepias tuberosa</i>	June-Aug	Orange	VH		
Yellow false indigo	<i>Baptisia tinctoria</i>	Midsummer	yellow	M	2.5'	Full Sun
Pale corydalis	<i>Capnoides sempervirens</i>	May-July	pink, yellow		Up to 3'	FS, PS
Partridge pea	<i>Chamaecrista fasciculata</i>	July-Sept	yellow	H	3'	FS to S
Sensitive pea	<i>Chamaecrista nictitans</i>	June-Oct	yellow		Up to 1 1/2'	Full Sun
Narrow-leaved fireweed	<i>Chamerion angustifolium</i>	June-Aug	magenta	H	Up to 4'	FS, PS
Turtlehead	<i>Chelone glabra</i>	July-Sept	white with pink tips	M	2'-7'	FS to S
Swamp thistle	<i>Cirsium muticum</i>	July-Oct	rose-purple		Up to 7'	FS, PS
Pasture thistle	<i>Cirsium pumilum var pumilum</i>	June-Aug	magenta, white		1'-3'	Full Sun
Showy tick-trefoil	<i>Desmodium canadense</i>	July-Aug	pink, violet		2'-4'	FS, PS
Panicled tick-trefoil	<i>Desmodium paniculatum</i>	July-Aug	purple	M-L	Up to 4'	Part Shade
Tall white-aster	<i>Doellingeria umbellata</i>	Aug-late summer	white	M-L	1'-6 1/2'	Full Sun
Annual fleabane	<i>Erigeron annuus</i>	Early summer	white		Up to 3 1/2'	FS, PS
Rough fleabane	<i>Erigeron strigosus</i>	Late spring	white		Up to 3'	FS, PS
Common boneset	<i>Eupatorium perfoliatum</i>	July-Oct	white		Up to 5'	FS, PS
White wood aster	<i>Eurybia divaricata</i>	Aug-Sept	white		1'-2'	PS, S
Purple wood-aster	<i>Eurybia spectabilis</i>	Aug-Oct	violet purple	M	1'-3'	FS, PS
Grass-leaved goldenrod	<i>Euthamia graminifolia</i>	Aug-Sept	yellow	M-L	2'-3'	FS, PS
Spotted Joe Pye weed	<i>Eutrochium maculatum</i>	July-Sept	light purple	H	6.5'	FS, PS
Sweet Joe Pye weed	<i>Eutrochium purpureum</i>	July-Sept	pale pink, purple	H	Up to 6 1/2'	PS, S

Common Name	Scientific Name	Bloom Time	Bloom Color	Pollinator Ranking*	Height	Light Needs
Meadow bottle gentian	<i>Gentiana clausa</i>	Sept-Oct	purple	H	Up to 2'	FS, PS
Spotted crane's-bill	<i>Geranium maculatum</i>	May-July	purple	H	1'	FS, PS, S
Fall sneezeweed	<i>Helenium autumnale</i>	Aug-Sept	yellow	H	Up to 5'	Full Sun
Purplehead sneezeweed	<i>Helenium flexuosum</i>	May-Aug	yellow	H	1'-3'	Full Sun
Tall white-aster	<i>Helianthus decapetalus</i>	July-Aug	yellow	H	Up to 5'	FS, PS
Woodland sunflower	<i>Helianthus divaricatus</i>	June-Aug	yellow	H	Up to 4'	PS, S
Pale-leaved sunflower	<i>Helianthus strumosus</i>	July-Oct	yellow	H	3'	FS, PS
Canada hawkweed	<i>Hieracium kalmii</i>	July-Oct	yellow	H	Up to 5'	Full Sun
Pointed-leaved tick-trefoil	<i>Hylodesmum glutinosum</i>	June-Aug	pink	H	2'	PS, S
Pale St. John's wort	<i>Hypericum ellipticum</i>	July-Aug	yellow	H	Up to 1 1/2'	FS, PS
Orange-grass St. John's wort	<i>Hypericum gentianoides</i>	Late spring	yellow	H	Up to 2'	FS, PS
Spotted St. John's wort	<i>Hypericum punctatum</i>	Early summer	yellow	H	Up to 3'	FS, PS, S
Stiff aster	<i>Ionactis linariifolius</i>	Sept-Oct	violet	H	1'-1 1/2'	FS, PS
Blueflag	<i>Iris versicolor</i>	May-June	purplish-blue	H	Up to 2'	FS, PS
Virginia dwarf-dandelion	<i>Krigia virginica</i>	June-Aug	yellow, orange	H	Up to 1'	Full Sun
Largepod pinweed	<i>Lechea intermedia</i>		pink, red	H		
Poor-man's pepperweed	<i>Lepidium virginicum</i>	May-Oct	white	H	Up to 1 1/2'	FS, PS
Round-headed bushclover	<i>Lespedeza capitata</i>	Aug-Sept	cream	L	2'-4'	Full Sun
Shrubby bushclover	<i>Lespedeza frutescens</i>	July-Sept	pink, purple	L	Up to 3'	
Woolly bush-clover	<i>Lespedeza hirta</i>	Late summer	white	L	Up to 6'	Full Sun
Northern blazingstar	<i>Liatris novae-angliae</i>	June-Aug	purple	H	3'	Full Sun
Cardinal flower	<i>Lobelia cardinalis</i>	July-Oct	red, white	H	2'-6'	FS, PS
Wild blue lupine	<i>Lupinus perennis</i>	May-June	blue	H	1'-2'	FS, PS
Whorled yellow-loosestrife	<i>Lysimachia quadrifolia</i>	June-Aug	yellow	L	Up to 2'	FS, PS
Allegheny monkeyflower	<i>Mimulus ringens</i>	June-Sept	pale purple, white	L	2'-4'	FS, PS
Wild bergamot	<i>Monarda fistulosa</i>	June-Sept	lavender	VH	Up to 5'	FS, PS
Oldfield-toadflax	<i>Nuttallanthus canadensis</i>	June-Aug	light blue, blue-violet	L	Up to 2'	Full Sun

Common Name	Scientific Name	Bloom Time	Bloom Color	Pollinator Ranking*	Height	Light Needs
Evening primrose	<i>Oenothera biennis</i>	June-Aug	yellow	L	3'-6'	Full Sun
Hairy evening-primrose	<i>Oenothera villosa</i>		yellow	L	4'	Full Sun
Virginia-creeper	<i>Parthenocissus quinquefolia</i>	Spring	green	L	Up to 1'	FS, PS
Tall white beardtongue	<i>Penstemon digitalis</i>	May-July	white	L	Up to 4'	FS, PS
Ditch stonecrop	<i>Penthorum sedoides</i>	July-Sept	yellow	L	Up to 2'	FS, PS
Coastal jointed knotweed	<i>Polygonum articulatum</i>	Aug-Oct	white, pink	L	Up to 1'	
Sweet everlasting	<i>Pseudognaphalium obtusifolium</i>	Sept-Oct	white	L	Up to 2 1/2'	FS, PS
Broad-leaved mountain-mint	<i>Pycnanthemum muticum</i>	July-Sept	white	VH	Up to 3'	FS, PS
Narrowleaf mountainmint	<i>Pycnanthemum tenuifolium</i>	July-Sept	white	VH	Up to 2 1/2'	FS, PS
Virginia mountain-mint	<i>Pycnanthemum virginianum</i>	July-Sept	white	L	1'-3'	FS, PS
Black-eyed Susan	<i>Rudbeckia hirta</i>	June-Oct	yellow	M-L	1'-3'	FS, PS
Green-headed coneflower	<i>Rudbeckia laciniata</i>	July-Oct	orange, yellow	L	7'-8'	FS, PS
Narrow-leaved blue-eyed-grass	<i>Sisyrinchium angustifolium</i>	May-June	blue, purple	L	Up to 2'	FS, PS
Strict blue-eyed grass	<i>Sisyrinchium montanum</i>	May-June	blue, purple	L	Up to 2'	Full Sun
Early goldenrod	<i>Solidago juncea</i>	June-July	yellow	L	Up to 3'	FS, PS
Gray goldenrod	<i>Solidago nemoralis</i>	Aug-Sept	yellow	H	Up to 3'	Full Sun
Downy goldenrod	<i>Solidago puberula</i>	Aug-Oct	orange, yellow	L	1'-3'	FS, PS
Wrinkleleaf goldenrod	<i>Solidago rugosa ssp rugosa</i>	Aug-Oct	yellow	L	1'-3 1/2'	FS, PS
Seaside goldenrod	<i>Solidago sempervirens</i>	Aug-Oct	yellow	L	Up to 4'	Full Sun
White meadowsweet	<i>Spiraea alba var. latifolia</i>	June-Sept	white	H	Up to 6 1/2'	FS, PS
Steeplebush	<i>Spiraea tomentosa</i>	July-Sept	pinkish-purple	H	Up to 3'	Full Sun
Heart-leaved American-aster	<i>Symphyotrichum cordifolium</i>	Aug-Sept	bluish-purple	H	2'-3'	Full Sun
Heath American-aster	<i>Symphyotrichum ericoides</i>	Aug-Oct	white	H	Up to 4'	Full Sun
Lance-leaved American-aster	<i>Symphyotrichum lanceolatum</i>	Sept-Oct	white	H	Up to 5'	Full Sun
New York aster	<i>Symphyotrichum novi-belgii</i>	July-Oct	violet, blue	H	Up to 4 1/2'	Full Sun
Heath aster	<i>Symphyotrichum pilosum</i>	After fall frost	white, pale purple	H	2'-5'	FS, PS

Common Name	Scientific Name	Bloom Time	Bloom Color	Pollinator Ranking*	Height	Light Needs
Purple-stemmed American-aster	<i>Symphyotrichum puniceum</i>	Aug-Nov	blue, deep violet	H	Up to 8'	Full Sun
New England aster	<i>Symphyotrichum novae-angliae</i>	Late summer	purple	H	2'-6'	FS, PS
Early meadow-rue	<i>Thalictrum dioicum</i>	April-May	yellowish-green	H	Up to 2'	PS, S
Tall meadow-rue	<i>Thalictrum pubescens</i>	June-July	white	H	Up to 6'	
Smooth spiderwort	<i>Tradescantia ohiensis</i>	May-July	blue, purple	H	Up to 3'	FS, PS
Forked bluecurls	<i>Trichostema dichotomum</i>	Late summer-fall	purple	H		PS, S
Blue vervain	<i>Verbena hastata</i>	June-Oct	blue, violet	M	2'-5'	FS, PS
White vervain	<i>Verbena urticifolia</i>	June-Oct	white	M	1'-5'	FS, PS
New York ironweed	<i>Vernonia noveboracensis</i>	July-Sept	purple	H	3'-7'	FS, PS
Culver's root	<i>Veronicastrum virginicum</i>	June-Aug	white, pink	H	2'-6'	FS, PS
Golden Alexanders	<i>Zizia aurea</i>	May-June	yellow	H	Up to 3'	FS, PS