Planting Wildflower Meadows for Pollinator Habitat

Cathy Neal, University of New Hampshire

Tuesday, September 18, 2018. 11:00 am – 12:00 pm

USDA United States Department of Agriculture National Institute of Food and Agriculture

Webinar Details

- Welcome
- A recording of this webinar will be available within a week at

http://www.neipmc.org/go/ipmtoolbox

We Welcome Your Questions

- Please submit a question **at any time** using the Q&A feature to your right at any time

- If you'd like to ask a question anonymously, please indicate that at the beginning of your query.

Some Questions for You

Planting Wildflower Meadows for Pollinator Habitat

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Why? What? Where? When? How?

What and Why?

Think beyond honey bees…meet the natives!

4,000+ native bee species in North America
Over 250 species in northern New England

Native bees are effective pollinators
Most are generalists, some specialists
May have different preferences than (non-native) honeybees
Are not aggressive; low risk for stings

Background http://u.osu.edu/thebuzz/

What do Bees Need?

- Food (pollen & nectar)
- Nesting Sites
- Safe habitat

Ground nesters

- Bare ground
- Abandoned nests

Cavity nesters

- Pithy or hollow stems – sumac, raspberries, milkweed
- Dead wood – holes created by borers, birds, etc.

Meadows provide the most buzz for the buck

- Floral resources
- Nesting sites
- Safe habitat

AND provide

- Bird/wildlife value
- Soil and water quality
- Energy conservation
- Connection to nature

Gardens or Meadows?

- If you want to design for aesthetics rather than let nature do the design
- If you want neat and tidy instead of wild and woolly
- Or have limited space
- Or want to use non-competitive species
- Or have favorite plant varieties
- Or want to use shrubs and annuals in the planting…
- Then plant a garden

Pollinator Gardens

- Design for diversity and seasonal bloom
- Plant in groups
- Avoid pesticides
- Tolerate some bare space, weeds, less mulch
- Let seedheads stand until late winter or early spring

https://pollinatorgardens.org

Annuals, Bulbs and Herbs

- Bulbs – may be first pollen sources bees can find in spring
- Annuals – sweet alyssum, cleome, sunflower, some zinnias, verbain
- Herbs– borage, basil, catmint, chives, lavender, oregano, rosemary (if allowed to bloom)
- Intersperse herbs with rows of veggies to attract pollinators

Ian A Kirk via Creative Commons

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Pinterest

Ornamental Oregano

Ball Horticulture

Be cautious with cultivars

Coreopsis lanceolata

‘Golden Sphere’

Wildflower Meadow Mixes

- Provide high quality pollen and nectar sources
- From diverse flowering species
- Available spring through fall
- In areas that are safe and accessible

Use primarily

- Native species
- Perennial species
- Wildflowers
- Warm season grasses

Species Selection

Wildflowers for New England Meadows

compiled by Cathy Neal, Landscape Horticulture Specialist, UNH, and Amy Papineau, Field Specialist, Merrimack County Extension

University of New Hampshire Cooperative Extension

Perennial Wildflowers[a]	Common Name	Flower Color	Height	Site		Best Use[b]			Distribution in NE[c]						NE Native[c]?	Wetland Status
				Sun/ Shade	Soil/Moisture	Garden Use	Meadow from Seed	Meadow from Plugs	CT	MA	ME	NH	RI	VT		
Agastache foeniculum	Lavender Hyssop	purple	3'	S PS	M-D	x	x		x			x	x		n	NC
Aquilegia canadensis	Red Columbine	red	3'	PS Sh	M-D	x		x	n	n	n	n	n	n	y	FACU
Asclepias incarnata	Swamp (Red) Milkweed	pink	5'	S PS	M-W	x	x	x	n	n	n	n	n	n	y	OBL
Asclepias syriaca	Common Milkweed	pink-purple	5'	S PS	M-D	x	x	x	n	n	n	n	n	n	y	UPL
Asclepias tuberosa	Butterfly milkweed	orange	2'	S	M-D	x		x	n	n	n	n	n	n	y	NC
Baptisia australis	Blue Wild Indigo	blue	3'	S PS	M	x			x	x		x	x	x	n	NC
Baptisia tinctoria	Yellow Wild Indigo	yellow	3'	S	M-D	x			n	n	n	n	n	n	y	NC
Coreopsis lanceolata	Lanceleaf Coreopsis	yellow	2'	S	M-D	x	x	x	x	x	x	x	x	x	n	FACU
Echinacea pallida	Pale Purple Coneflower	pink	4'	S	M-D	x	x	x	x	x	x				n	NC
Echinacea purpurea	Purple Coneflower	purple	4'	S PS	M-D	x	x	x	x	x		x		x	n	NC
Eupatorium perfoliatum	Boneset	white	4'	S PS	M-W	x			n	n	n	n	n	n	y	FACW
Eutrochium purpureum	Sweet Joe Pye Weed	pink	6'	S PS	M-W	x		x	n	n		n	n	n	y	FAC
Gentiana clausa	Closed Gentian	blue	2'	PS Sh	Mo-W	x		x	n	n	n	n	n	n	y	FACW
Helenium autumnale	Dogtooth daisy	yellow	5'	S PS	Mo-W	x			n	n	n		n	n	y	FACW
Heliopsis helianthoides	Oxeye Sunflower	yellow	6'	S	D-M-Mo	x	x	x	x	x	x	x		x	n	FACU
Liatris spicata	Dense Blazing Star	purple	3'	S	M-Mo	x			x		x		x		n	FAC
Lobelia cardinalis	Cardinal Flower	red	4'	S PS	Mo-W	x		x	n	n	n	n	n	n	y	FACW
Lobelia siphilitica	Great blue lobelia	blue	4'	S PS	M-Mo	x		x	n	n	n	n	n	n	y	FACW
Lupinus perennis	Sundial Lupine	blue-purple	2'	S PS	D	x			n	n	n	n	n	n	y	NC
Monarda punctata	Spotted beebalm	lav-white	2'	S	D		x						x	x	n	
Monarda fistulosa	Wild Bergamot	lavendar	4'	S PS	D-M-Mo	x	x	x	n	n	n	n	n	n	y	FACU
Oligoneuron rigidum	Stiff Goldenrod	yellow	4'	S PS	M-D	x	x	x	n	n			n		y	NC
Penstemon digitalis	Foxglove Beardtongue	white	4'	S PS	M-Mo	x	x	x	n	n	n	n	n	n	y	FAC
Pycnanthemum virginianum	Virginia Mountain Mint	white	3'	S PS	M-Mo	x			n	n	n	n	n	n	y	FACW
Ratibida pinnata	Yellow Coneflower	yellow	5'	S	D-M-Mo	x	x	x	x	x				x	n	NC
Rudbeckia hirta	Black Eyed Susan	yellow	2'	S PS	D-M-Mo	x	x	x	x	x	x	x	x	x	n	FACU
Senna hebecarpa	American Senna	yellow	5'	S	M-Mo	x		x	n	n		n	n	n	y	FACW
Solidago juncea	Early Goldenrod	yellow	5'	S PS	D-M-Mo	x	x	x	n	n	n	n	n	n	y	NC
Solidago speciosa	Showy Goldenrod	yellow	5'	S PS	Mo	x	x	x	n	n	n	x	n	n	y	NC
Symphyotrichum laeve	Smooth Blue Aster	blue	4'	S	M-D	x	x	x	n	n	n	n	n	n	y	FACU
Symphyotrichum novae angliae	New England Aster	purple	5'	S PS	M-Mo	x	x	x	n	n	n	n	n	n	y	FACW
Tradescantia ohiensis	Ohio Spiderwort	blue	3'	S PS	M-D	x			n	n	x	x	x	x	y	FACU
Verbena hastata	Blue Vervain	blue	5'	S	M-Mo-W	x	x		n	n	n	n	n	n	y	FACW
Vernonia noveboriensis	New York Ironweed	purple	6'	S	M-Mo-W	x			n	n		x	n		y	FACW
Veronicastrum virginicum	Culver's Root	white	6'	S PS	M-Mo	x			n	n	x		n		y	FAC
Zizia aurea	Golden Alexanders	yellow	3'	S PS	M-Mo-W	x	x		n	n	n	n	n	n	y	FAC

Wildflower Phenology Chart

Species	Common Name	Average Bloom Period (2013-15) in Durham, NH
		May · June · July · August · Sept. · October
Zizia aurea	Golden Alexanders	
Aquilegia canadensis	Wild Columbine	
Lupinus perennis	Wild Lupine	
Tradescantia ohiensis	Ohio Spiderwort	
Baptisia australis	Blue Wild Indigo	
Penstemon digitalis	Foxglove Beardtongue	
Coreopsis lanceolata	Lanceleaf Coreopsis	
Echinacea pallida	Pale Purple Coneflower	
Rudbeckia hirta	Black Eyed Susan	
Agastache foeniculum	Lavender Hyssop	
Asclepias syriaca	Common Milkweed	
Heliopsis helianthoides	Ox Eye Sunflower	
Asclepias tuberosa	Butterfly Milkweed	
Baptisia tinctoria	Yellow Wild Indigo	
Dalea purpurea	Purple Prairie Clover	
Echinacea purpurea	Purple Coneflower	
Parthenium integrifolium	Wild Quinine	
Senna hebecarpa	American Senna	
Pycnanthemum virginianum	Virginia Mountain Mint	
Ratibida pinnata	Yellow Coneflower	
Rudbeckia fulgida	Orange Coneflower	
Allium cernuum	Nodding Wild Onion	
Liatris spicata	Dense Blazing Star	
Verbena hastata	Blue Vervain	
Lobelia cardinalis	Cardinal Flower	
Monarda fistulosa	Wild Bergamot	
Eryngium yuccifolium	Rattlesnake Master	
Liatris pycnostachya	Prarie Blazingstar	
Eutrochium purpureum	Sweet Joe-Pye	
Rudbeckia subtomentosa	Sweet Black Eyed Susan	
Rudbeckia triloba	Brown Eyed Susan	
Vernonia altissima	Ironweed	
Solidago juncea	Early Goldenrod	
Solidago graminifolia	Flat-topped Goldenrod	
Oligoneuron rigidum	Stiff Goldenrod	
Gentiana clausa	Closed Gentian	
Solidago speciosa	Showy Goldenrod	
Symphotrichum laeve	Smooth Aster	
Symphotrichum novae-angliae	New England Aster	

Seed Mixes

Recommended seed list for trial on medium to dry sites in northern New England

UNH Custom Mixes for Medium-Dry Soils	Wildflowers (50% of mix)	Percent by weight	
		NH-PN MIX	BUDGET MIX
Aguilegia canadensis	Red Columbine	2%	3%
Asclepias syriaca	Common Milkweed	2.25%	3%
Asclepias tuberosa	Butterfly Milkweed	6%	0%
Chamaecrista fasciculata	Partridge Pea	7%	8%
Coreopsis lanceolata	Lanceleaf Coreopsis	2%	3%
Echinacea purpurea	Purple Coneflower	6%	7%
Echinacea pallida	Pale Purple Coneflower	8%	11%
Eutrochium purpureum	Sweet Joe Pye	1%	1.5%
Heliopsis helianthoides	Oxeye Sunflower	2%	2%
Lupinus perennis	Sundial Lupine	7%	0%
Monarda fistulosa	Wild Bergamot	0.25%	0.50%
Monarda punctata	Dotted Horsemint	0.25%	0.50%
Oligoneuron rigidum	Stiff Goldenrod	0.25%	0.50%
Penstemon digitalis	Foxglove Beardtongue	1%	1.5%
Ratibida pinnata	Yellow coneflower	2%	3.5%
Rudbeckia hirta	Black Eyed Susan	1%	2%
Solidago speciosa	Showy Goldenrod	0.5%	1%
Symphyotrichum novae-angliae	New England Aster	1%	1%
Symphyotrichum laeve	Smooth Blue Aster	1%	2%
	Grasses (50% of mix)		
Elymus canadensis	Canada Wild rye	10%	10%
Shizachyrium scoparium	Little Bluestem	30%	30%
Sorghastrum nutans	Indian Grass	10%	10%

Seed Sources

The NH Meadow mix cost runs about $50 per 1000 square feet

or $1500-3000 per acre

(for 10 or 20 lb/acre rate)

- Prairie Nursery has the specs and will formulate appropriate mixes depending on area and rate of seed to be used www.prairienursery.com

- Other companies that specialize in wildflowers and meadow mixes include
  - Ernst Seed www.ernstseed.com
  - Prairie Moon Nursery www.prairiemoon.com
  - Vermont Wildflower Farm www.vermontwildflowerfarm.com

Seed Sources

Supplies of NE ecotypes are extremely limited. If this is important to you, check with

Grow Native Massachusetts
www.grownativemass.org/resources/nurseries

New England Wetland Plants
www.newp.com/catalog/seed-mixes/

New England Wildflower Society
www.newenglandwild.org/grow/store/buy-native-plants

Wild Seed Project http://wildseedproject.net/

Where, When and How?

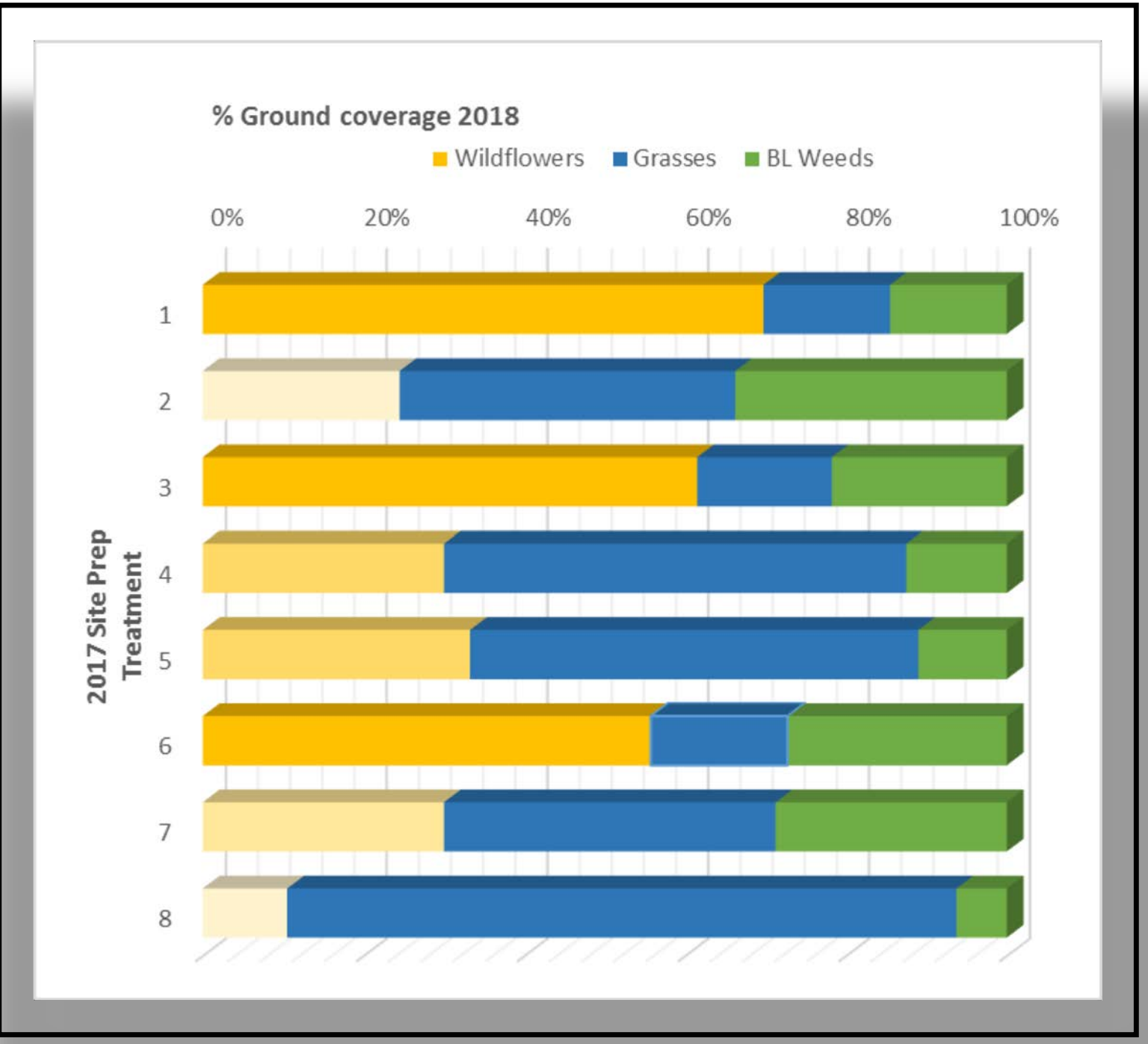
Site Selection

- Away from pesticide drift
- Open space with full sun
- Poor soil is ok
- At least 400-500 square feet
- Consider the viewscape


Burpee's Bee Garden
Butterflies Welcome!
Feed a Bee
Pollinator
Wildflower
Mix

Site Preparation

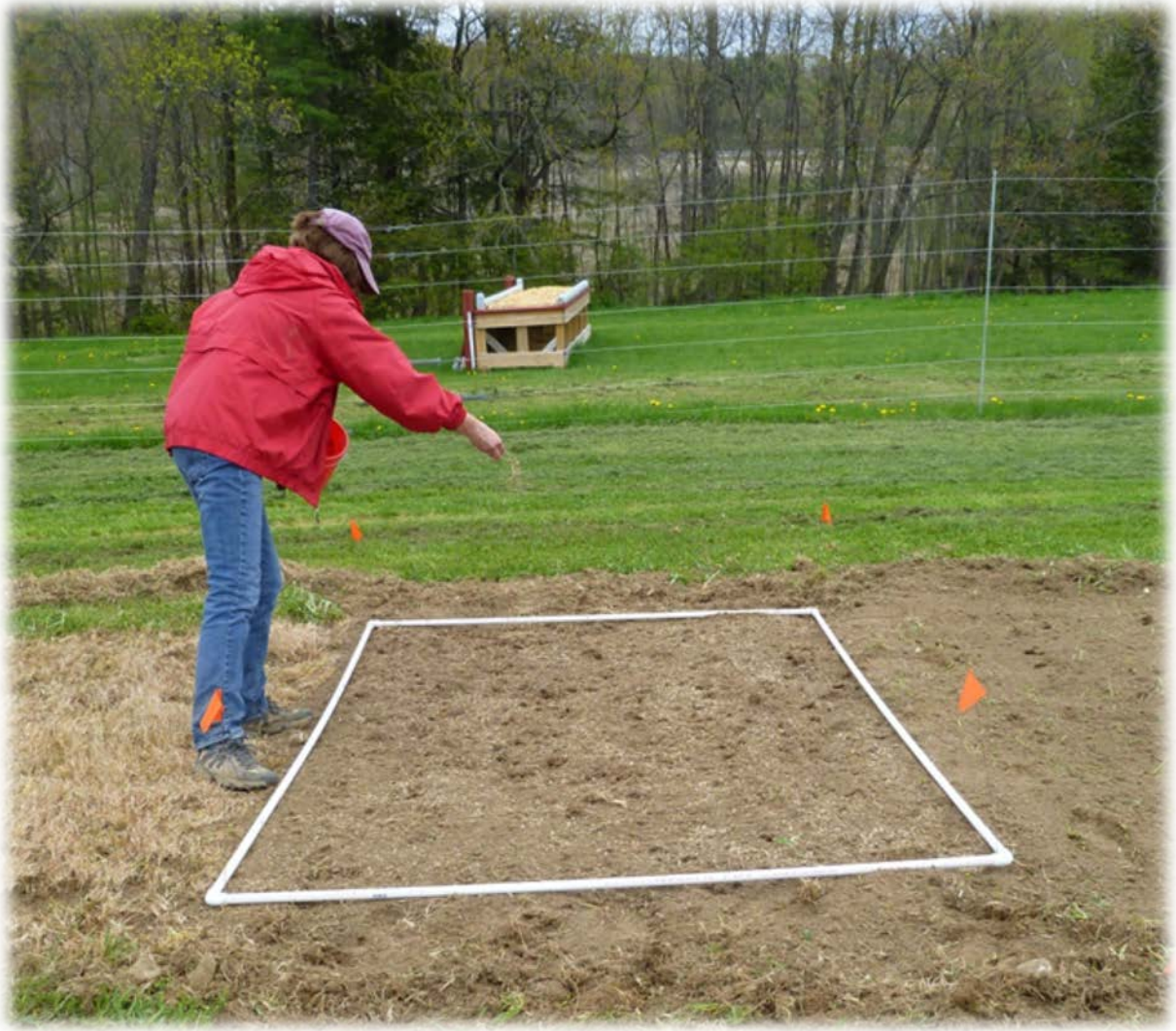
- ✓ **Spend** an entire season
- ✓ **Common Strategies**
  - Herbicides
  - Tillage
  - Smothering or light exclusion
  - Solarization
  - Cover crop



Key

1	Tilled	clear plastic
2	Tilled	black plastic
3	Tilled	herbicide spot sprayed
4	Tilled	repeat tillage
5	Not tilled	clear plastic
6	Not tilled	black plastic
7	Not tilled	herbicide 3 apps.
8	Not tilled	repeat mowing

Plant in Spring or Fall



Seeding

- Mix seed with moist carrier
- Distribute evenly by hand or use seeder
- Roll for good seed-soil contact
- Mulch lightly
- Be patient

Seed vs Transplants

✓ **Advantages of plugs**
Faster establishment
More competitive with weeds
More species diversity
Some flower the first year

✓ **Disadvantages**
More work
Need water until rooted in
Expensive
Availability/minimum orders

Maintenance

Year 1

Mid-summer mowing (4-6”)

Year 1

Year 2

Year 3

9.17.15

6.24.16

08.16.16

6.29.17

07.20.18

08.02.17

Maintenance

Year 3+

Mow in late fall or early spring – every other year?

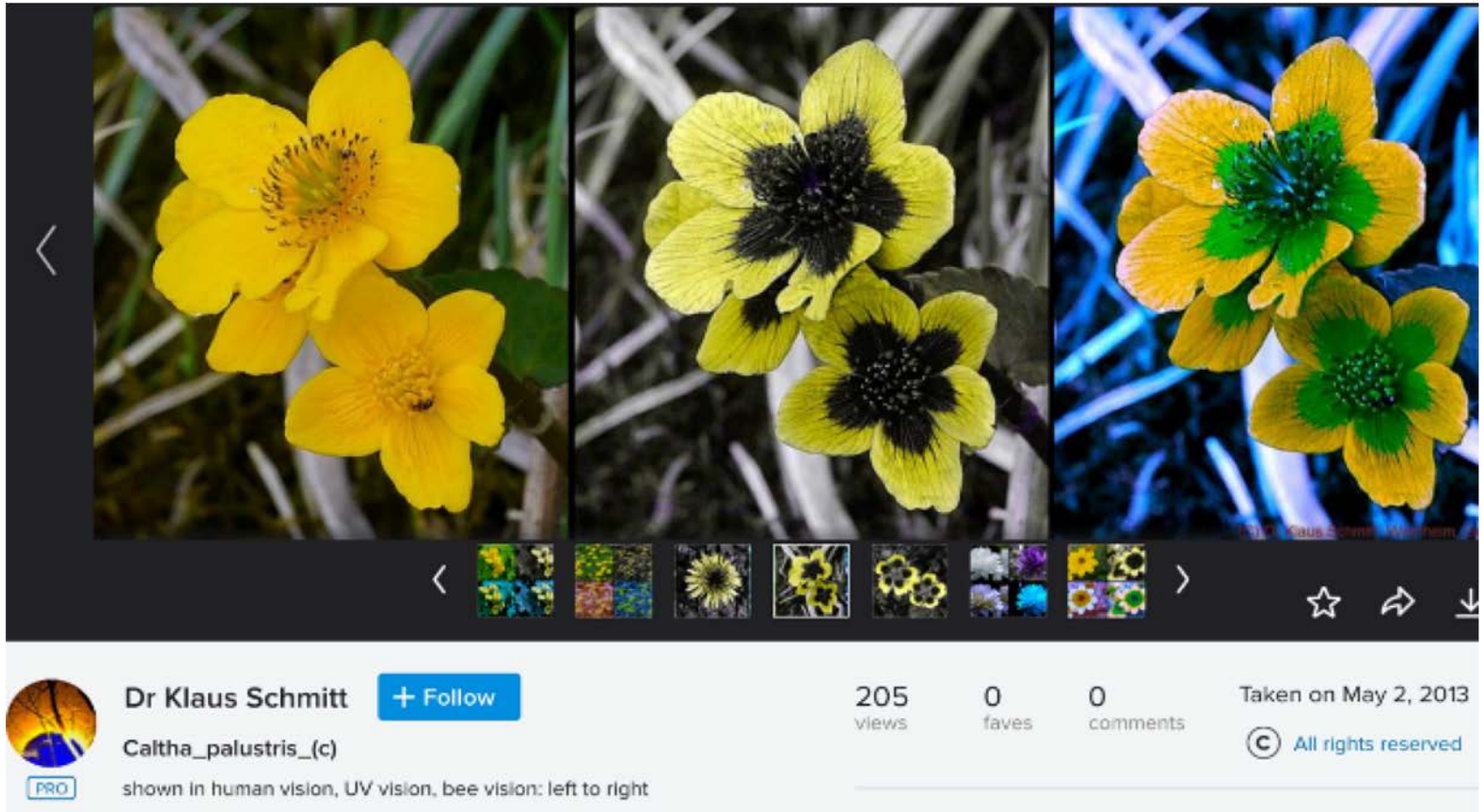
Leave the debris

Cut out invasive plants by hand


A Bee’s Perspective

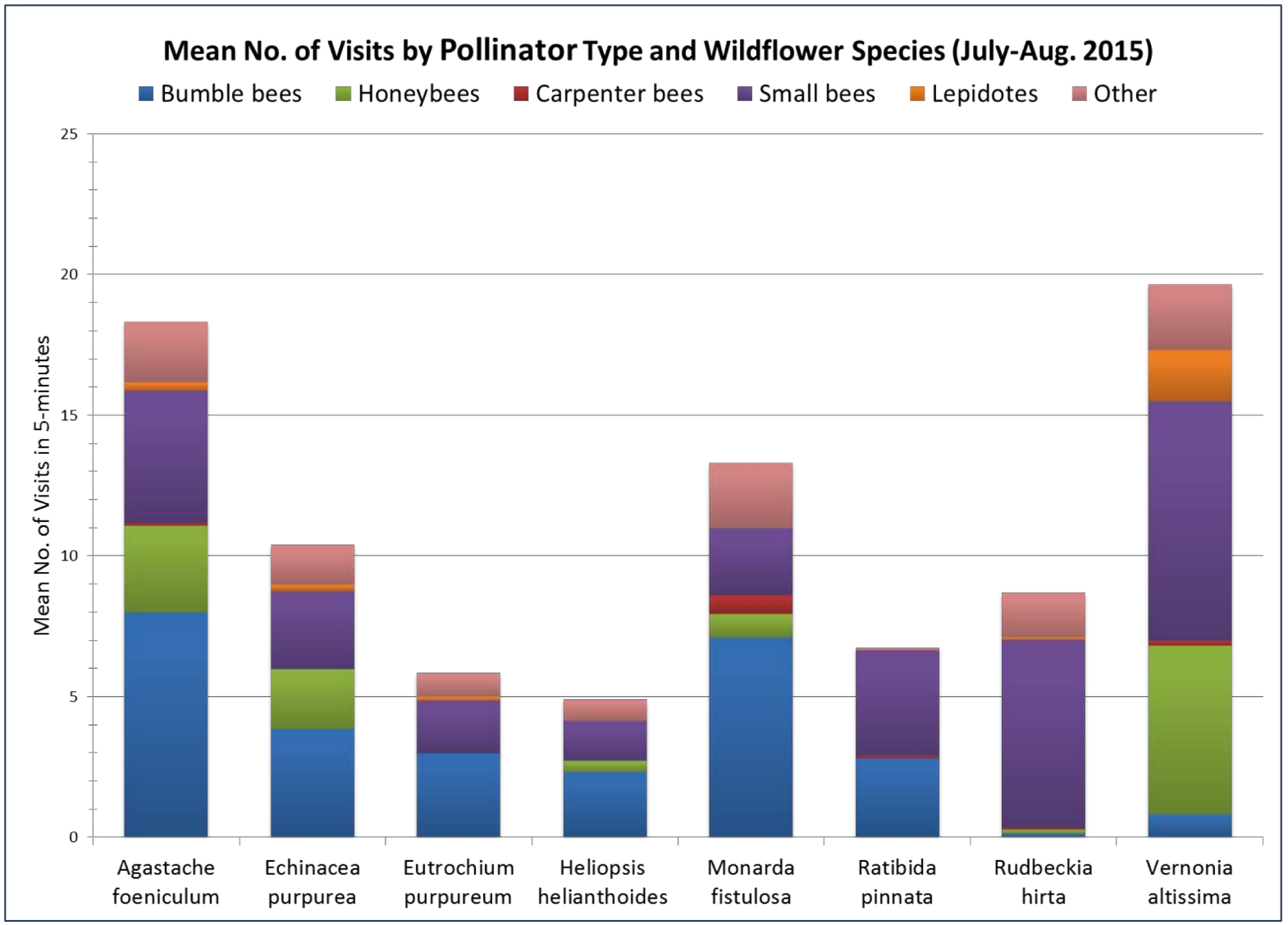
What do Bees Actually SEE?

- Bees can’t see red but see UV light
- Color spectrum shift
- Many flowers have patterns or bands



theatlantic.com *10.18.2017*
“Flowers Have Secret Blue Halos That Bumblebees Can See”

Monitoring Pollinator Preferences



https://extension.unh.edu/tags/wildflower-meadows

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Wildflower Meadows

FEATURED

Wildflower Mixes for Trial in New Hampshire

Pollinator Plants for Northern New England Gardens [fact sheet]

Wildflower Meadows - Plant Selection and Establishment

More Resources

- Xerces.org
- pollinatorgardens.org
- Greatsunflower.org

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  http://neipmc.org/go/APra

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- Today's Webinar will be available to view **on demand** in a few business days.

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Upcoming Toolbox Webinars

- What you need to know about the Spotted Lanternfly - a new invasive insect

Wednesday, September 19, 2018. 11:00 am – 12:00 pm

- Cornell's Climate Smart Farming Program: Decision Tools & Practices

Thursday, September 20, 2018. 2:00 pm – 3:00 pm

- Pest Management in No-till Corn Silage Systems – with an introduction to NE SARE funding programs & resources

Tuesday, September 25, 2018. 2:00 pm – 3:00 pm

2019 RFA now available

- http://neipmc.org/go/PaGs

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USGS Bee Inventory and Monitoring Lab, Beltsville, Maryland, USA [Public domain]

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