

Michigan Native Plants to Provide Resources for Beneficial Insects



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Historical Michigan Landscapes

Provide

- Biodiversity
- Pest suppression
- Pollination



Prairie



Oak savanna

Michigan Agricultural Landscapes

Provide

- Biodiversity
- Pest suppression
- Pollination



Annual crops



Orchards

Project Goals

Use native plants to provide beneficial insects with nectar and pollen.

Decrease pesticide use and increase pollination.



What is a beneficial insect?

Natural enemies

Predators: both young and adults feed directly on other insects.

Parasitoids: develop on or in one host insect, emerge as adult, eventually killing host.

Pollinators

Bees, other insects: pollinate flowers while collecting nectar and pollen; increase crop yields.



Beneficial Insect Requirements

Alternate host/prey

Shelter

Moderated microclimates

In-season refuges

Overwintering sites

Nesting sites

Food

Nectar

Pollen



Exotic Plants

Benefits

- Reliable seed or plant sources
- Large agronomic database
- Prolific/sustained floral display
- Previous success in other locales



Disadvantages

- Do not enhance native biodiversity
- Potentially invasive



Native Plants

Benefits

- Enhance native biodiversity
- Re-creation of imperiled habitats
- Less likely to be invasive
- Adapted to local climate
- Habitat permanency

Disadvantages

- Greater initial cost
- Longer establishment time



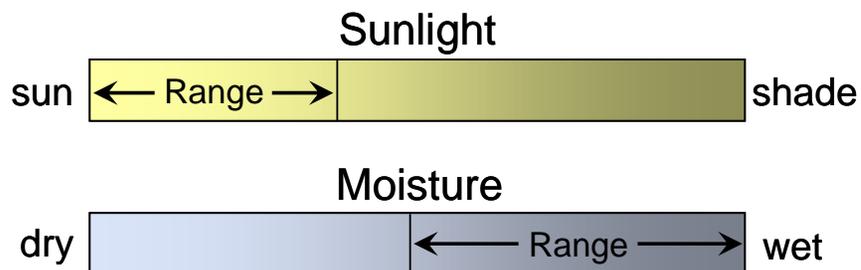
Bloom Timing of Native Plants Attractive to Beneficial Insects

Native plant	Natural enemies	Bees	Bloom Period						
			May	Jun	Jul	Aug	Sep	Oct	
wild strawberry	★★	★	█						
golden Alexanders	★★★	★★	█	█					
Canada anemone	★★★	★		█	█				
penstemon	★★	★★		█	█				
angelica	★★★	★		█	█				
cow parsnip	★★★	★		█	█				
sand coreopsis	★★★	★		█	█	█	█		
shrubby cinquefoil	★★★	★		█	█	█	█	█	
Indian hemp	★★★	★		█	█	█	█		
late figwort	★★	★★			█	█	█	█	
swamp milkweed	★★	★★			█	█	█		
Culver's root	★★	★★★			█	█	█		
yellow coneflower	★★★	★★			█	█	█		
nodding wild onion	★	★★				█	█	█	
meadowsweet	★★★	★★				█	█	█	
yellow giant hyssop	★★	★★★				█	█	█	
horsemint	★★★	★★				█	█	█	
Missouri ironweed	★★	★★				█	█	█	
cup plant	★★★	★★★				█	█	█	
pale Indian plantain	★★	★★				█	█	█	
boneset	★★★	★★				█	█	█	
blue lobelia	★★★	★★★				█	█	█	
pale-leaved sunflower	★★★	★★				█	█	█	
Riddell's goldenrod	★★★	★★★						█	█
New England aster	★★★	★★						█	█
smooth aster	★★	★★						█	█

KEY
 ★ good
 ★★ better
 ★★★ best

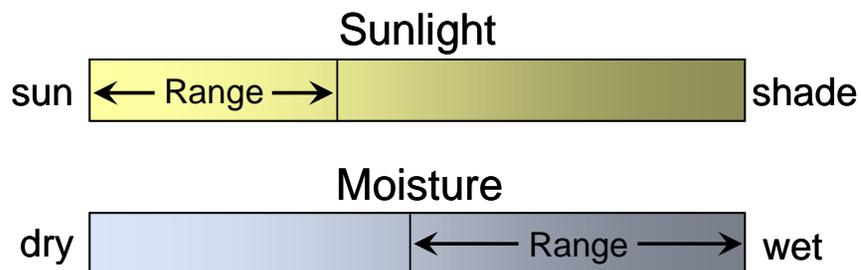
Wild strawberry (*Fragaria virginiana*)

- Natural enemies: ★★☆☆
chalcid wasps
- Bees: ★☆☆
sweat bees and small carpenter bees
- Bloom: mid-late May



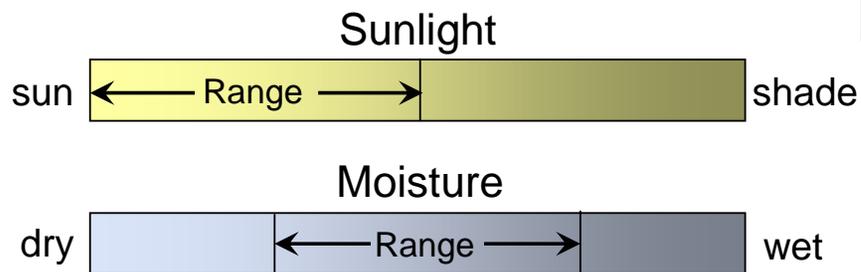
Golden alexanders (*Zizia aurea*)

- Natural enemies: ★★ ★
chalcid wasps, dance flies
- Bees: ★★ ★
yellow-faced bees, digger bees, sweat bees, and cuckoo bees
- Bloom: late May - mid June



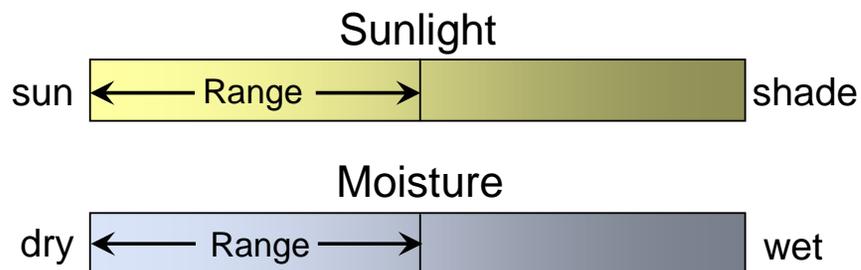
Canada anemone (*Anemone canadensis*)

- Natural enemies: ★★ ★
minute pirate bug, dance flies,
chalcid wasps
- Bees: ★ ☆ ☆
sweat bees
- Bloom: throughout June



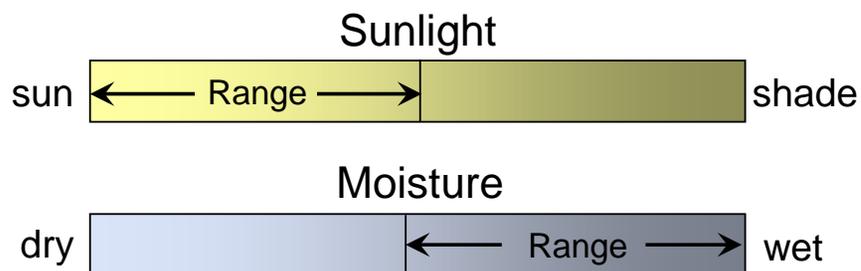
Penstemon (*Penstemon hirsutus*)

- Natural enemies: ★★☆☆
chalcid wasps and minute pirate bug
- Bees: ★★☆☆
large carpenter bees, small carpenter bees, and bumble bees
- Bloom: late May - mid June



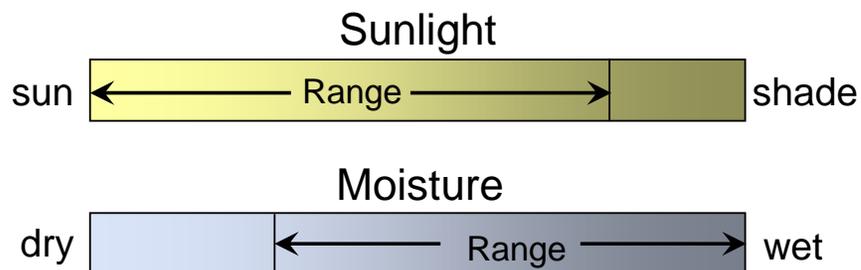
Angelica (*Angelica atropurpurea*)

- Natural enemies: ★★☆☆
chalcid wasps, dance flies, minute pirate bug
- Bees: ★☆☆☆
sweat bees
- Bloom: early June



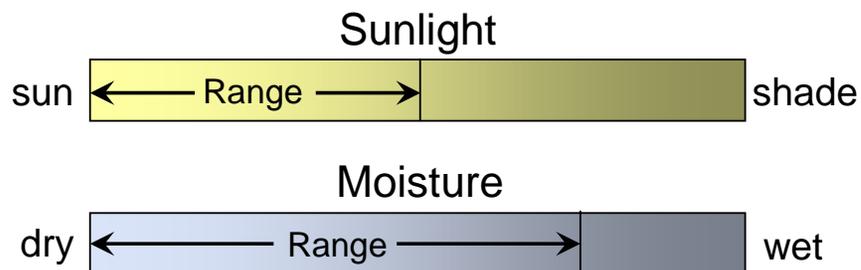
Common cowparsnip (*Heracleum maximum*)

- Natural enemies: ★★☆☆
chalcid wasps and minute pirate bug
- Bees: ★☆☆☆
yellow-faced bees and sweat bees
- Bloom: mid June



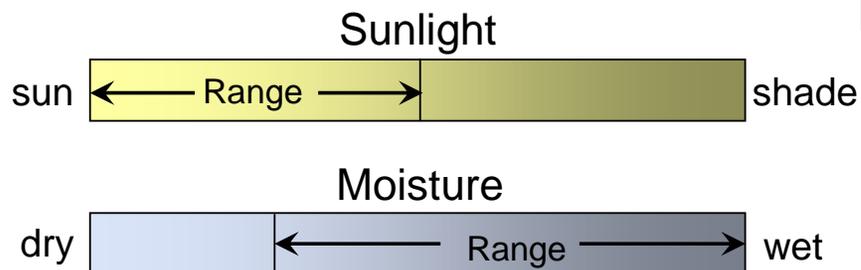
Sand coreopsis (*Coreopsis lanceolata*)

- Natural enemies: ★★ ★
minute pirate bug and predatory
thrips
- Bees: ★ ☆ ☆
sweat bees
- Bloom: June - August



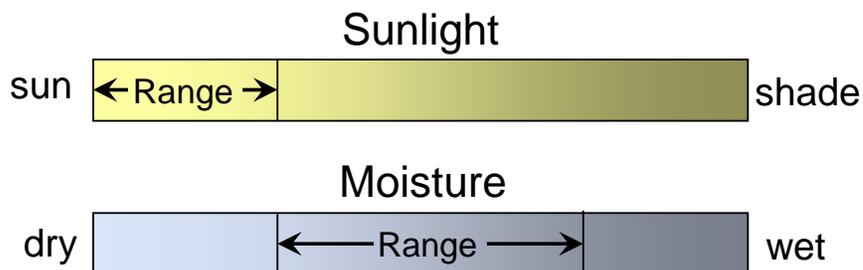
Shrubby cinquefoil (*Potentilla fruticosa*)

- Natural enemies: ★★ ★
minute pirate bug, chalcid wasps,
spiders, dance flies
- Bees: ★ ☆ ☆
yellow-faced bees and sweat bees
- Bloom: July - September



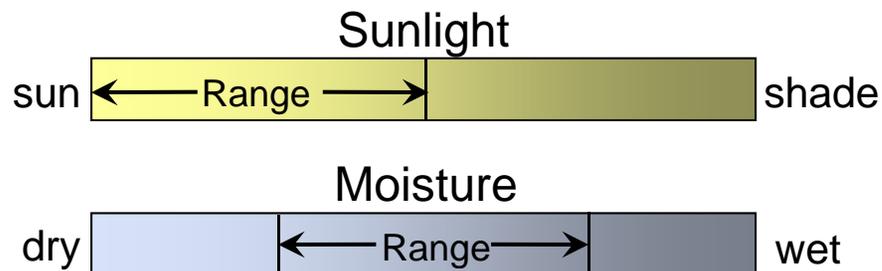
Indian hemp (*Apocynum cannabinum*)

- Natural enemies: ★★ ★
dance flies, chalcid wasps, crab spiders, lady beetles
- Bees: ★ ☆ ☆
yellow-faced bees and sweat bees
- Bloom: late June - July



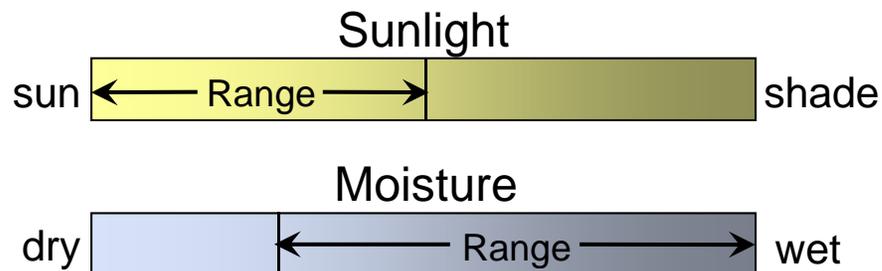
Late figwort (*Scrophularia marilandica*)

- Natural enemies: ★★☆☆
dance flies
- Bees: ★★☆☆
yellow-faced bees, sweat bees, and
bumble bees
- Bloom: late July – early
August



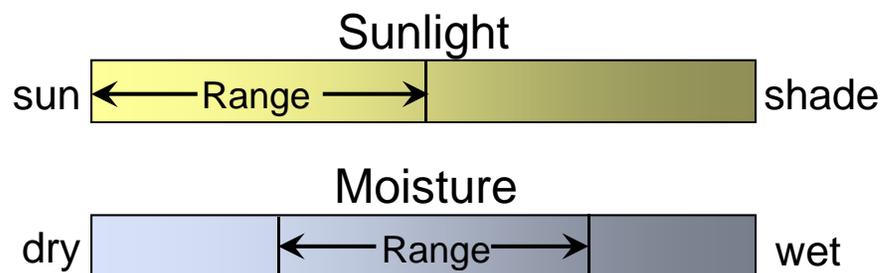
Swamp milkweed (*Asclepias incarnata*)

- Natural enemies: ★★☆☆
chalcid wasps, dance flies
- Bees: ★★☆☆
yellow-faced bees, sweat bees, and large carpenter bees; also highly attractive to honey bees
- Bloom: mid July – mid August



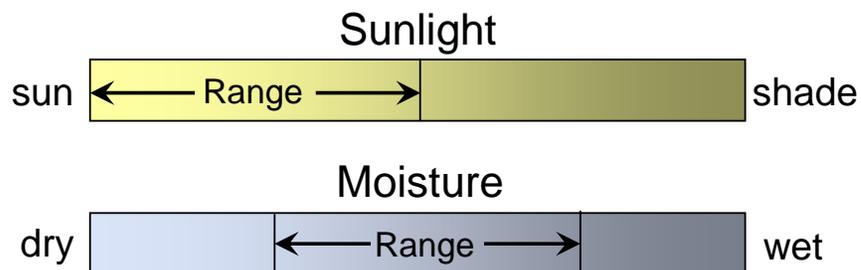
Culver's-Root (*Veronicastrum virginicum*)

- Natural enemies: ★★☆☆
minute pirate bug
- Bees: ★★★☆☆
sweat bees, small carpenter bees, and bumble bees; also highly attractive to honey bees
- Bloom: late July – early August



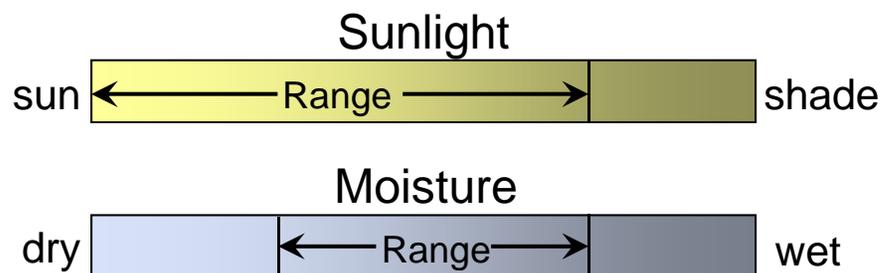
Yellow coneflower (*Ratibida pinnata*)

- Natural enemies: ★★☆☆
chalcid wasps, minute pirate bug, spiders
- Bees: ★★☆☆
sweat bees, digger bees, cuckoo bees, small and large carpenter bees, and bumble bees
- Bloom: late July - mid August



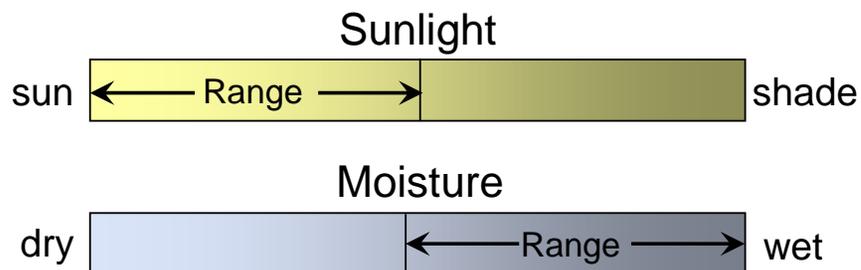
Nodding wild onion (*Allium cernuum*)

- Natural enemies: ★☆☆
minute pirate bug, crab spiders
- Bees: ★★☆☆
sweat bees and bumble bees; also highly attractive to honey bees
- Bloom: throughout August



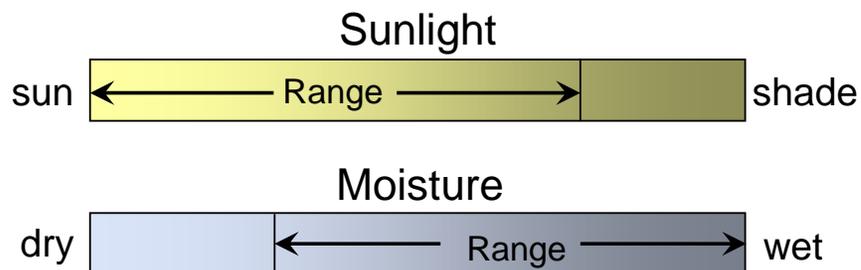
Meadowsweet (*Spiraea alba*)

- Natural enemies: ★★☆☆
minute pirate bug and chalcid wasps
- Bees: ★★☆☆
yellow-faced bees, digger bees, sweat bees, and bumble bees
- Bloom: throughout August



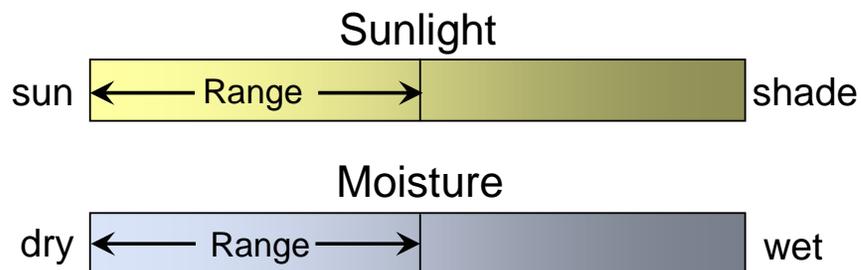
Yellow giant hyssop (*Agastache nepetoides*)

- Natural enemies: ★★☆☆
minute pirate bug, predatory plant bug, spiders, dance flies, chalcid wasps
- Bees: ★★★
yellow-faced bees, sweat bees, and bumble bees
- Bloom: throughout August



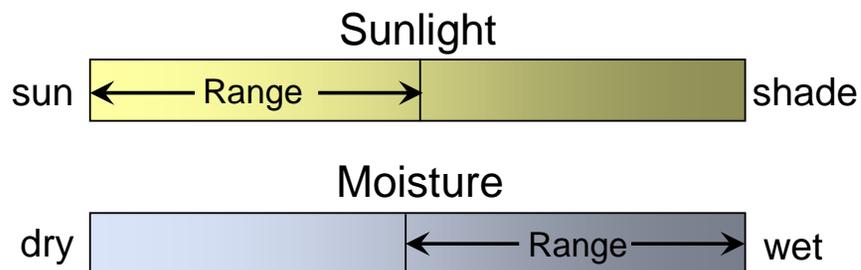
Horsemint (*Monarda punctata*)

- Natural enemies: ★★☆☆
soldier beetle, predatory plant bug
- Bees: ★★☆☆
large carpenter bees, digger bees, and bumble bees
- Bloom: throughout August



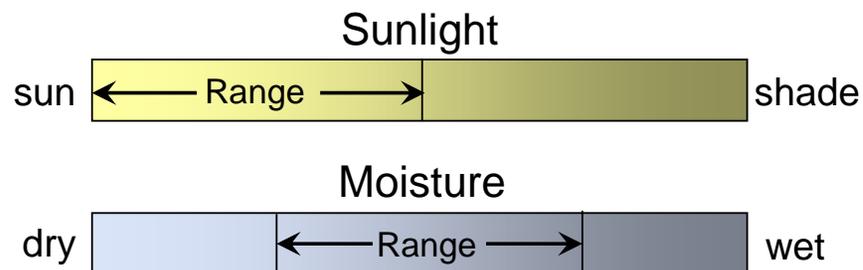
Ironweed (*Vernonia missurica*)

- Natural enemies: ★★☆☆
chalcid wasps
- Bees: ★★☆☆
sweat bees, leafcutter bees, cuckoo bees, small carpenter bees, and bumble bees
- Bloom: throughout August



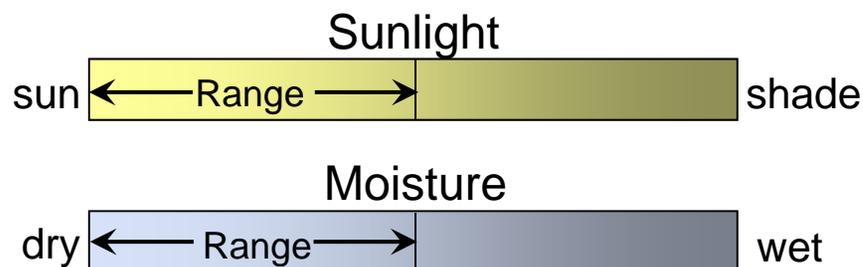
Cup plant (*Silphium perfoliatum*)

- Natural enemies: ★★ ★
chalcid wasps, minute pirate bug,
soldier beetle, predatory plant bug
- Bees: ★★ ★
sweat bees, leafcutter bees, small
carpenter bees, digger bees, and bumble
bees
- Bloom: throughout August



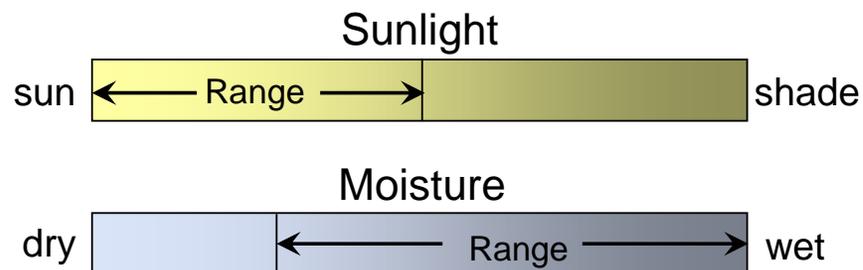
Pale Indian plantain (*Cacalia atriplicifolia*)

- Natural enemies: ★★☆☆
minute pirate bug, chalcid wasps,
soldier beetle
- Bees: ★★☆☆
sweat bees, digger bees, and bumble
bees
- Bloom: throughout August



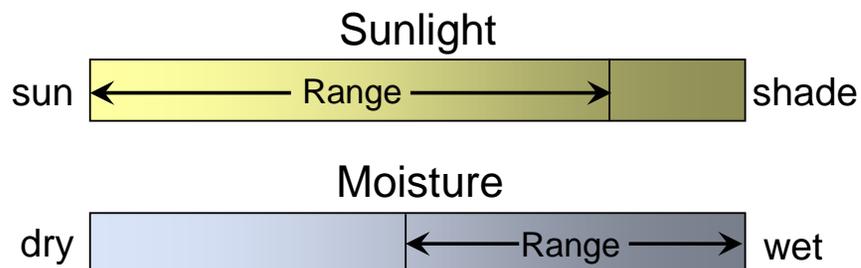
Common boneset (*Eupatorium perfoliatum*)

- Natural enemies: ★★ ★
minute pirate bug, predatory plant bug, chalcid wasps, soldier beetle, spiders
- Bees: ★★ ★
sweat bees, small carpenter bees, digger bees, and bumble bees
- Bloom: August – early September



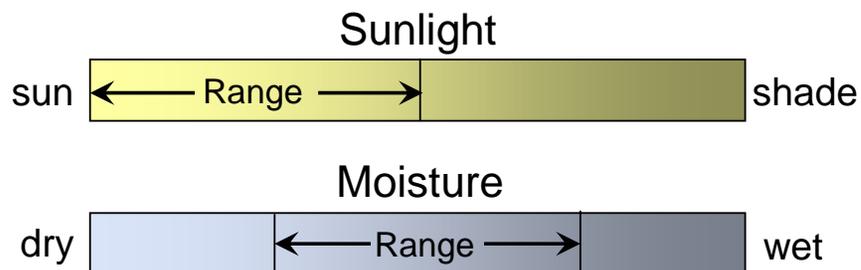
Blue lobelia (*Lobelia siphilitica*)

- Natural enemies: ★★☆☆
minute pirate bug, chalcid wasps,
soldier beetle, lady beetles,
predatory plant bug
- Bees: ★★☆☆
yellow-faced bees, sweat bees,
small carpenter bees, and bumble
bees
- Bloom: August – early
September



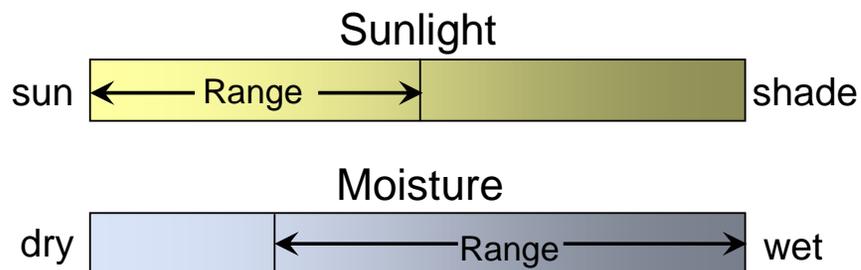
Pale-leaved sunflower (*Helianthus strumosus*)

- Natural enemies: ★★ ★
chalcid wasps, soldier beetle,
minute pirate bug, crab spiders
- Bees: ★★ ★
sweat bees, digger bees, and
bumble bees
- Bloom: August – early
September



Riddell's goldenrod (*Solidago riddellii*)

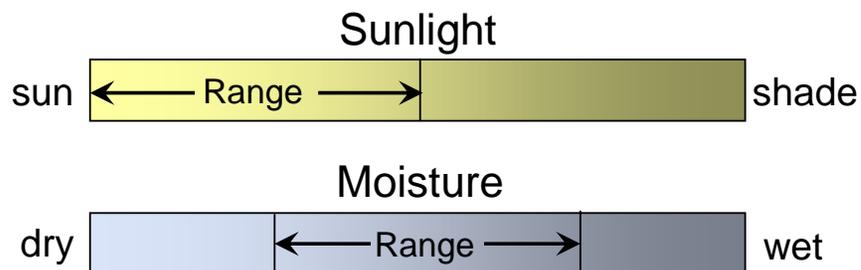
- Natural enemies: ★★ ★
minute pirate bug, chalcid wasps,
paper wasps, lady beetles
- Bees: ★★ ★
yellow-faced bees, Andrenid bees, sweat
bees, small and large carpenter bees,
digger bees, and bumble bees; also
highly attractive to honey bees
- Bloom: throughout September



NOTE: Showy goldenrod (*S. speciosa*) was also tested, and had a similar number of bees and fewer natural enemies.

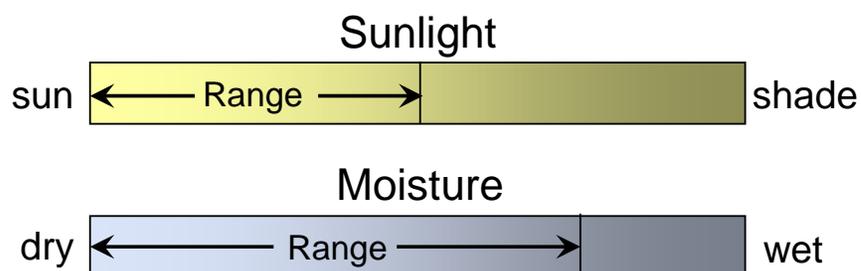
New England aster (*Aster novae-angliae*)

- Natural enemies: ★★☆☆
chalcid wasps and dance flies
- Bees: ★★☆☆
digger bees, sweat bees, small carpenter bees, and bumble bees
- Bloom: throughout September



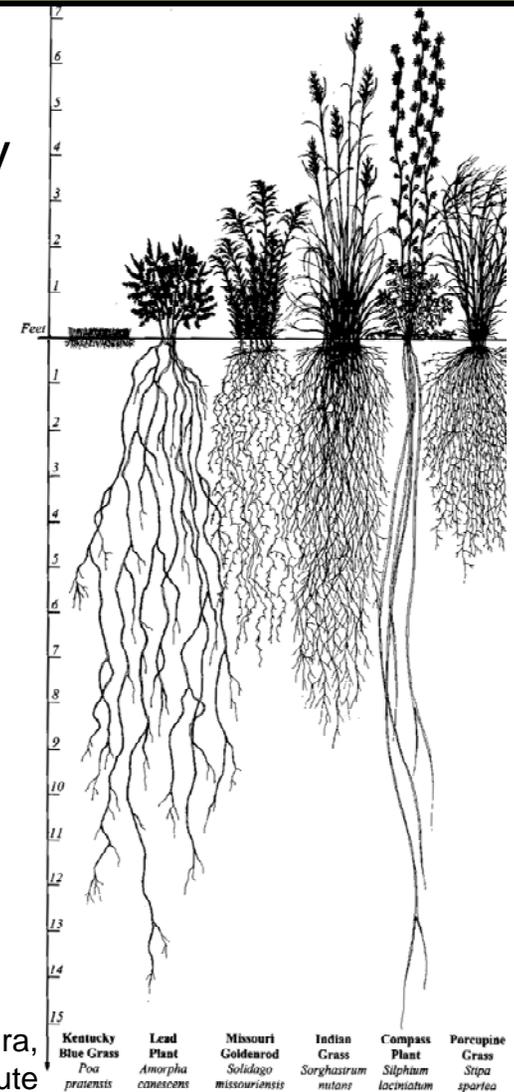
Smooth aster (*Aster laevis*)

- Natural enemies: ★★☆☆
minute pirate bug, spiders, chalcid wasps
- Bees: ★★☆☆
sweat bees and bumble bees
- Bloom: mid September – early October

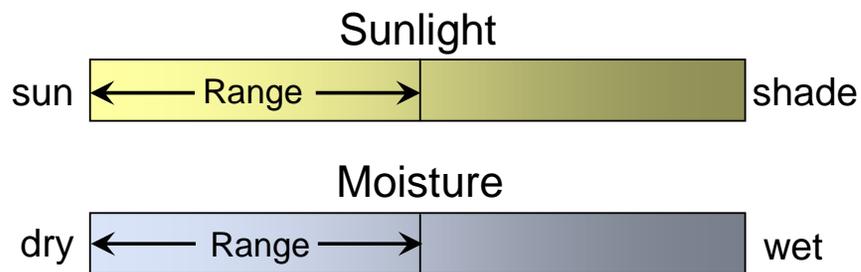


Native grasses

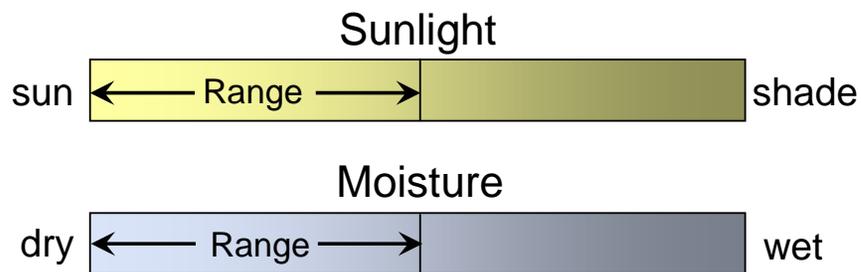
- Grow in native prairie habitat, where they
 1. Provide structural support for wildflowers
 2. Fill in gaps that wildflowers can't early in establishment, decreasing weed pressure
 3. Have root systems of different depths that complement wildflowers



Canada wild rye (*Elymus canadensis*)



Little bluestem (*Andropogon scoparius*)



Switch grass (*Panicum virgatum*)



Acknowledgements

Bill Schneider and WILDTYPE Design, Native Plants & Seed Ltd:
native plants and expertise

For more information: <http://ipm.msu.edu/plants/home.htm>



Funding:



For photos of native plants: contact Anna Fiedler