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

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<th>Natural enemies</th>
<th>Bees</th>
<th>Bloom Period</th>
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<td>Jun, Jul, Aug</td>
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<td>Indian hemp</td>
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<td>late figwort</td>
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<td>Culver's root</td>
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<td>nodding wild onion</td>
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<td>yellow giant hyssop</td>
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<td>New England aster</td>
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<td>smooth aster</td>
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</tbody>
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**KEY**
- * good
- ** better
- *** best
Wild strawberry (*Fragaria virginiana*)

- **Natural enemies:** ★★★☆☆
  chalcid wasps

- **Bees:** ★★★☆☆
  sweat bees and small carpenter bees

- **Bloom:** mid-late May

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**Sunlight**

- sun
- Range
- shade

**Moisture**

- dry
- Range
- wet
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

Sunlight
sun ← Range → shade

Moisture
dry ← Range → wet
Canada anemone (*Anemone canadensis*)

- **Natural enemies:** ★★★
  - minute pirate bug, dance flies, chalcid wasps

- **Bees:** ★★★★
  - sweat bees

- **Bloom:** throughout June

**Sunlight**
- Range: sun → shade

**Moisture**
- Range: dry → wet
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

Sunlight

sun  Range  shade

dry  Range  wet
Angelica \textit{(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

**Sunlight**

- **Range:**
  - sun
  - shade

**Moisture**

- **Range:**
  - dry
  - wet
Shrubby cinquefoil *(Potentilla fruticosa)*

- **Natural enemies:** ★★★★
  - minute pirate bug, chalcid wasps, spiders, dance flies

- **Bees:** ★★★
  - yellow-faced bees and sweat bees

- **Bloom:** July - September

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**Sunlight**

sun ← Range → shade

**Moisture**

dry ← Range → wet

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[Logos and images related to Michigan State University, Project GREEEN, Charles Stewart Mott, and North Central Region SARE]
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

**Sunlight**

sun ← Range → shade

**Moisture**

dry ← Range → wet
Late figwort (*Scrophularia marilandica*)

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

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**Sunlight**

- Sun ★★★
- Range ★
- Shade ★★

**Moisture**

- Dry ★★★
- Range ★★
- Wet ★★
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

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**Sunlight**

sun ← Range → shade

**Moisture**

dry ← Range → wet

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[Images and logos of Michigan State University, Project GREEEN, and North Central Region SARE]
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

- **Sunlight**
  - Range: sun to shade
- **Moisture**
  - Range: dry to wet
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

![Sunlight and Moisture Range]

- **Sunlight**:
  - Sunside
  - Range
  - Shade

- **Moisture**:
  - Dry
  - Range
  - Wet
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

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Sunlight

sun  Range  shade

dry  Range  wet
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

**Sunlight**
- Sun (Range) to shade

**Moisture**
- Dry (Range) to wet
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

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**Sunlight**

sun ← Range → shade

**Moisture**

dry ← Range → wet

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[Logos and images related to Michigan State University, Project GREEEN, North Central Region SARE]
Horsemint (*Monarda punctata*)

- **Natural enemies:** ★★★
  soldier beetle, predatory plant bug

- **Bees:** ★★★☆
  large carpenter bees, digger bees, and bumble bees

- **Bloom:** throughout August

Sunlight

- Sun: Range → Shade

Moisture

- Dry: Range → Wet
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 carper bee bees, digger bees, and bumble bees

- **Bloom:** throughout August

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**Sunlight**

- **Range**
- Left: sun
- Right: shade

**Moisture**

- **Range**
- Left: dry
- Right: wet
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

**Sunlight**
- sun ← Range → shade

**Moisture**
- dry ← Range → wet
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

*Sunlight*

- Sun: Range: Shade

*Moisture*

- Dry: Range: Wet

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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

**Sunlight**
- Sun
- Range
- Shade

**Moisture**
- Dry
- Range
- Wet
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

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**Sunlight**

- Sun
- Shade

**Moisture**

- Dry
- Wet
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

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**Sunlight**

- sun ➔ Range ➔ shade

**Moisture**

- dry ➔ Range ➔ wet

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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

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**Sunlight**

sun ← Range → shade

**Moisture**

dry ← Range → wet
Smooth aster (*Aster laevis*)

- Natural enemies: ★★☆
  - minute pirate bug, spiders, chalcid wasps

- Bees: ★★☆
  - sweat bees and bumble bees

- Bloom: mid September – early October

Sunlight

- Sun: Range
- Shade

Moisture

- Dry: Range
- Wet
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

Heidi Natura, Conservation Research Institute
Canada wild rye (*Elymus canadensis*)

**Sunlight**
- sun → Range → shade

**Moisture**
- dry → Range → wet
Little bluestem (*Andropogon scoparius*)

**Sunlight**
- sun
- Range
- shade

**Moisture**
- dry
- Range
- wet
Switch grass  (*Panicum virgatum*)

**Sunlight**
- Sun range to shade

**Moisture**
- Dry range to wet
Acknowledgements

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

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