Going Native: It’s Not Just About the Honey Bee

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Going Native: It’s Not Just About the Honey Bee

**BEE NUMBERS**

- 20,000 species world wide
- 4000 species of bees in North America
- 300+ species of bees in MN
- Honey bee = 1 species
## Going Native: It’s Not Just About the Honey Bee

<table>
<thead>
<tr>
<th><strong>HONEY BEES</strong></th>
<th><strong>NATIVE BEES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly <strong>social</strong></td>
<td>Majority (90%) <strong>solitary</strong></td>
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<tr>
<td>Nest in managed <strong>hives</strong></td>
<td>Nest in the <strong>ground</strong> or in <strong>cavities</strong></td>
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</tbody>
</table>
| **Perennial** colony | **Annual** life cycle  
Adults live 2 - 6 weeks |
| Produce **honey** | Do not produce honey |
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Native Bee Nesting Sites

70% Ground Nesting

Bare soil
(sparsely vegetated)

Well drained sandy soils
(easier excavation)

30% Cavities, Stems, Rocks

Abandoned beetle burrows
(tree snags, downed logs)

Cavities in stems, twigs, or rocks

Old potter wasp or mud dauber nests
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Native Bee Nesting Sites

Ground-Nesting Bees

Nests vary from a single short tunnel to complex, branching tunnels.

Females apply resin, oil or gland secretions on cell walls (structural, waterproofing, prevent fungal/bacterial growth).
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**LOW NEST ACTIVITY**

**BEES**
- Not aggressive
- Feeds on flowers

**HIGH NEST ACTIVITY**

**Yellowjacket WASPS**
- Aggressive
- Feeds on insects

<table>
<thead>
<tr>
<th>Paper Nest Colony</th>
<th>PAPER NEST COLONY</th>
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</table>
Cavities are dry, warm and offer protection from predators.

Tunnels are divided with leaf pieces, leaf pulp, tree resin, pith or mud to create separate brood cells.
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Threats to Native Bees

Habitat Degradation and Fragmentation

Conversion of natural habitat

- Intensive agriculture
- Housing development
- Roads
- Lawns

Invasive Plants

- Outcompete native plants
- Reduce plant diversity, quantity of floral resources over the growing season
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Threats to Native Bees

Pesticides
Insecticides = Kill insects including pollinators
Systemic and contact insecticides

Herbicides = Kill plants
Eliminate forage plants
Eliminate larval host plants for butterflies and moths

Introduced Pathogens
Decline of bumble bee populations believed to be from the introduction of a pathogen (*Nosema bombi*) when bumble bees reared in Europe were reintroduced into North America for greenhouse crop pollination.

Climate Change
Wild fires
Drought
Extreme cold or heat
Mismatched emergence of flowers and pollinators
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Bee Families and Common Genera

**Family Andrenidae**
Mining Bees, *Andrena* spp.

**Family Apidae**
Bumble Bees, *Bombus* spp.
Small Carpenter Bees, *Ceratina* spp.
Digger Bees, *Anthophora* spp.
Cuckoo Bees, *Tripeolus* spp.

**Family Megachilidae**
Mason Bees, *Osmia* spp.
Leafcutter Bees, *Megachile* spp.
Cuckoo Bees, *Coelioxys* spp.
Wool Carder Bees, *Anthidium* spp.

**Family Halictidae**
Green Sweat Bees, *Agapostemon* spp.
Sweat Bees, *Halictus* spp.

**Family Colletidae**
Yellow-Faced Bees, *Hylaeus* spp.
Cellophane Bees, *Colletes* spp.
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**Family Apidae**
Small Carpenter Bees, *Ceratina* spp.

**Nest**
Pithy Plant Stems

**Pollen Collection**
Fine hairs on hind legs

**Appearance**
Hour glass shaped abdomen

Metallic blue - green

Often with white patch on face

**Size**
Extra Small
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Family Apidae
Small Carpenter Bees, *Ceratina* spp.

Active Early Spring - Fall

- Hoary Vervain *Verbena stricta*
- White Upland Aster *Solidago ptarmicoides*
- Ohio Spiderwort *Tradescantia ohiensis*
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Family Apidae
Small Carpenter Bees, *Ceratina* spp.

Plant Stems
Nest
Ground
Flat bare ground or slopes

Nest Soil Type
Loam, Sandy Clay-Loam

Pollen Collection
Long hairs on hind legs

Appearance
Robust, hairy

Size - Medium

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Family Apidae
Digger Bees, *Anthophora* spp.

*Anthophora terminalis* visiting blue lobelia, *Lobelia siphilitica*
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Family Apidae
Digger Bees, Anthophora spp.

Active
June - August

Smooth Beardtongue
Penstemon digitalis
Family Apidae

**Nest**
Ground

**Pollen Collection**
Long hairs on hind legs

**Appearance**
Robust and hairy
Pale bands on abdomen

Males - long antennae

**Size** - Medium

Common Ironwood
*Vernonia fasciculata*
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Family Apidae

Active
July - September

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Male
Gray Headed Coneflower
*Ratibida pinnata*

Female
White Turtlehead
*Chelone glabra*

Female
Asters
*Symphyotrichum* spp.
Family Megachilidae

Leafcutter Bees, Megachile spp.

**Nest**
Cavities in wood, plant stems, rocks, garden hoses, and electrical outlets

**Pollen Collection**
Abdomen

**Appearance**
Dark gray/black
Female - large mandibles
Upturned abdomen

**Size** - Small to medium
Wrap brood cells in leaf or petal pieces

Prefer leaves that are smooth on one side (face inwards)

Different shapes are cut for different parts of the cell (oblong vs round)
Family Megachilidae

Leafcutter Bees, *Megachile* spp.

**MALE**

**FEMALE**
Family Megachilidae

Cuckoo Bees, *Coelioxys* spp.

**Nest**
No nest

Lay eggs in leafcutter bee nests

**Appearance**
Pointed abdomen (female)
Spined-tip abdomen (male)

Relatively hairless

**Size** - Medium
Females use the spine on their abdomen to puncture a hole through the leaf pieces in a leafcutter brood cell.
Family Halictidae

Green Sweat Bees, *Agapostemon* spp.

**Nest**
Ground - bare, flat ground

**Nest Soil Type**
Sandy Loam

**Pollen Collection**
Hind legs

**Appearance**
Bright green head and thorax

**Female:** green or black and white striped abdomen  
**Male:** green and yellow striped abdomen
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Family Halictidae

Green Sweat Bees, Agapostemon spp.

Pollen collection
June - July

Ohio Spiderwort
Tradescantia ohiensis

Purple Prairie Clover
Dalea purpurea

Smooth Oxeye
Heliopsis helianthoides
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Family Colletidae

Yellow-Faced Bees, *Hylaeus* spp.

**Nest**
Cavities in wood, stems

**Nest Lining**
Salivary gland secretions

**Pollen Collection**
Crop
Liquid Provisions

**Appearance**
Black with yellow markings on face, thorax and legs

Hairless, wasp-like
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Family Colletidae
Yellow-Faced Bees, *Hylaeus* spp.

*Golden Alexanders*
*Zizia aurea*

*Canada Anemone*
*Anemone canadensis*

*Rattlesnake Master*
*Eryngium yuccifolium*

*Swamp Milkweed*
*Asclepias incarnata*

Active
May - September
Create and Conserve Native Bee Habitat

Cavity-Nesting Bees

Bundle together hollow stems (10” length) and hang in a site with openings facing morning sun

*Replace every two years
Create and Conserve Native Bee Habitat

Cavity-Nesting Bees

Cut perennial stems in late spring - leave 15” of stem stubble

It's No Trouble To Leave Some Stubble
Create and Conserve Native Bee Habitat

Ground-Nesting Bees

- Leave Areas of Bare Soil
- Don’t mulch everything

- Avoid Tilling Soil

- Avoid Compacting Soil
- Don’t drive vehicles in your landscape

- Leave Existing Rodent Holes
Create and Conserve Native Bee Habitat

Provide a Diversity of Forage Plants

**Plant in Masses**
(many of the same plant clustered together)

**Use Native Plants Whenever Possible**

**Provide a continuous succession of flowers from early spring until late fall**

**Plant a diversity of flower forms and flower colors**
Create and Conserve Native Bee Habitat
Provide a Diversity of Forage Plants
Create and Conserve Native Bee Habitat

Perennial Plantings

Rain Gardens

Photo: Metro Blooms