

FLOWERS FOR FRIENDLY BUGS

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Many insects and mites perform functions that are directly or indirectly beneficial to humans. They pollinate plants, contribute to the decay of organic matter and the recycling of soil nutrients, and attack other pest insects and mites. Only a very small percentage of the over one million known species of insects are pests. In a sense, beneficial insects are a form of free pest control waiting to be utilized. Conservation of these natural enemies is important to enhance their beneficial activities in our gardens. We need to recognize the groups of insect predators and parasitoids, and what habitat they require for survival.

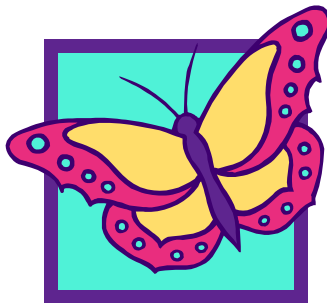
Common insect predators in Michigan include lady beetles, ground beetles, lacewings, many of the ‘true bugs’ (insects in the order Hemiptera), syrphid flies (also called flower or hover flies), robber flies, hunting wasps and praying mantids. Non-insect predators such as spiders and mites are also beneficial. Predators require several prey to complete their development. Common insect parasitoids in Michigan include ichneumon and braconid wasps, and tachinid flies. Parasitoids develop on or within a single host during their development, which kills the host insect.

Many beneficial insects require alternate food sources such as nectar and pollen to sustain themselves while searching for hosts, and to produce healthy, fertilized eggs. Providing the beneficials with shelter and critical overwintering sites in our gardens is also important. A more diverse plant canopy that includes flowering borders, hedges and other perennial habitat can increase the abundance and diversity of the natural enemies present.

A number of plant species have been shown to encourage natural enemies (see Table 1), but this list is far from complete. The size and shape of a given flower limits the kinds of insects that can access its pollen and nectar. Many of the natural enemies that can benefit most from floral resources are small parasitic wasps, often smaller than mosquitoes. Consequently, flowers that are good for natural enemies are small, shallow, and in clusters. Equally important as flower size and shape is the timing of pollen and nectar production by the flowers. Pollen and nectar must be available when the adults are active during specific times in the growing season. This is achieved by planting a mixture of plants that have relatively long blooming periods that overlap in time. Perennials often have shorter blooming periods than annuals, so particular attention should be given to plant diversity and blooming times in perennial borders designed as habitat for natural enemies.

Several plant families contain species that are especially noted for their attractiveness to beneficial insects. The *Apicaceae*, or carrot family, contains many such species. The *Asteraceae*, or daisy family, also contains many valuable species. The *Fabaceae*, or bean family, provides ample habitat and alternate prey as well as nectar for natural enemies. The last family that has a large number of beneficial species is the *Brassicaceae*, or mustard family. Many plants other than these mentioned in Table 1 have been shown to have positive effects on natural enemies. However, these effects may vary from season to season, with location, or by which crop plants are involved, making absolute recommendations difficult. Experimenting with plant combinations and observing the results will provide the gardener with ideas on providing habitat for natural enemies in their gardens.

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TABLE 1 - GOOD FLOWERS FOR FRIENDLY BUGS

APICACEAE (Carrot Family)	
Angelica	<i>Angelica archangelica</i>
Anise	<i>Pimpinella anisum</i>
Blue lace	<i>Trachymene caerulea</i>
Caraway	<i>Carum carvi</i>
Chervil	<i>Anthriscus cerefolium</i>
Coriander (cilantro)	<i>Coriandrum sativum</i>
Dill	<i>Anethum graveolens</i>
Fennel	<i>Foeniculum vulgare</i>
Flowering ammi, Bishop's flower	<i>Ammi majus</i>
Lovage	<i>Levisticum officinale</i>
Queen Anne's Lace (wild carrot)	<i>Daucus carota</i>
Toothpick ammi	<i>Ammi visnaga</i>
Wild parsnip	<i>Pastinaca sativa</i>
ASTERACEAE (Daisy Family)	
Blanketflower	<i>Gaillardia</i> spp.
Blazing Star	<i>Liatrus pycnostachya</i>
Chamomile	<i>Chamaemelum nobile</i>
Coneflower	<i>Echinacea</i> spp.
Coreopsis	<i>Coreopsis</i> spp.
Cosmos	<i>Cosmos</i> spp.
Golden Marguerite	<i>Anthemis tinctoria</i>
Goldenrod	<i>Solidago</i> spp.
Marigold, Signet	<i>Tagetes tenuifolia</i>
Mexican Sunflower	<i>Tithonia tagetifolia</i>
Sunflower	<i>Helianthus</i> spp.
Tansy	<i>Tanacetum vulgare</i>
Yarrow	<i>Achillea</i> spp.
FABACEAE (Bean Family)	
Alfalfa	<i>Medicago sativa</i>
Big flower vetch	<i>Vicia</i> spp.
Fava bean	<i>Vicia fava</i>
Hairy vetch	<i>Vicia villosa</i>
Sweet clover	<i>Melilotus</i> spp.
BRASSICACEAE (Mustard Family)	
Basket-of-Gold alyssum	<i>Aurinum saxatilis</i>
Broccoli	<i>Brassica oleracea</i>
Candytuft	<i>Iberis umbellata</i>
Hoary alyssum	<i>Berteroa incana</i>
Mustards	<i>Brassica hirta & juncea</i>
Sweet alyssum	<i>Lobularia maritima</i>
Yellow rocket	<i>Barbarea vulgaris</i>
Wild mustard	<i>Brassica kaber</i>
Other plant families and individual plants	
Buckwheat	<i>Fagopyrum sagittatum</i>
Cinquefoil	<i>Potentilla</i> spp.
Dipsacus	<i>Dipsacus</i> spp.
Milkweeds	<i>Asclepias</i> spp.
Phacelia	<i>Phacelia</i> spp.
Pincushion flower	<i>Scabiosa caucasica</i>
Scabiosa	<i>Scabiosa atropurpurea</i>

Most insecticides kill predators and parasitoids along with the pests. In many instances, natural enemies are more susceptible than pests to commonly used insecticides. If pest problems exceed the damage threshold that is acceptable to you in your home garden, then select the least toxic options to manage the pest and conserve the beneficials. Microbial pesticides such as *Bacillus thuringiensis* (*Bt*) and beneficial nematodes are toxic to specific pests and are not directly harmful to beneficials. Insecticidal soaps and horticultural oils are contact treatments applied directly to target pests which break down quickly on treated surfaces, therefore killing fewer beneficials. Leaving certain areas unsprayed or altering application patterns can favor survival for beneficials. In this way, we can reduce the use of insecticides in our home gardens.

References:

- Beneficial Insects and Mites* by Tess Henn and Rick Weinzierl. 24pp. University of Illinois, Extension Publication 1298.
- Biological Control of Insects* by Edward Grafius, Douglas Landis, and Janice Ryan. 8pp. Michigan State University Extension Publication E2453.
- Guarding the Garden: Habitat Manipulation to Favor Natural Enemies* in Midwest Biological Control News, April 1996, Vol. 3, No. 4, pp.1,2,7.
- Planning your Predator/Parasite Friendly Garden* by Tom Ellis in Landscape Crop Advisory Alert, Michigan State University Extension, March 6, 1998, Vol. 13, No.1, pp. 5-7.