Notes on Selecting Plants for your Pollinator Patch (Kavassalis 2018)

Think about the goals for your Pollinator Patch. Plants should suit local conditions, support healthy ecosystems, positively impact your neighbours and community, while fitting your budget.[1]

Layer flowering plants, grasses, shrubs and trees to provide pollinators with both food and habitat.[2]

Bees need pollen sources, nectar sources, shelter and nesting habitat. Plants must flower at the right time (phenology) to support their life cycle.[3]

Pollen is rich in protein but not all is edible and pollinators have preferences. Some are specialists and can feed on a few restricted species (like monarchs). Diversity is key to meeting diverse needs, though specialty gardens can be created tailored to oligolectic species.[4]

Pollinators must be provided nesting habitat and resources if they are to survive. They may nest in the foliage or stems of plants, in wood or in cracks in stone or in soil. Natural sites are best but constructed nests may help.[5]

Flower choice[6]

- Bees - Bright colours (except red which bees cannot see)
- Butterflies - Bright colours including red with faint sweet scents and a landing pad
- Moths - Night blooming flowers (typically white) with strong, thick sweet smells
- Flies - All of the above plus flowers with the odour and colour of rotting fruit or dung
- Beetles - Strongly fruity white or green flowers

Some pollinators migrate great distances, while others are locally constrained. Even those that move short distances may belong to a species that is widely distributed and adaptable to diverse food sources. The recommendation from experts is to: **"Plant a variety of plants, biased towards native and near-native species with a selection of exotics to extend the flowering season."** [7]

Native species are part of ecosystems, which has developed in a given area over a long period of time. **Nativars** are naturally occurring variations, selections or hybrids of local species that may have beneficial attributes. An **aggressive invasive plant** that disrupts ecosystems is an unwanted addition to any garden. What is desired in one region may not be appropriate for another. **Be cautious when using plant lists** as many have not been evaluated or may not be regionally or site suitable. **Research shows that pollinators generally prefer native species to native cultivars or non-native species.**

David Suzuki Foundation List[8]
Early Season: blueberry, crabapple, cranberry, crocus, foxglove, heliotrope, hazelnut, heather, primrose, willow
Mid-Season: blackberry, catnip, chives, dahlia, hyssop, lavender, raspberry, sunflower, yarrow
Late Season: aster (perennial), borage, coneflower, cornflower, cosmos, goldenrod, pumpkin, sedum, squash
This is a national list with many exotics.

University of Michigan Study[9,10] (H=Halton; U=Uncommon; R=Rare)
Early Season: Strawberry, *Fragaria virginiana* (H), Golden Alexander, *Zizia aurea* (H), Penstemon, *Penstemon hirsutus* (H), Lanceleaf coreopsis, *Coreopsis lanceolata* Shrubby cinquefoil, *Dasiphora fruticosa*, Dogbane, *Apocynum cannabinum* (UH).
Mid-Season: Prairie rose, *Rosa setigera*, Figwort, *Scrophularia marilandica* (UH), Hoary vervain, *Verbena stricta*, Swamp milkweed, *Asclepias incarnata* (H), Culver's root, *Veronicastrum virginicum* Gray headed coneflower, *Ratibida pinnata* Lead plant, *Amorpha canescens* Nodding onion, *Allium cernuum*, Meadowsweet, *Spiraea alba* (H).
Late Season: Yellow Giant Hyssop, *Agastache nepetoides* (RH), Spotted Bee Balk, *Monarda punctate*, Missouri Ironweed, *Vernonia missurica*, Cup Plant, *Silphium perfoliatum*, Boneset, *Eupatorium perfoliatum* (H), Great Lobelia, *Lobelia siphilitica* (H), Woodland sunflower, *Helianthus strumosis*, Hairy bush clover, *Lespedeza hirta* (RH) Rough blazing star, *Liatris aspera*. Riddell's Goldenrod, *Oligoneuron riddellii* Showy goldenrod, *Solidago speciosa* , New England Aster, *Symphyotrichum novae-angliae* (H), Smooth blue aster *Symphyotrichum laeve* (UH)

Notes on Selecting Plants for your Pollinator Patch (Kavassalis 2018)

Most cultivars of native species are less attractive to pollinators, though there are exceptions, e.g. Culver's Root - *Veronicastrum virginicum* 'Lavendelturm', *Phlox paniculata*: 'Jeana'; 'Dick Weaver' 'Delta Snow' 'Lavelle' 'Robert Poore.' Exotics and annuals that are long blooming can provide beauty and pollinator support when nothing else is available. Recommended species include: Bighead knapweed *Centaurea macrocephala* Dahlia (open types like 'Bishop of York,' 'Esther,' or 'Bishop of Llanda'), Mexican sunflower *Tithonia rotundifolia.*

Doug Tallamy has ranked the **best trees for moths and butterflies** as: Oak, Cherry, Willow, Birch, Poplar, Crabapple, Blueberry, Maple, Alder, Hickory, Elm, Pine, Hawthorn, Blackberry, Spruce, Ash, Basswood…[11,12,13]

Grasses and sedges can form an important matrix for your pollinator garden. They provide, shelter, protection from predators and for some pollinators food. There are 67 grasses and 83 sedges native to Halton. Only a few have been evaluated for garden use and few are commercially available. Attractive native grasses currently available: Big bluestem, *Andropogon gerardii*, Reed Grass *Calamagrostis stricta*, Bottle brush *Elymus hystrix*, Wood Millet *Milium effusum*, Switch grass *Panicum virgatum*, Little bluestem *Schizachyrium scoparium,* Indian grass *Sorghastrum nutans*. Sedge species worth considering: *Carex albicans*, *C. bromoides*, *C. crinata*, *C. eburnea*, *C. grayii, C. grisea*, *C. pensylvanica*, *C. plantaginea, C. sprengelii*, *C. vulpinoidea*. Most sedge species prefer shady moist conditions.

Ask your garden centre to bring in natives. Some nurseries that specialize: NativePlantNurseries.ca; Grow Wild, St Williams Nursery, Wildflower Farms, etc. See Credit Valley Conservation website for List.

References:

1. W. Gold. 2008. *Plant Selection, Forms & Sources*. University of Washington Restoration Ecology Network (UW-REN) Capstone. http://courses.washington.edu/ehuf462/462_mats/Plant_selection_110708_part_1.pdf

2. M. Vaughan and S. Black (2006) USDA National Agroforestry Center. AF Note-34: *Enhancing Nest Sites for Native Bee Crop Pollinators*. https://www.plants.usda.gov/pollinators/Enhancing_Nest_Sites_For_Native_Bee_Crop_Pollinators.pdf

3. Vaudo AD, et al. (2015) *Patch HM: Bee nutrition and floral resource restoration*. Current Opinion in Insect Science 10:133-141.

4. Fowler, J. & Droege, S. (2016). *Specialist bees of the Mid-Atlantic and Northeastern United States*. Xerces Society http://jarrodfowler.com/specialist_bees.html

5. http://www.xerces.org/wp-content/uploads/2008/11/nests_for_native_bees_fact_sheet_xerces_society.pdf

6. Moisset, B., Buchmann, S (2012) *Bee basics: An introduction to our native bees*. Washington, DC: USDA Forest Service and Pollinator Partnership. https://www.fs.fed.us/wildflowers/pollinators/documents/BeeBasics.pdf

7. Salisbury, A., et al. (2015) *Enhancing gardens as habitats for flower-visiting aerial insects (pollinators): should we plant native or exotic species*?. J Appl Ecol, 52: 1156–1164.

8. Create a pollinator-friendly garden for the birds, bees and butterflies https://davidsuzuki.org/queen-of-green/create-pollinator-friendly-garden-birds-bees-butterflies/

9. Tuell J.K., Fiedler A.K., Landis D. & Isaacs R. (2008) Visitation by wild and managed bees (Hymenoptera: *Apoidea*) to eastern US native plants for use in conservation programs. Environmental Entomology, 37, 707-718).

10. More resources from MSU are online: http://www.canr.msu.edu/nativeplants/resources/teaching_tools

11. Tallamy, D. 2007. *Bringing Nature home*. Timber press. http://enst.umd.edu/sites/enst.umd.edu/files/_docsTable%201%20from%20Doug%20Tallamy%20Sheet1.pdf

12. Heather Holm has published a helpful list of *Native Trees and Shrubs for Pollinators* online: https://www.pollinatorsnativeplants.com/plant-lists--posters.html.

13. Forest Gene Conservation Assoc. http://fgca.net/