Good Bugs – Bad Bugs

Prepared by: Etobicoke Master Gardeners



Etobicoke Master Gardeners www.etobicokemastergardeners.ca Presented with: Humber Arboretum



Humber Arboretum www.humberarboretum.on.ca

Welcome to the virtual world Zoom Tips & Tricks





How to ask a question:

- \checkmark Click on "Chat" in the functions
- \checkmark Type in your question. A moderator will read it.



Master Gardeners of Ontario



ABOUT US CONTACT US CALENDAR OF EVENTS COMMUNITY ACTIVITIES EMG MEMBER LOGIN



Etobicoke Master Gardeners (EMG) was formed in January 2005 to support and provide valuable resources to the Etobicoke Gardening Community.

EMG members meet at the Kingsway-Lambton United Church the fourth Wednesday of most months from 7 to 10 p.m.

We welcome inquiries from enthusiastic and interested individuals wishing to:

- learn more about joining our group

- studying for Master Gardener (MG) designation
- increasing and sharing their knowledge
- network, share ideas, and work with others who have similar

NATIVE PLANT WORKSHOP VIDEO

Thank you to everyone who joined the Etobicoke Master Gardeners, and Humber Arboretum at the Native Plant Workshop

Check-out the details on the 2023 Workshop Series! For full details visit our Community Activities page

Our upcoming Workshop Topic on April 29, 2023 is "Invasive Plants, Controls, and Alternatives " - Virtual Workshop

Join the Etobicoke Master Gardeners and the Humber Arboretum for a free workshop on *Invasive Plants*. Learn the definition of an invasive plant as well as the coological problems they cause. Learn how to

Etobicoke Master Gardeners

www.etobicokemastergardeners.ca





The Humber Arboretum consists of nearly 250 acres of public gardens and natural areas located in the Humber River watershed in North Etobicoke. Connected to Humber College North Campus, it exists as a unique tri-partnership between Humber College, the City of Toronto, and the Toronto and Region Conservation Authority (TRCA). The Humber Arboretum is free to visit and offers a variety of programming to both Humber College students and the public.

LAND ACKNOWLEDGEMENT

Humber Arboretum and Humber College are located within the traditional and treaty lands of the Mississaugas of the Credit.

Known as Adoobiigok [A-doe-bee-goke], the "Place of the Alders" in Michi Saagiig [Mi-Chee Saw-Geeg] language, the region is uniquely situated along the Humber River Watershed, which historically provided an integral connection for Anishinaabe [Ah-nish-nah-bay], Haudenosaunee [Hoeden-noshownee], and Wendat [Wine-Dot] peoples between the Ontario Lakeshore and the Lake Simcoe/Georgian Bay regions.

Now home to people of numerous nations, Adoobiigok continues to provide a vital source of interconnection for all.

Session Topics

- Introduction to Insects
- ✓ The Beneficials
- ✓ The Pests
- ✓ Some Neutrals
- Managing the Pests in our Gardens
- Resources / Wrap Up

Introduction to insects

- ✓ Insects, bees, beetles, butterflies....
- Spiders and Mites
- Millipedes and Centipedes
- ✓ Pill bugs
- Slugs, snails & worms
- Essential part of ecology
 - ✓ Feed on plants,, and other bugs
 - Provide food for birds and animals
 - ✓ Pollinate flowers
 - ✓ 90% of bugs are beneficial, "Good Bugs"
 - "Bad Bugs" cause unacceptable damage to plants and crops



Insects 101!



Insect Life Cycles

Insect Complete Metamorphosis

✓ Form changes significantly over life cycle



Insect Life Cycles

Insect Incomplete
 Metamorphosis

 Insect hatches from egg, into nymph stage
 Example : Grasshopper

 Similar appearance, food, habitat throughout rest of life cycle



Life Cycles & Generations

- Non-Insects young look like adults
 Similar habitat and food sources
- ✓ Significance of knowing a "Bug's" Life cycle?
 - ✓ When might different bugs, insects, etc., cause the most damage to plants? When would they be more beneficial?
 - How many generations per year
 one or many generations?
 Over winter? Or not?
 When do they breed?
 - ✓ Shelter in leaf mould? In plant stems? In the ground? ...

Good Bug Vs. Bad Bug Behaviour Good Bug S Bad Bug

- ✓ Essential Pollinators
 ✓ "Composters"
 ✓ Control bad bugs
 ✓ Maintain ecobalance
 ✓ Part of the food web
 ✓ Aesthetically
 - pleasing

- ✓ Cause "excessive" damage
- ✓ Defoliate & mine leaves
- ✓ Devour roots
- Bore into stems,
 branches and
 trunks
- ✓ Vector for disease

Native and Non-Native

 Key difference: non- native insects lack natural predators to control their populations

✓ Non-natives increasing

- Climate change and milder winters
- Imported with plants (incidental)
- Imported to control other pests (incomplete research)

The Beneficials

The Beneficials



Almost none are harmful to you



Encourage them in the garden, plan for a Pollinator Garden



Maintain healthy populations



Provide them with basic needs

Good Bugs

- ✓ Bees
- ✓ Beetles
- Butterflies
- ✓ Dragonflies
- Hover Fly (Syrphidae)
- Lacewing (Hemerobius humilinus)
- Ladybug (spotted lady beetle)
- Pill Bug (Armadillidium vulgare) & Sow Bug (Oniscus spp.)
- ✓ Spiders
- Daddy Long Legs
- ✓ Tachinid Fly (*Tachinidae*)
- ✓ Wasps

Bees

Mason Bee

Honeybee (Apis mellifera)

Photo by EMG LP

bugguide.net

Carpenter Bee (Xylocopa virginica,

Plasterer Bee

(Colletes inaequalis)

Photo by EMG LF

9-Spotted Lady Beetle (Coccinella novemnotata)

Asian Multicoloured Ladybug (Harmonia axyridis)

Ladybug larva (Coccinellidae)

Rove Beetle (Staphylinidae)

BEETLES Predators

Carabid Beetles



Bugwood.org

Monarch Butterfly

(Danaus plexippus)

Photo by EMG LF

Photo by EMG LF

American Painted Lady Butterfly (Vanessa virginiensis)





Least Skipper (Ancyloxypha numitor)

Dragonflies (suborder Odonata)







Twelve-spotted skimmer (Libellula puchella)



Hover Fly (Syrphidae)





Brown Lacewing (Hemerobius humilinus)



The Composters: Pill Bug (Armadillidium vulgare) & Sow Bug (Oniscus spp.)



Pill Bug







Source: Mississauga Pest Control

Sow Bug

Harvestman (Opiliones)

Arachnids

<u>bugguide.net</u>

Spider (Araneus diadematus)

www.naturespot.org.uk

Tachinid Fly (*Tachinidae*)



texashighplainsinsects.net

Parasitic Wasps (Chaloidoid)

Wasps

Paper Wasp (Polistes dominulus)

The Pests

Pests

- There are many, many kinds of pests
 - Slugs, earwigs, tomato hornworms, leaf miners the list is endless
 - ✓ The best defense is constant vigilance
 - ✓ Leave places for good bugs to hide and overwinter
 - Encourage variety of plants
 - Consult a reliable source



Bad Bugs

- Aphids (Aphidoidea)
- Asian Long-horned Beetle (Anoplophora glabripennis)
- ✓ Box Tree Moth (*Cydalima perspectalis*)
- Cabbage Butterfly (*Pieris rapae*)
- Cucumber Beetles (Acalymma vittate)
- ✓ Cutworms (Noctuidae)
- Earwigs (Dermaptera)
- Emerald Ash Borer (Agrilus planipennis)
- Euonymus webworm (Yponomeuta cagnagella)
- LDD Moth (formally known as Gypsy Moth) (Lymantria dispar dispar)
- ✓ Japanese Beetle (*Popillia japonica*)
- ✓ Leaf Hoppers (*Cicadellidae*)
- ✓ Leaf Miners
- Lily Leaf Beetle (Lilioceris lilii)
- ✓ Saw Fly (Symphyta)
- ✓ Scale (*Coccoidea*)
- Slugs & Snails

Aphids (Aphidoidea)







Asian Long-Horned Beetle (Anoplophora glabripennis)



Box Tree Moth (*Cydalima perspectalis*)


Cabbage Butterflies (*Pieris rapae*)





David Cappaert, Michigan State University, Bugwood.org

UGA5171081



Cucumber Beetle (*Acalymma vittate*)







Cutworms (Noctuidae)



Earwigs (Dermaptera)







Emerald Ash Borer (Agrilus planipennis)



David Cappaert, Michigan State University, Bugwood.org



Euonymus webworm (Yponomeuta cagnagella)

LDD Moth (formally known as Gypsy Moth) (Lymantria dispar dispar)

Japanese Beetle (*Popillia japonica*)



Leaf Hoppers (Cicadellidae)



Copyright © 2017 William A Krithinithis https://bugguide.net/node/view/1453987/bgimage





http://fieldcropnews.com/2017/06/leafhopper-alert/ Potato leafhopper adult. Photo: T. Baute, OMAFRA



Leaf Miners



Birch Leaf Miner (*Fenusa pumila*)

Sawfly (Symphyta)



Lily Leaf Beetle (*Lilioceris lilii*)





Scale (Coccoidea)





Jumping Worm

ATTENTION: Invasive jumping worms in Ontario (Prepared August 2023 by Dr. Michael McTavish, University of Toronto)

- Jumping worms include several species of non-native, invasive earthworms that have recently been found in Canada and can spread quickly into new habitats.
- Jumping worms rapidly deplete organic matter near the surface, exposing soils to desiccation, erosion and nutrient loss and harming plant biodiversity.

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What am I looking for?







Adulta Duternities

Jumping worm activity (adapted from McCay et al. 2021)

What should I do?

- 1. Inspect new soil amendments and plants for jumping worms and their casts and watch for invasion in local parks and natural areas.
- Report sightings to EDDMapS (<u>https://www.eddmaps.org/</u>). Collect photos and video of casts and earthworms and upload to Report sightings > Wildlife > Ontario > jumping worms.
- Limit the spread by not sharing plants or soil amendments from infested locations and clean off all footwear and tools when working in or walking through an infested area.
- Eradicate small populations (when practical) by euthanizing jumping worms in alcohol and solarizing soil under dark plastic, aiming to achieve at least 40°C for 3 days.

Where can I find more information?

- Invasive Species Centre profile on jumping worms (<u>https://www.invasivespeciescentre.ca/</u>).
- Contact Dr. Michael McTavish at the University of Toronto (michael.mctavish@alum.utoronto.ca).

Good Bug ? Bad Bug? Neutral!

- Fire Bug (pyrrhocoris apterus)
- Moths (Lepidoptera)
- ✓ Oak wilt Beetle

Firebug (*pyrrhocoris apterus*)



Moths (Lepidoptera)

Silk Worm (Bombyx mori)



Rosy Maple Moth (Dryocampa rubicunda) /Greenstriped mapleworm





Widow Underwing (Catocala vidua)





Sap Beetle (Nitidulideae family) - Oak Wilt Vector

- Insects can be vectors of viruses and fungal diseases as they move between plants
- Oak Wilt is a new fungal disease that appeared in Ontario from the US in 2023
- Threatens Ontario's Oak tree population
- Various species of Sap Beetles spread the virus



Fungal mat on Oak sapwood

Managing the Pests in our Gardens

Identifying Bug Presence





The Ontario Pesticide Ban







Integrated Pest Management

- ✓ Understand the problem
- Recognize common diseases & insects
- Choose the most effective control measure *OR* combination of measures
- Healthy plants resist disease and insect pests
- Frequent monitoring
- Follow good cultural *pest* management practices



Cultural Practices

- ✓ Select the right plant
- ✓ Choose plants that
 - ✓ fit your environment
 - demonstrate pest resistance and plant vigor
 - companion planting to repel pest



Cultural Practices

- Plant health starts with your garden
 - ✓ Soil composition
 - ✓ Natural light
 - ✓ Natural water
 - ✓ Good ventilation
 - ✓ Use your leaves
 - Earthworms are your friends, but not 'jumping worms'!



Physical Pest Management

- Remove insects
 - ✓ Handpick
 - ✓ Trap
 - Forceful water spray
 - Exclusion or barriers



Biological Pest Management



Encourage Good Bugs in your Garden

- Plant Natives
- Provide a diversity of plants
- Reduce Your Lawn
- ✓ Keep it Natural
- ✓ Don't Use Pesticides
- Provide fresh water & nesting sites
- ✓ Plant where pollinators will visit



Control via Living Organisms

- Bacillus
 thuringiensis
 kurstaki (BT)
- Parasitic nematodes
- Predators

Control via Natural Materials





Diatomaceous Earth

Dormant Oil



Soap Solutions



Sulphur



Toronto's official bee Sweat Bee (*Halictid*)

Wrap-Up

Photo by EMG LF

Resources

- ✓ Master Gardeners <u>www.mgoi.ca</u>
- ✓ Etobicoke Master Gardeners <u>www.etobicokemastergardeners.ca</u>
- Ontario Ministry of the Environment, <u>http://www.ene.gov.on.ca/en/land/pesticides</u>
- Day, Sonia; <u>The Plant Doctor A Practical Guide to Having a</u> <u>Healthy Garden</u>; Key Porter Books Limited 2006
- Ontario Ministry of Environment website, Backgrounder, Fact Sheet, Legislation and Proposed Regulations for Cosmetic Pesticides Ban Act 2008
- Durham Master Gardeners The Ontario Pesticide Ban What Can we do? email: durhammg@hotmail.com

Etobicoke Master Gardeners

www.etobicokemastergardeners.ca

You can find a copy of the presentation



Native Plant Gardening (April 23, 2022)



native_plant_gardening_april_23_2022.pdf Download File

EMG Website > Community Activities > Resources

Etobicoke Master Gardeners

www.etobicokemastergardeners.ca



Etobicoke Master Gardeners' Annual 2024 SPRING PLANT SALE

Saturday, May 25 8:30 am-12:30 pm 6 Kingsway Crescent

Advice Clinic, Perennials, Shrubs, Herbs & Tomatoes & more!





Native plants for native pollinators

etobicokemastergardeners.ca





2024 Eco-Garden Community Workshop Series Saturdays 10:00 AM to Noon

Virtual Sessions via Zoom

January 27: Good Bug, Bod Bug

February 24: The Edible Garden - Growing Your Own Food

April 13: Invasives and other challenges

October 26: Sustainable Gardening and Climate Change Considerations

November 9: Indoor Plants for All Occasions

In-Person at the Humber Arboretum

May 11: Trees and Shrubs Tour

June 1: Let's Get Growing - Plant Propagation, Seed Saving, and Growing from Seed

September 21: Making the Cut - Pruning Workshop

Free, but space is limited & registration is required: Humber.ca/arboretum/emg



Poll Question How did you hear about the event?

- 1. Humber Arboretum
- 2. Etobicoke Master Gardeners
- 3. Facebook
- 4. Twitter
- 5. Etobicoke Guardian
- 6. Toronto Gardeners
- Lakeshore Environmental Gardening Society
- 8. Etobicoke Horticultural Society
- 9. Other
Etobicoke Master Gardeners

Thank you!

Questions





