




## Beneficial insects and mites

Ministry of Agriculture, Food and Rural Affairs  
Ministère de l'Agriculture, de l'Alimentation et des Affaires rurales



## Not all bugs are bad.....



"Unidentifiable Winged Insect Man!  
You've come just in time."

## Beneficial insects: provide a service to humans

Snapshots at [jasonlove.com](http://jasonlove.com)

## IT'S A BEETLE! IT'S A WASP! IT'S A .... NATURAL ENEMY!






Renée Howerton / Character Design



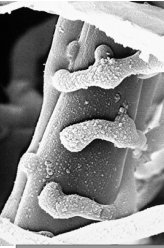



## Distinguish and record natural enemies and pests when scouting!

## TYPES OF NATURAL ENEMIES

<b>Predators</b>		Kill or consume many prey. Larger than prey. Generalists.
<b>Parasitoids</b>		Develops on/in single host. Smaller than host. Specialists
<b>Pathogens</b>		Disease-causing microbe. Kill or shorten the life of pests. May be specific to certain species or to specific life stages.



## Weeds and plant diseases also have natural enemies.

 <b>Phoma fungus on thistle</b>	 <b>Galerucella beetle feeding on purple loosestrife</b>	 <b>Gliocladium fungus parasitizing Rhizoctonia</b>
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### APHID MIDGES

- Fly larvae, resembling small bright orange maggots with strong jaws
- Feed on aphids, scales, mealybugs
- Active bloom to late summer





http://www.biopol.nf/UK/Aphids1.htm




### ASSASSIN BUGS

- Common generalist predators, sit and wait to attack passing prey
- Large, dark brown with raptorial front legs and large beaks
- Nymphs and adults feed on aphids, mites, caterpillars and other soft-bodied insects
- Active from petal fall through early August

### DAMSEL BUGS

- Long and slender, various colours
- Active from May through September




### BIG-EYED BUGS

- Bulging eyes

### EARWIGS



- Elongate, leathery body with a pair of forceps-like pincers on abdomen
- Omnivorous, eating insects, plants and ripe fruit
- Feed on aphids, mites, caterpillars as well as aphid honeydew and sooty moulds
- Active early spring to preharvest



J. Berger 5387670


### GROUND BEETLES

- Found under debris on soil surface
- Adults small to large, elongate, usually dark with long legs
- Larvae are elongated, worm-like
- Obvious mandibles
- Nocturnal, generalist feeders which will consume apple maggot pupae, codling moth larvae, aphids and others
- Present throughout the growing season

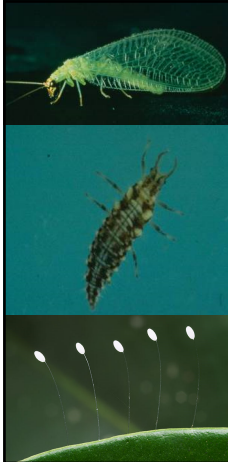



### HOVER FLIES

- Adults resemble small bees, and feed on pollen and nectar
- Larvae are slug-like
- Larvae feed on aphids, scales, mites and caterpillars
- Adults most active in late June to late July, but there are several generations throughout the year



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### LACEWINGS

- Adults are green or brown with lacy wings and feed mainly on honeydew
- Larvae have a pointed body, mottled colour and large sickle shaped mandibles
- Feed on aphids, mites, caterpillar eggs and others
- Active from late May to early Sept



### LADY BEETLES

- Adults and larvae eat aphids, scales and mites
- Larvae are alligator-shaped
- Active tight cluster through preharvest



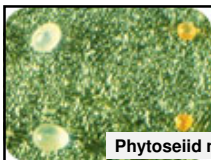
### MULLEIN BUG

- Nymphs <2.5 mm long, yellow to green with pointed head and red eyes
- Adults light green to tan with spiny, black-spotted legs
- Nymphs feed on leaf sap and sting fruitlets early in season, become predaceous shortly after petal fall
- Active bloom to preharvest

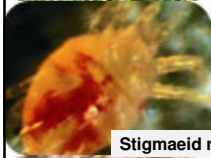


### ORIOUS / FLOWER BUGS

- Adults are small with black and white wings
- Nymphs are smaller, reddish-brown, teardrop-shaped and wingless
- Larvae and adults feed on mites, aphids, thrips, midge, small caterpillars
- Active pink through harvest



Phytoseiid mites



Stigmaeid mites



Red velvet mites

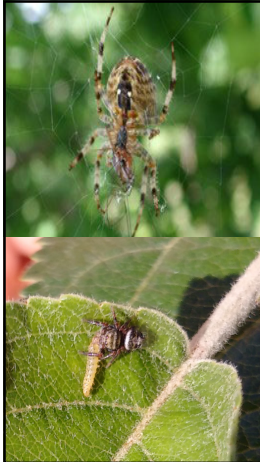
### PREDATORY MITES

- Faster moving than prey
- Often taken on colour of prey
- Feed on all life stages of TSSM, ERM, rust mites
- Some species also feed on aphids, scales and other insects
- Active bloom to harvest - different species found at different times



Spider mite adult (left) and phytoseiid mite (right)

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### SPIDERS

- Several different types found within the tree canopy, on branches and on the trunk
- Generalist feeders that prey on many different insect pests
- Active from petal fall through preharvest



### STETHORUS / SPIDER MITE DESTROYER

- Type of ladybeetle
- Small (1.5 mm), shiny black, hairy
- Larvae dark grey and hairy, eggs are tiny, oblong and often scattered singly in mite colonies
- Active tight cluster through late summer



### STINK BUGS

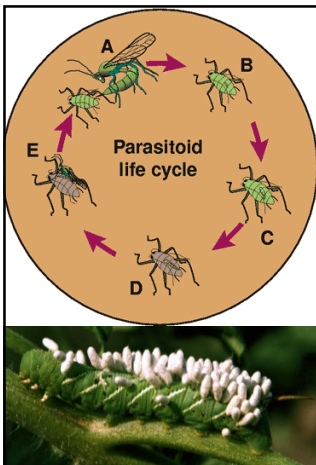
- Especially spined soldier bug
- Often brown, with pointed "shoulders"
- Wide prey range including caterpillars
- Active late April / early May

S.A. Marshall School of Environmental Science, University of Guelph

**PREDATOR**

**PLANT FEEDING**


- Beak short, thick and free moving
- Beak long, slender
- Only attached at base
- First segment fused to head
- For harpooning prey.
- For probing plants



### PARASITIC INSECTS

- Immatures complete development on or in a host
- Adults often not easy to distinguish in field – look for signs of parasitism of host
- All pest life stages can be attacked (egg, larvae, pupae, adult)






### PARASITIC WASPS

- Small wasps which lay eggs in or on insect hosts
- Larvae feed on host, killing it
- Various species from different families
- Aphids, leafminers, caterpillars, eggs attacked, depending on the wasp species
- Active from tight cluster through harvest



E. Beers



### PARASITIC FLIES

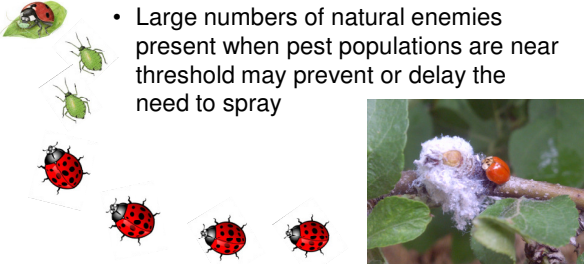
- Medium to large flies that lay eggs on the backs of hosts
- Similar to houseflies, but are covered in bristles
- Eggs often laid on host body – larvae burrow into host to feed
- Very wide host range, includes OBLR
- Sometimes observed while sampling for OBLR



### INSECT PATHOGENS

### Natural Enemies in Apples

- Active in Ontario apple orchards
- Count when monitoring for pests
- Large numbers of natural enemies present when pest populations are near threshold may prevent or delay the need to spray



### Questions?

