



# Wildlife Gardening for Natural Pest Control



**City of Kirkland - Natural Yard Care**

# Integrated Pest Management

What is IPM?

“IPM is a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health and environmental risks. “

National IPM Network



# Why IPM?

- Pesticides are designed to kill organisms
- Increase in pesticide use -170% between 1964 and 1982.
- US crop production - 37% reduction each year by negative pest effects; a percentage that has stayed stable over the course of agriculture.
- Pesticide use puts non-target organisms at risk – including you, your family and pets
- 5% active Ingredient versus 95% inert ingredients
- Inert ingredients are not required to list and might be “trade secrets” and just as toxic or more so as active ingredient
- Risk to humans = toxicity of the material used and length and intensity of exposure to that material

# IPM Resources

- Use your resources to learn about pesticides
  - Safety Data Sheets – aka Material Safety Data Sheet
  - Grow Smart, Grow Safe website
  - Washington Toxics Coalition
  - Northwest Center for Alternatives to Pesticides



# Bees and Neonicotinoids

## QUESTIONS TO ASK YOUR NURSERY



NORTHWEST CENTER FOR  
ALTERNATIVES TO PESTICIDES

### NEONICOTINOIDS

Scientific studies have shown that a newer class of pesticides, called neonicotinoids (neonics for short), are a major factor in pollinator declines.

Both systemic and persistent, neonics continue to affect bees long after a spray through soil absorption.

Check with your nursery before buying plants to ensure that your bee-friendly flowers aren't killing pollinators.

### QUESTIONS TO ASK

1. Are your plants or seeds treated with neonicotinoids?
2. Do you know which of your suppliers use them?
3. Would you consider removing neonicotinoid applications and treated plants from your shelves?



### NEONICOTINOID PESTICIDE ACTIVE INGREDIENTS:

Acetamiprid, Clothianidin,  
Dinotefuran, Imidacloprid,  
Thiacloprid, Thiamethoxam

Is your nursery neonic free? Let us know!

[INFO@PESTICIDE.ORG](mailto:INFO@PESTICIDE.ORG)

For more information:  
[WWW.PESTICIDE.ORG](http://WWW.PESTICIDE.ORG)

# IPM Steps

- Prevention – create a healthy landscape
- Monitoring and Observation – be a detective and scribe
- Intervention – decide if you need to do something



# Prevention

- MULCH – prevent weeds, conserve moisture, moderate soil temp
- IMPROVE SOIL – test, amend, fertilize, cover crop
- RIGHT PLANT, RIGHT PLACE – meet plant's needs
- SANITATION – remove diseased or pest infested plant materials
- PROVIDE AIR SPACE - overcrowding can cause disease issues
- WATERING – in morning, deeply, slowly and keep foliage dry
- ROTATE CROPS – tomato, onion and cabbage family plants
- PLANT DIVERSE GARDENS – get help managing pests
- FLOATING ROW COVER – use to keep out flying pests
- USE REFLECTIVE MULCHES – silver flashing deters flea beetle
- SLUG TRAPS – beer or yeast in containers



Protecting a crop with a floating row cover

# Monitoring and Observation

- Observe your garden all year long
- Learn about your plant's needs - native habitat - mature size and shape - soil, sun and water needs
- Learn about life cycles of pests
  - SIMPLE - Stink Bugs – egg to nymphs to adult
  - COMPLETE - Imported Cabbage Worm Butterfly – egg to larvae to pupae to adult
- Learn about life cycles of weeds
  - Annual, biennial and perennial weeds
  - Tap roots versus fibrous roots
- Fungal, bacterial, viral diseases
- Pests versus beneficial insects
- Keep a notebook



Courtesy Un

# Identifying Issues



The clue?

The weather that preceded the observation of this damage.

# Look Alikes

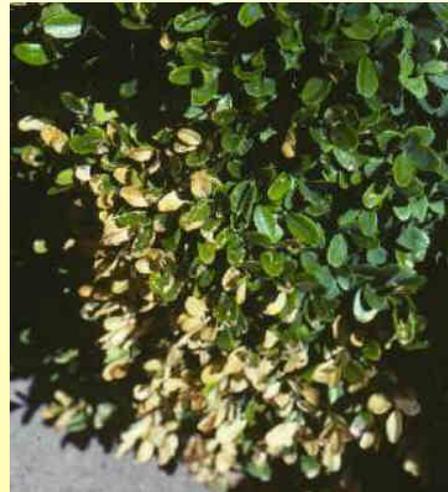
air  
pollution



drought



winter  
injury



salt  
damage

# Which One is the Pest?



**Ground Beetle**



**Root Weevil**

# Tolerance

- Determine if there is a need for intervention.
- Aesthetics and the health of your plants are not necessarily the same thing.
- Sometimes removing a plant is the best choice.



# Intervention

- Assess your tolerance levels for any given issue
- Review plant placement guidelines
- Assess for a problem plant that needs to be removed
- Review your plant care practices
- Treat the issue



# Treatment Options

**Cultural** – adjust watering, prune for air flow, fertilize, check trunk flare, check soil moisture

**Mechanical** – hand remove the pest and dispose of, pull the weeds before they go to seed, use preventative measures like slug traps

**Biological** – beneficial insects or pesticides derived from bacteria, fungi or other biological source

Btk or *Bacillus thuringiensis* subspecies *kurstaki* - controls tent caterpillar

**Chemical** - use as a last resort and use lowest toxicity products first

# Chemical Treatment

- All chemicals have potential toxicity. Use least toxic first.
- Inert ingredients are often not described on the label.
- All are manufactured products.
- Use as a last resort.
- Read and follow label instructions.
- Acquire the Material Safety Data Sheet which will outline safety information.



# Organic Versus Certified Organic

- Organic refers to a carbon based substance.
- Frequently used on product labels; indicates product is made of organic matter
- Certified Organic is applied to a product that has met a set of standards developed by the USDA in order to be used in organic production.
- Can be identified by USDA or WSDA seal or OMRI logo



# Create a Habitat Garden

NORTH ↑

Prevailing winds

trees & shrubs for screening and wildlife

Flowering Tree

Snag

Shade / part shade

Bat House

Fruit Tree and  
Mason Bees

PNW native border

veggie garden

Sunny, hot

Wildflower Garden

Sandy soil

patio

Ground Dwelling Bees

fern garden

Dry shade

herbs

rainbarrels

Lower level, wet

Rock Piles

Native wetland plants



# Building Habitat

- Plants diversity is key –shape and size and species
- Don't be overly tidy
- Leave some ground bare for ground nesters
- Leave moss intact for bird nests
- Provide larval food plants for butterfly caterpillars
- Plant dense areas for shelter
- Provide snags, wood blocks, rock piles for basking, nesting and safe sites
- Provide a water source – puddles for butterflies, fountains or baths for birds



# Butterflies and Moths



Monarch and Milkweed



Anise Swallowtail Larvae

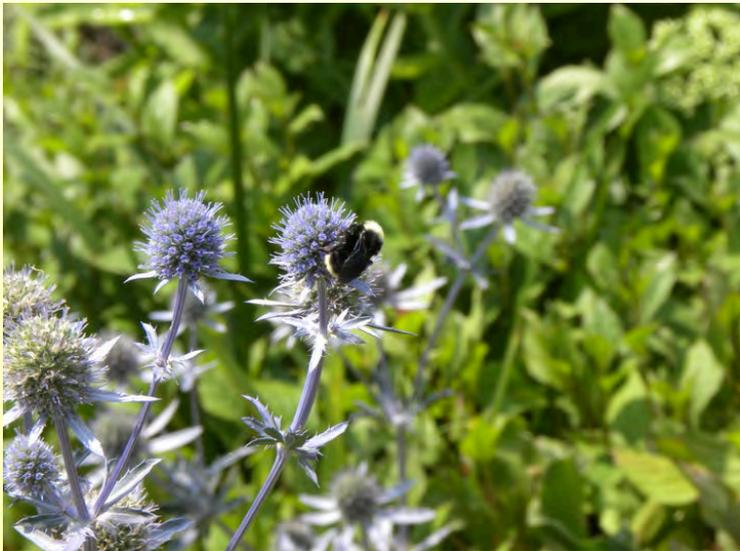
Western Sheepmoth



Taylor's Checkerspot

# Native Bees

- Bumble Bees – 30 species in western North America
- Solitary Bees – mason, leaf cutter, carpenter
- Green Bees and Small Bees – ground nesting, semi -social



Yellow Faced Bumble Bee - *Bombus vosnesenskii*



Western Bumble Bee - *Bombus occidentalis*

# Beneficial Insects

## Green Lacewing and Larva



Larvae also called Aphid Lions

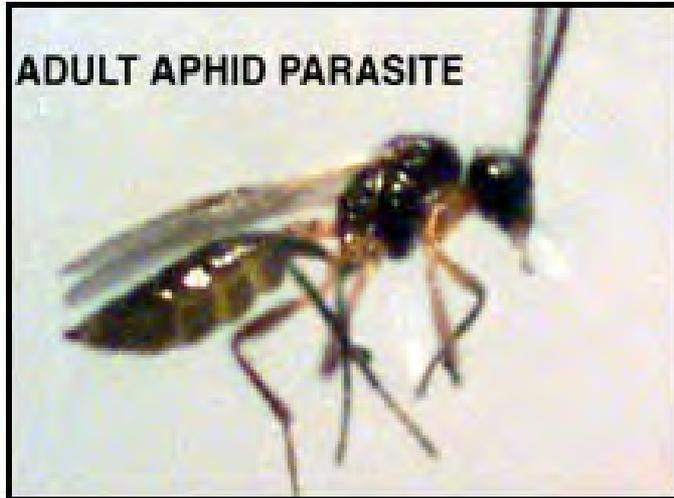


## Lady Beetle and Larva



Adults and  
larvae are  
proficient  
aphid  
eaters

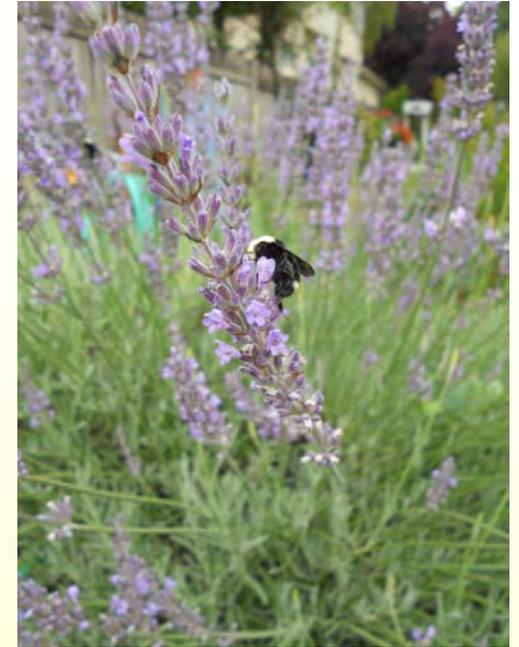
# Parasitoid Wasp



**They Do Not Sting!!!**

- Parasitize by laying eggs in the host insect. The host is entirely consumed by the developing larvae.
- Caterpillars, moths, leafminers, wood-boring beetle larvae, flies, aphids, gypsy moth, weevils, and spiders.

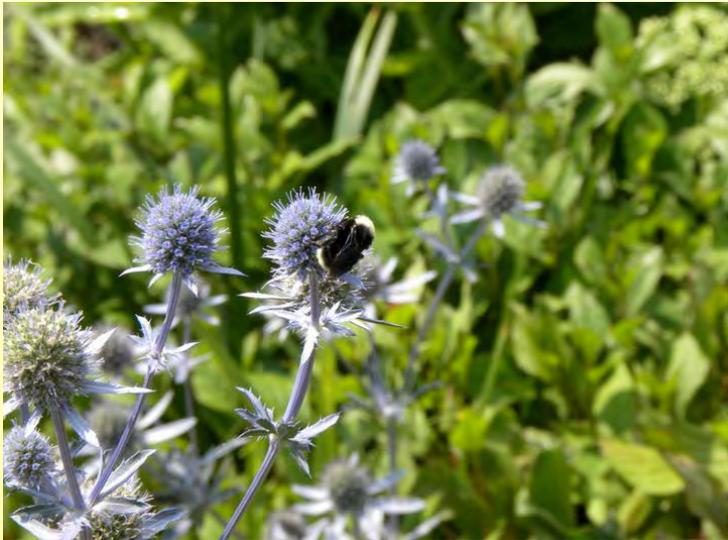
# Mint Family – Lamiaceae



# Daisy Family – Asteraceae

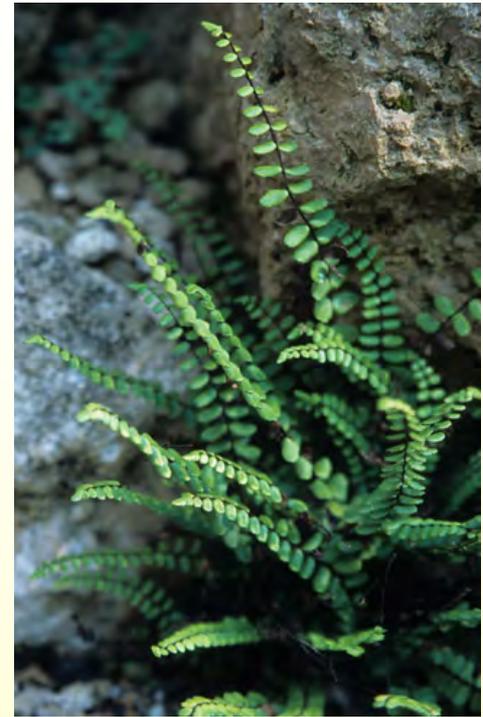


# Carrot Family - Apiaceae



# Planting Choices

- Native plants are pest and disease resistant and recognized by native fauna
- Group plants together
- Three season bloom
- Intermix with edibles
- Include cover crops – let them bloom



Fall Planted Blend – with crimson clover



Phacelia – summer cover crop

## Garter Snake

- Snakes eat slugs!
- Provide tall grass areas
- Warming areas can be created with large rocks



## Bats



## Birds



- Chickadee young eat only insects
- Adults eat weed seeds

- Bats eat 600-1,000 insects an hour
- One baby a year
- Bats are not blind. They see as well as humans
- Fragrant and night-blooming plants



What do you suppose? A bee sat on my nose.  
Then what do you think? He gave me a wink And said,  
"I beg your pardon, I thought you were the garden."  
~English Rhyme