Tips for Gardening

- Fewer Hazardous Products

- Less Toxic Waste

Pests & Insect Heroes

Gardening with Nature in Mind

Guide for Reducing Household Hazardous Waste

Coastal Character
is the marquee of the
Lincoln County Sustainability Program
and is a recognition
of the mindful community members
(residents, businesses, and visitors alike)
who are making a difference
(locally, naturally, and sustainably)
in Lincoln County and the world around us.

Coastal Character
Local, Natural, Sustainable

A Cooperative Sustainability Program of the Lincoln County Solid Waste District,
the cities of Depoe Bay, Lincoln City, Newport,
Siletz, Toledo, Waldport, and Yachats;
Dahl Disposal Service,
North Lincoln Sanitary Service,
Thompson's Sanitary Service;
and Lincoln County.

solidwaste@co.lincoln.or.us *(541) 574-1285*

Cabbage Moth

Note: insects are not necessarily printed to exact size, but a relatively close approximation. If the insect is shown in a magnifying glass the sizes have been exaggerated to show more details.

Gardening Without HHW

Each year, our community spends tens of thousands of dollars to properly dispose of unwanted Household Hazardous Waste (HHW).

This booklet provides successful and nature-oriented tips so folks in our community can use far less of these toxic and hazardous products. It also reminds folks that what goes into a garden has an effect on our region's forests, rivers, and ocean ecosystems. Pesticides that wash into rivers, streams and the ocean have an impact on the bugs, the birds, the fish, and other animals far beyond someone's garden plot.

Gardening without HHW is successful because it works in harmony with nature and the surrounding ecosystem.

Hardy Garden Basics

The bottom line is to develop a strategy that will result in fewer problems and promote a longer lasting, thriving garden. Start from the ground up.

- Healthy soil not only helps to reduce the need for fertilizers, pesticides, and water in a garden, it assists garden plants to resist against pests, drought, weeds and diseases. Understanding your soil's characteristics is an important first step to success. Start with a soil test. Your local Extension office can provide recommendations for reputable labs.*
- Native plants tend to be well adapted to our local climate and soil conditions. They resist pests, and often require less care. Native plants also may house and host many beneficial insects that help protect and promote other plants in your garden.*
- Pay attention to suitable garden locations for each plant. Wind, shade, sun, heat, dryness, and sodden soils are all factors that affect the success of plants in your garden. Move plants to their best location. You may also need to acknowledge that some plants may just not be well suited in all desired locations.*
- Avoid plants notorious for being prone to diseases and pests. Avoid not only troublesome plants, but also those plants known to struggle in your local climate. Instead look for disease-resistant plants and cultivars which are bred for local conditions.*

**Work with the Master Gardener™ Plant Clinic (listed on back of this guide) or your local garden center to expand on these tips.*

Friends or Foes

Codling Moth Larvae

Your garden is so much more than just a place for plants. From the soil up, there are many small microbes, insects, and other invertebrates that contribute to making a garden green, lush, and vibrant. Most are simply helpful little bugs you will hardly ever notice.

Lacewing

Before you instantly squish that next creepy crawly thing in your garden, you might want to stop and take a second look. Not everything that climbs and wiggles through your garden is a bad thing. Given the chance, these beneficial creatures will reduce or eliminate the pests, diseases, and fungi that cause harm to your garden. Moreover, that 'thing' you wanted to squish could very well be a source of food that attract those beneficial creatures.

Assassin Bug

It is also good to remember:
In order to have beautiful butterflies
fluttering around your garden,
You need caterpillars
nibbling on a few plants!

Oregon Swallowtail Page 43

Beneficial Insects
(and Arthropods)


Flower Fly


Spider

Don't let their scary looks bug you.

These are some of your garden's best friends. No, really. Take a closer look. If you see these insects in your garden, be thankful. They are providing free pest control, removing aphids, caterpillars, and other insects that eat garden plants. These are your garden heroes. It's a jungle out there and you want all the help you can get.


Aphid Midge

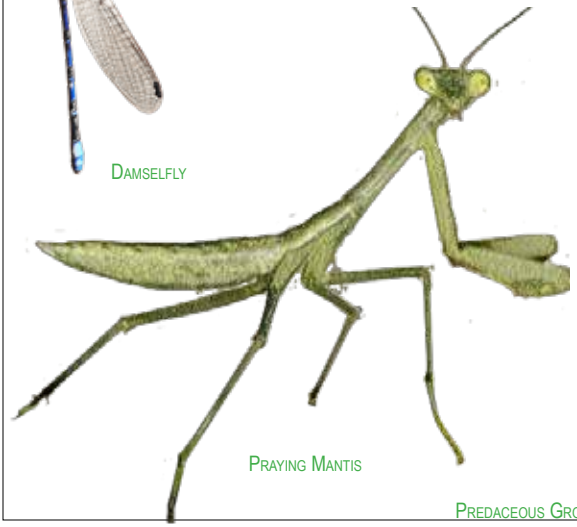

Lady Bug

These are the insects and arthropods **you want to see** in your Garden


Damselfly


Assassin Bug


Yellow Jacket


Praying Mantis


Parasitic Wasp


Predaceous Ground Beetle

APHID MIDGE

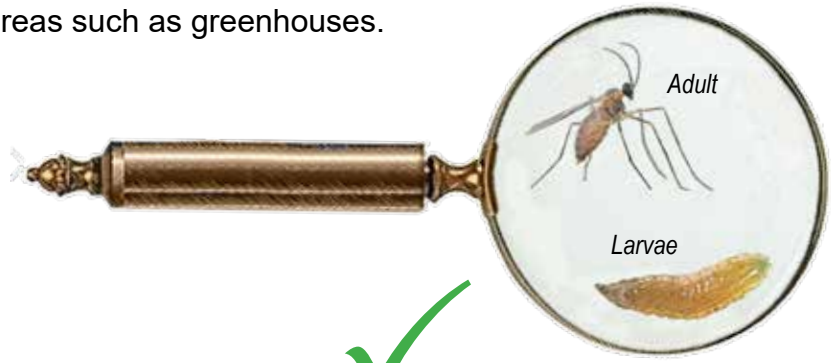
The aphid midge adults fly around garden areas feeding upon nectar. It is their larvae that feed upon aphids. The larvae are voracious predators. Each larvae is capable of killing dozens of aphids per day.

HOW TO IDENTIFY

Aphid midge adults are dark reddish brown with antennae that curl back over a thin delicate body. Both the aphid midge larvae and the adult fly are quite small, usually less than 1/8 inch long.

HOW TO ATTRACT

Ensure there are garden areas with lots of pollen and nectar that are protected from strong winds. This will attract the adult flies. The aphid midge thrives in humid and warm areas such as greenhouses.



ASSASSIN BUG

(AKA - Ambush Bug)

There are many varieties of assassin bugs. They use their curved and pointed mouth area called a “proboscis” to stab and kill prey. They are generalist predators, attacking and killing a wide variety of garden insects, from aphids to caterpillars. Although the Oregon varieties are relatively harmless, assassin bugs will use their proboscis to defend themselves when threatened. Hence, it is best not to provoke or handle them.

HOW TO IDENTIFY

Adult assassin bugs generally grow to about 3/4 inch long. Most are brownish/blackish color and have long narrow bodies with a pronounced snout. The nymphs are generally smaller and wingless, but resemble the adults.

HOW TO ATTRACT

Add mulch in garden areas to provide a place for assassin bugs to hide. Flowers and herbs like marigold, tansy, dill, and fennel may attract assassin bugs.

DAMSEL BUG

(AKA - Nabid Bug)

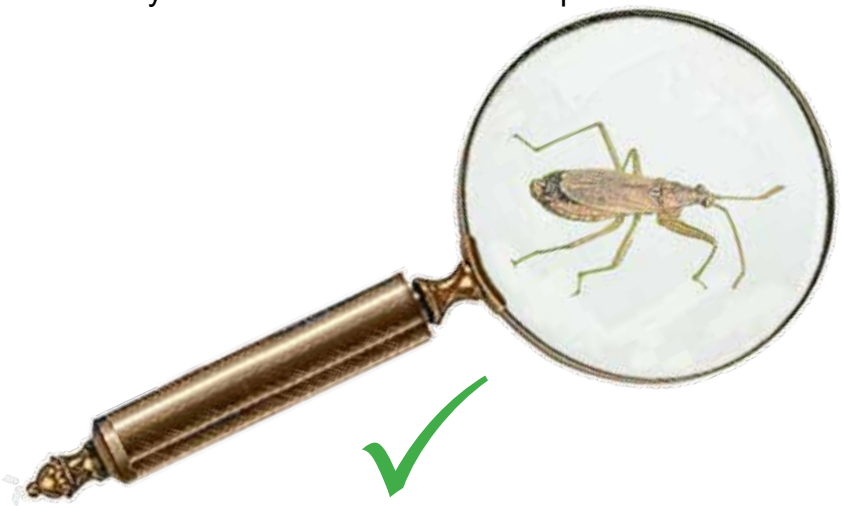
Damsel bugs feed on a wide range of small garden insects from aphids to tiny caterpillars. There are many varieties found all over the world.

HOW TO IDENTIFY

Adult damsel bugs have wings. There are 2 main types: the common variety which is 1/3rd inch long and yellow brown, and a larger skinny black variety. The nymphs are smaller and wingless, but resemble the adults.

HOW TO ATTRACT

Damsel bugs are attracted to tall grasses to hide in, as well as a variety flowers for their nectar and pollen.




Damselfly

DAMSELFLIES & DRAGONFLIES

There are many species of both damselflies and dragonflies. Each are fierce aerial predators that capture and kill a variety of large and small garden insects.

How to Identify

Damselflies are typically smaller and skinnier species than dragonflies, and keep their wings elevated when at rest. Dragonflies are heavy-bodied species and hold their wings horizontal in both flight and when resting.

How to Attract

Both need a variety of vegetation that is located near a source of fresh water.


Dragonfly

FLOWER FLY

(AKA - Hover Flies & Syrphid Flies)

Flower flies are frequently found hovering around garden flowers where they feed on nectar. They are also good pollinators. Flower fly larvae feed upon small garden insects such as aphids.

HOW TO IDENTIFY

Adult flower flies mimic yellow jackets and wasps. They grow to about 1/8 inch to 5/8 inches long and have variations of yellows and dark browns that are striped. Even though flower flies look and act aggressive, they do not bite or sting people. The larvae can grow to about 3/4 inches long, may be grayish or greenish in color, and are somewhat translucent.

Larvae

HOW TO ATTRACT

Plant a variety of flowers that bloom all year. Flower flies are attracted to flowers and rely upon nectar as their food source.

Adult

LACEWINGS

Lacewings are frequently found where there are infestations of aphids. Both the adults and larvae are aggressive predators, consuming aphids, caterpillars, beetle larvae, mites, and insect eggs.

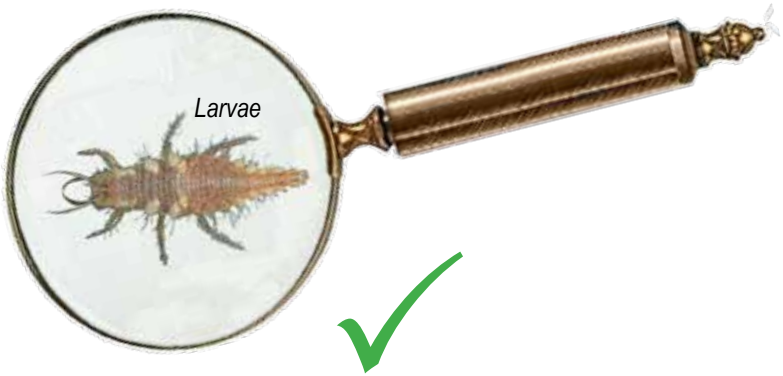
HOW TO IDENTIFY

Adult lacewings are delicate green or brown insects with long wings and small heads. Adults grow to about 1/2 inch to 3/4 inches long. The larvae have an alligator-like appearance and are yellow/brown in color.

Adult

HOW TO ATTRACT

Plant a variety of flowers that bloom all year. The pollen and nectar are a food source for adult lacewings.



LADYBUG BEETLE

(AKA - Ladybird Beetle)

Ladybugs prey upon aphids. Both the adults and the larvae feed on a wide variety of small insects, but seem to prefer aphids. A ladybug may consume as many as 5,000 aphids over its lifetime.

HOW TO IDENTIFY

Adult ladybugs are dome-shaped beetles. Typically, their colors are red with black dots, but they can also be black, or gray, with orange or white patches. The larvae look nothing like the adult. Larvae are typically black with orange patches. Both adults and larvae can grow to about 1/2 inches long.

HOW TO ATTRACT

Planting herbs and flowers such as cilantro, dill, fennel, caraway, yarrow, tansy, angelica, scented geraniums, coreopsis, and cosmos may attract lady bugs.

Minute Pirate Bug

The minute pirate bugs are generalist predators of garden insects. They prey upon a wide variety of garden insects such as aphids, thrips, tiny caterpillars, mites, and insect eggs.

How to Identify

Both adults and nymphs are somewhat oval-shaped. Nymphs are wingless and commonly yellow-orange to brown in color.

How to Attract

Plant a variety of flowers that bloom all year. Minute pirate bugs may also consume pollen.

PARASITIC WASP

Parasitic wasps are frequently found among garden flowers where they feed on nectars, pollens, and honeydew such as aphid honeydew (a sticky liquid they excrete). Adults may also feed upon insects, but it is the larvae that is the parasite to garden pests. The egg is inserted into the egg or bodies of the host insect, typically worms and caterpillars. Once there, the larvae feed upon and kill their host. Parasitic wasps are not known to harm people.

HOW TO IDENTIFY.

Most parasitic wasps are small. They range in size from teeny tiny (the size of speck of pepper) up to about 1/2 inch.

HOW TO ATTRACT

Provide shade on hot summer days. Grow both perennial and annual flowers to attract parasitic wasps to the garden. Adults are attracted to and rely upon nectar as their food source.

PRAYING MANTIS

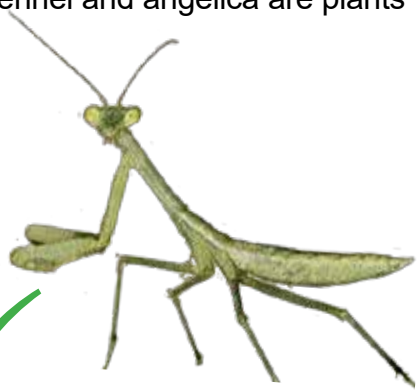
Praying mantises are aggressive generalist predators, consuming a wide variety of insects such as fruit flies, crickets, beetles, moths, and grasshoppers. They are experts of camouflage and stealth.

HOW TO IDENTIFY

Praying mantises can get quite large, but are usually around 3-5 inches long. They are often green or tan in color, blending in with their habitat. Although they may have wings, they are clumsy fliers. Young praying mantises appear as a smaller version of the adults, with the exception that the young do not have wings.

HOW TO ATTRACT

Grow shady, protective plants that are low to the ground. Marigold, raspberry canes, dill, fennel and angelica are plants and herbs that attract
Praying Mantises.



PREDACEOUS GROUND BEETLES

(AKA - Carabids)

Predaceous Ground Beetles belong to one of largest beetle families in North America and have many species. Both adult and larvae of predaceous ground beetles prey upon insects, snails, and slugs along the ground.

HOW TO IDENTIFY

Most ground beetles are colored in various shades of black, but may also be found in iridescent green. They have long legs and are fast runners. Adult beetles can fly and have ridges on their wings. They range in size between 3/8 inch to 1-3/4 inch.

HOW TO ATTRACT

Create dark areas and moist areas in the garden where beetles can hide during the day.

Larvae

Adult

SOLDIER BEETLE

Soldier beetles are frequently found on garden flowers where they feed on pollens and nectar. They are also good pollinators. The soldier beetle's larvae feed upon other small garden insects eggs and larvae.

HOW TO IDENTIFY

Adults are about 1/2 inch long with yellow/brown wing covers. The larvae can grow up to 3/4 inches long.

HOW TO ATTRACT

Plant a variety of flowers that bloom all year. Adults are attracted to and rely upon nectar as their food source, especially plants such as goldenrod, hydrangea, catnip, milkweed and wild lettuce.

SPIDERS

Spiders are opportunistic hunters and prey upon on a wide variety of insects including aphids, caterpillars, cucumber beetles, flies, grasshoppers, leafhoppers, and thrips.

HOW TO IDENTIFY

Spiders belong to the largest phylum in the animal kingdom called Arthropoda. All spiders have 8 legs and 2 body segments. They produce silk to entrap their prey. Different spiders use different hunting strategies. Jumping spiders and wolf spiders ambush their prey. Garden spiders use webs to capture prey.

HOW TO ATTRACT

A lush garden is an excellent habitat for spiders. Using mulch provides wolf spiders places to hide.

YELLOW JACKETS

Yellow jackets eat a widely varied diet - insects, nectar, honeydew *(see Aphids page 21)*, and fruit. They are aggressive hunters and capture flies, crickets, aphids, caterpillars, cabbage moths, and grubs. They also are attracted to human food such as fruits, sweets, sodas, and meats. Even though they can be viewed as a problem for a picnic, yellow jackets serve an important role in feeding on garden pests and removing dead bugs in the garden.

HOW TO IDENTIFY

Similar to some bees and wasps, yellow jackets have a distinctive black and yellow stripe coloration. They grow to about 1/2 inch long.

HOW TO ATTRACT

Plant a variety of flowers that bloom all year. Yellow Jackets are attracted to sweet smells.

Healthy Soil

Don't forget about the ecosystem in your soil. Healthy soil is teaming with life and helps to reduce the need for fertilizers, pesticides, and water in a garden. More importantly, healthy soil assists garden plants to resist against pests, drought, weeds, and diseases.

When you are gardening with nature in mind, compost can be a critical ingredient. Compost enhances soil structure and plant growth by:

- Adding organic material into the soil, increasing biological activity, and storing critical organic nutrients.
- Promoting healthy plant growth by loosening clay soils, promoting root development, and supporting beneficial organisms which help plants to thrive and resist against weeds, disease, and insects.
- Enhancing the capacity of soils to retain more moisture, as well as reducing erosion and water run-off.

Problematic Insects

Natural gardening is a balancing act, in which creatures living in your yard need something to eat and your garden is a tasty part of the food chain. Even the best gardens will have some damage and losses each year.

Healthy plants are resilient and are often quite tolerant to minor damage. For garden pests, careful monitoring and promotion of natural controls, along with some occasional interventions to stop infestations are a way to work in harmony with your garden.

Garden Pest

Aphids

Aphids can damage plants in both flower and vegetable gardens. Plants tend to recover from small groups of aphids, but infestations can damage large sections of a plant. Aphids secrete a sweet substance called honeydew. The honeydew often attracts ants, bees, and flies. The honeydew is sticky and as aphids shed their exoskeletons their castoff exoskeletons can be seen stuck to leaves.

How to Identify



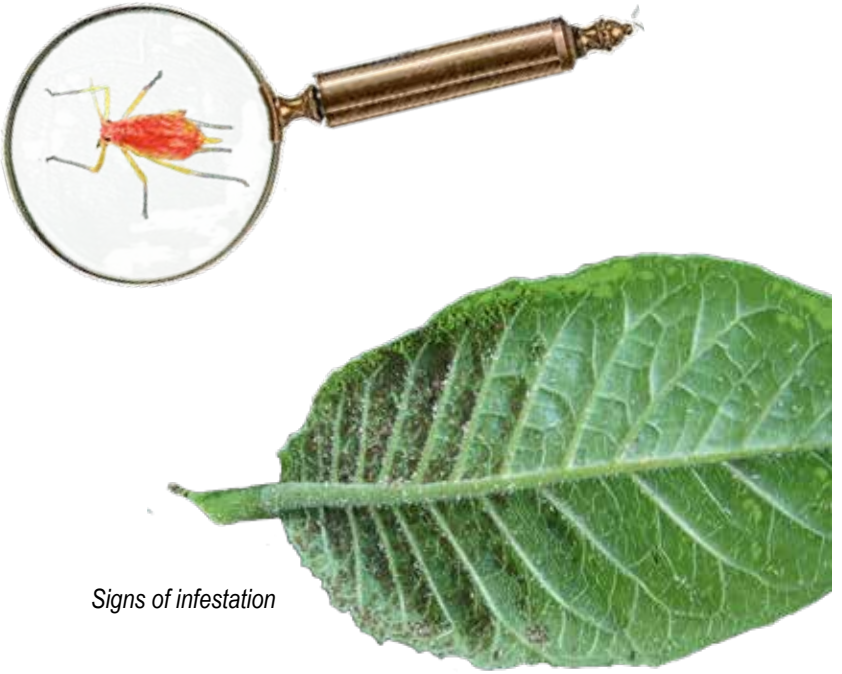

Aphids are small, 1/16- to 1/8-inch-long, pear-shaped, soft-bodied insects. They can range in color from green, black, red, yellow, brown or gray. All aphids have cornicles, which look like tail pipes on their rear ends. Mature aphids may or may not have wings.

Natural Controls

- Maintaining healthy plants is one of the best ways to avoid aphid infestation. Weak or stressed plants, as well as over-fertilized plants are much more susceptible to aphid attack.
- Keep soil clear of leafy debris in the fall where aphid eggs can overwinter.
- If you till your soil, make sure to cultivate 6 inch to 8 inches deep to destroy overwintering eggs.
- Syrphid flies, green lacewing larvae, wasps, and ladybugs naturally prey on aphids. It is good to remember these are basic life cycles, where aphid populations will increase in spring before the populations of predators come to the rescue. So, it may take time before you will see the aphid populations reduce.

Intervention

- Hose the aphids off plants, especially while waiting for natural predator populations to rise.
- During infestations, pinch off severely affected plant sections.
- Avoid plantings that attract aphids, especially if aphids pose a particular problem for your garden. Consult the Master Gardener Plant Clinic (listed on back of this guide) or your local nursery for help choosing plants which may be less likely to develop aphid issues.



Signs of infestation

APPLE MAGGOTS

Apple maggots are the larvae of flies that feed on the inside of apples (and pears), making brown tunnels in the white flesh of the fruit. Adult flies emerge from the soil in early summer and feed in wooded or brushy areas. They lay eggs just under the skin. Once the eggs hatch, their larvae feed on the fruit for three to four weeks. When ripe fruit drop to the ground, the larvae transform into pupae in the soil and spend winter and early spring underground. Apple maggot tunnels are usually hard to spot from the outside of the fruit.


Chrysalis

HOW TO IDENTIFY

The adult fly is 1/4 inch long, smaller than a common housefly. The fly has dark markings on clear wings, a conspicuous white spot where the thorax joins the abdomen, and has white stripes on the abdomen.


Adult


Larvae

NATURAL CONTROLS

- Reduce future infestations by regularly removing fallen, overripe, and rotten apples and pears from around your tree(s). This will help reduce the apple maggot pupa living in your local soil.*
- Do not place potentially infected home grown apples or pears into home compost (instead use your yard debris/ mix compostable roll cart). This will help reduce the apple maggot pupa getting into your garden soils.*
- If apple maggots are a consistent problem, consider planting thicker-skinned later varieties such as Winesap and Jonathan.

** Apple maggot flies may still arrive from other areas, but these strategies will help to keep their overall numbers in check.*

Intervention

- Traps: Adult flies may be trapped as they first attempt to lay eggs. Hang traps (about 1 trap per 100 fruit) in the trees by the end of June. As a general rule, place one trap facing wooded/brushy areas and one trap on the south side of the tree. There are many kinds of trap designs available and some can be easily made at home such as covering a red sphere with a sticky substance. Contact the Master Gardener Plant Clinic (listed on back of this guide) or your local garden center for more information on building or buying traps.
- Bagging: In early to mid-June, enclose each apple or pear in a small clear plastic bag. Zip-tie, staple, or clip to keep the bag closed. Snip the bottom corner off each bag to allow water to run out. If you have a tall tree, you may choose to bag only the fruits that are easy to reach, and leave fruit growing higher up exposed.

Signs of damage

CODLING MOTHS

Codling moths larvae feed on the inside of apples and pears. Damaged fruit is usually noticeable because the tunneling larvae leave a crumbly patch on the exterior of the fruit. Adults emerge in the early spring and lay eggs on developing fruit. Larvae tunnel directly to the core of the fruit and then exit, drop to the ground, and crawl off to spin cocoons. Larvae may stay in cocoons through winter or emerge as adults within 2-3 weeks.

HOW TO IDENTIFY

Larvae

Codling moths are a medium-sized light grayish brown moth about 3/8 inch long. The larvae have a unique brown head with an off-white body.

Chrysalis

Adult

NATURAL CONTROLS

- Wasps and their larvae are natural parasites of moths. Attract parasitic insects by growing sweet alyssum or daisies near fruit trees to provide a good nectar source for the wasps.
- Reduce future infestations by regularly removing fallen, overripe, and rotten apples and pears from around your tree(s). This will help reduce the apple maggot pupa living in your local soil.*
- Do not place homegrown apples and pears into home compost (instead use your yard debris/mix compostable roll cart). This will help reduce the apple maggot pupa getting into your garden soils.*

** Codling Moths flies may still arrive from other areas, but these strategies will help to keep their overall numbers in check.*

Intervention

- In winter, carefully inspect trees, scraping away loose bark and destroying overwintering cocoons before warm spring weather. Also, carefully inspect harvested apples and pears, including storage areas. Destroy any moths or larvae found there.
- Banding: Wrap bands of corrugated cardboard (ridges running vertically) around tree trunks just after bloom, before the larvae begin to crawl down the tree in the late spring. This draws in the larvae looking for a place to pupate. Remove the bands once a week in warm weather (every two weeks in cooler weather) and kill the larvae. Repeat until you have harvested all the fruit. This will reduce the overall population.
- Traps: There are many kinds of pheromone trap designs available and some can be easily made at home such as delta or wing traps. Contact the Master Gardener Plant Clinic (listed on back of this guide) or your local garden center for more information on building or buying traps.

Signs of damage

CABBAGEWORMS

Cabbageworms *(aka Imported Cabbageworms)* feed on cole crops such as cabbage, cauliflower, broccoli, kale, rutabaga, radish, turnip and collard. Signs of cabbageworms are ragged holes left in the leaves between the large veins and midribs of cabbage family plants. Established plants can tolerate some defoliation, with little effect on yield. However, do not allow defoliation to exceed 30 percent of the leaves.

HOW TO IDENTIFY

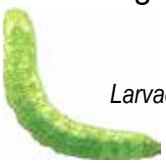
Adult

Adult butterflies are 1-1/2 inches long, white butterflies with black spots on the forewings, with 2-3 spots on each wing. Eggs are yellow and oblong. Cabbageworm eggs can be found on both the upper and lower sides of leaves. Caterpillars grow up to 1 inch in length and are velvety green with faint yellow stripes running lengthwise down the back and sides.

Chrysalis

NATURAL CONTROLS

- Prevent Brassicaceae family weeds like wild mustard, peppergrass, and shepherd's purse from growing in the areas near cabbage-family plants. These weeds can support the cabbageworm life cycle.
- Paper wasps are heroes that naturally prey on cabbageworm caterpillars.



Larvae

Intervention

- Grow cole crops in a screened area to prevent adult moths from laying eggs on the plants.
- Search for cabbageworms as well as brush off any eggs. Do not place infected materials into home compost (instead use your yard debris/mix compostable roll cart).
- Yellow sticky traps may be used to catch female butterflies. Contact the Master Gardener Plant Clinic (listed on back of this guide) or your local garden center for more information on building or buying traps.

Signs of damage

CUTWORMS

Cutworms generally do severe damage to young plants in both flower and vegetable gardens. A sure sign of cutworms are sliced off stems of seedlings at soil level. In fact, they get their name because they cut down young plants as they feed on the stems. They feed at night and hide in the soil during the day. Eggs are laid in the soil, where the larvae and pupae overwinter.

Adult

How to Identify

Cutworms are gray or brownish caterpillars with very few hairs, can grow up to two inches in length, and curl up when disturbed. The adult moths are about 1 inch long with wingspans up to 1-1/2 inches. The forewings are darker than the hind wings.

Larvae

Natural Controls

- Cutworms do not like dry soil. Remove weeds and leaf litter which can hold moisture. Maintain a three- or four-foot buffer zone of dry soil around susceptible areas.
- Reduce overwintering larvae by tilling the soil in the fall.

Chrysalis

Intervention

- Protect seedlings by placing an 4 inch tube around each plant. Toilet paper tubes work well. Keep tube about 3 inches above ground, and bury 1 inch deep into the soil.
- Search for offenders. Watch for young plants that are freshly damaged being cut off near the ground. Run your hand over the ground, rolling the soil clumps within a one-foot radius of the damaged plants. If cutworms are present, they will curl into a “C” when disturbed. Remove them.

Signs of damage

LEAF MINERS

Leaf miners are the tiny larvae of insects that tunnel between the upper and lower surfaces of leaves, leaving characteristic wavy lines that are visible through the leaf. Leaf miners feed on many vegetable plants in the garden. Damage is especially troublesome on spinach, chard and sometimes beets since these plants are grown to harvest the leaves. Leaf miners can also be troublesome in celery. Adult flies and moths emerge in spring and insert eggs into leaves. Hatching larvae tunnel through the mid-leaf tissue, between leaf surfaces, and are active for about two to three weeks. When ready to pupate, the larvae leave the leaf and drop to the soil, emerging in 10 to 15 days as adults. Several generations can occur during one year before the pupae hide for the winter.

HOW TO IDENTIFY

Leaf miners are tiny and the insect itself may not be noticed, just their patterned trail in the leaf. Many species of flies, moths, and few beetles have larvae which are leaf miners.

Natural Controls

- Lacewings and spiders naturally prey on leaf miners. In addition, leaf miners have other natural enemies which include ants, true bugs *(Hemiptera)*, flies, and birds.
- Parasitic wasps can attack the larvae through the leaf.
- Prevent weeds such as lambsquarter from growing in the nearby garden area. These weeds can support the leaf miner life cycle.
- Reduce overwintering larvae by tilling the soil in the fall and then rotate plant species several feet away from where they were planted the previous year.

Intervention

- Search for offenders by removing affected leaves and brush off any small white egg clusters from the backs of the leaves. Do not place infected materials into home compost (instead use your yard debris/mix compostable roll cart).
- Yellow sticky traps may be used in enclosed areas such as greenhouses. Contact the Master Gardener Plant Clinic (listed on back of this guide) or your local garden center for more information on building or buying traps.

Signs of damage

LEAF ROLLERS

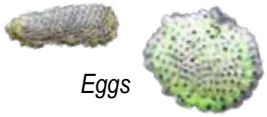
Larvae

Leaf rollers are insects that can impact different types of trees (such as apple, willow, and plum) and bushes (blueberries, photinia, and laurel) with their characteristic folded leaves. The name leaf roller comes from the larva's habit of tying leaf edges together with a web when building feeding sites or shelters. Signs of injury to fruit are usually shallow, ragged edged zones and thick, corky tissue covering the damaged area.

Adults

HOW TO IDENTIFY

Leaf roller eggs are laid *en masse*. At first, they start out as light green, but as eggs mature they turn light brown. Larva are typically green and grow to about 1 inch long. It is the larvae which spin webs and roll the leaves. Pupae are dark brown, about ½ inch long, and are usually found in rolled leaves on the tree. Adult moths are typically reddish brown and smaller than ½ inch long.



Eggs

NATURAL CONTROLS

- Wasps may prey on leaf rollers.
- Do not place affected leaves into home compost. Instead use your yard debris/mix compostable roll cart. This will help reduce the number of larvae escaping into your garden soils.

Intervention

- Search for offenders, remove affected leaves, and brush egg clusters from the backs of unaffected leaves. Discard infected materials into your yard debris/mix compostable roll cart.

Signs of damage

SCALE

Scale sucks plant sap, which weakens plants and causes leaves to yellow and drop. They are noticeable as small bumps on leaves, stems, and fruits. Scale may excrete large quantities of a gooey liquid called 'honeydew,' making plant leaves and stems sticky. Scale populations are usually kept down by natural predators.

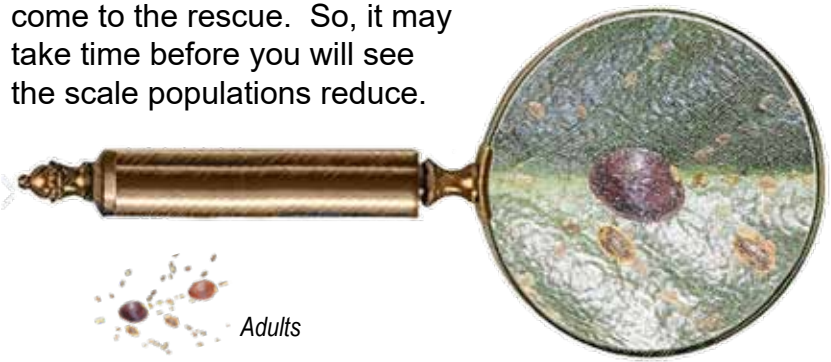
HOW TO IDENTIFY

Scale are insects that are convex in shape and about 1/8 to 1/4 inch long. They have larval stages, which at first may look like a mite and then progress to the more recognizable convex shape. Adult females look like hard or soft bumps on the plant. Males become minute flying insects with yellow wings, and do not feed.

Adult male

NATURAL CONTROLS

- Syrphid flies, green lacewing larvae, wasps, and ladybugs naturally prey on scale. It is good to remember these are basic life cycles, where scale populations will increase in spring before the populations of predators come to the rescue. So, it may take time before you will see the scale populations reduce.



Adults

Intervention

- On small plants, you can search for offenders. Carefully inspect leaves and stems and scrap off scale with a fingernail or dab each individual scale with a cotton swab soaked in rubbing alcohol.
- Scale is easiest to manage during the crawler stage. Crawlers usually appear in early summer. You can find crawlers by shaking infested branches over a white sheet of paper or white paper plate to look for reddish or yellowish colored crawlers. Contact the Master Gardener Plant Clinic (listed on back of this guide) or your local garden center for more information on using insecticidal soap or other methods to control outbreaks of scale.

Signs of damage

SLUGS

Slugs feed at night on young plants, leaves, flowers, and ripening fruits. They are most prevalent in cool, moist areas with shade and seem to have a taste for strawberries, lettuce, spinach, carrot tops, dahlias, and marigolds in particular.

HOW TO IDENTIFY

Slugs are slimy and soft bodied and look like snails without shells. They are generally brownish or grayish in color and their head contains two pairs of feelers. They can range in size from 1/4 inch to more than 2 inches. Slugs have a layer of slime to protect their skin from drying up.

Adult

NATURAL CONTROLS

- Beetles, toads, snakes, turtles, shrews, ducks, and birds naturally prey on slugs.
- Discourage slugs by creating sunny and dry conditions around plants. Prune lower branches to allow more sunlight to reach soil. Divide or thin plants to improve air circulation and allow the soil surface to dry out. If planting in rows, make plant rows 12 to 18 inches wide, and water in the mornings. Avoid over-watering.
- Eliminate materials where slugs can hide during the day. Remove loose containers, boards, pavers, flat stones, and leaf litter.

Eggs

- In shady areas, promote plants that slugs do not eat, such as bleeding heart, ferns, sedges, and ornamental grasses. Contact your local nursery or the Master Gardener Plant Clinic for plants that may work best in your garden.

Intervention

- Create a slug barrier. A 3 inch wall of copper sheeting or tape will typically prevent a slug from crossing it. Watch for slugs that may have been trapped inside the garden.
- Search for offenders. Slugs tend to be more active at night or in cool damp areas during the day.
- Build your own slug trap. Turn over a wet clay pot in a shady area of the garden. Create a gap for slugs to crawl in. The slugs will collect under the pot during the warmest part of the day. Check for slugs and remove them. You can also attract slugs to your trap with fermented bread dough (check with your local Extension Office for a recipe).

Signs of damage

SPIDER MITES

Spider mites attack a wide variety of plants and like dry conditions. Signs of spider mites include when leaves start to look pale or mottled, and there may be webbing between and on the back of leaves. Because they are so small, detection is done by tapping a suspect leaf over a sheet of white paper. If the little spots move, it's likely they are mites.

HOW TO IDENTIFY

Spider mites are very tiny, about 1/50 of an inch long. They can vary in color from grays, blacks, reds, and browns.

NATURAL CONTROLS

- Spider mites thrive on plants under stress. Keep plants well-watered, and conserve moisture through proper mulching to reduce the chances of a spider mite attack.
- Lacewing larvae, praying mantis, and ladybugs naturally prey on spider mites. It is good to remember these are basic life cycles, where spider mite populations will increase in spring before the populations of predators come to the rescue. So, it may take time before you will see the spider mite populations reduce.

Intervention

- Wash spider mites and their webs away with a strong stream of water. During an infestation, you will need to repeat this every several days. Be sure to spray all sides of the leaves thoroughly.

Signs of damage

Tent Caterpillars

Tent caterpillars spin silky white tents that cover the tips of branches. Caterpillars emerge in early to mid-May and feed on plants for a few weeks. They are typically found on roses as well as walnut, alder, willow, and fruit trees.

Larvae

How to Identify

Tent caterpillars are about 2 inches long and have a row of white 'footprint' markings down their back. There are many hairs along the edge of their body. Adult moths emerge for a few days in summer, are tan colored and nocturnal. The eggs are laid in a foam-like band around small twigs or branches of the host tree where they hibernate over the winter.

Adult

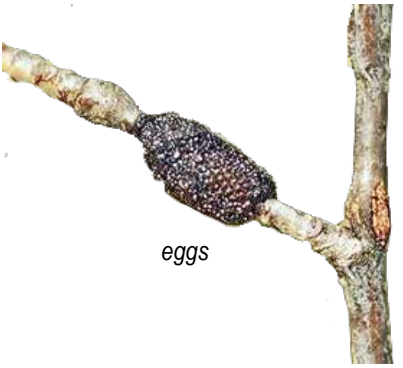
Natural Controls

- Tent caterpillars are native insects and are usually controlled by natural factors. Flies are a natural parasite to caterpillars. Sometimes the fly's white eggs are seen in rows along caterpillar backs.
- Do not place infected materials into home compost (instead use your yard debris/mix compostable roll cart). This will help reduce the number of larvae escaping into your garden soils.

Intervention

- During heavy infestation or if found to be bothersome, manually remove the tents with a stick in the morning or in the evening when caterpillars are in their tents.
- During the winter, examine branches and rub off and discard egg masses that appear as hardened gray or brown frothy material, somewhat similar to Styrofoam. Egg masses are usually 1/2 inch long bands surrounding twigs.

Signs of damage



eggs

Looking for some more resources? Check these out:

Beneficial Insects

Want to learn more about how to keep insect heroes coming back to your garden? Check out:

- **Encouraging Beneficial Insects in Your Garden**
  https://catalog.extension.oregonstate.edu/pnw550
- **Create a home landscape for pollinators**
  such as butterflies, bees, and hummingbirds
  https://beav.es/S5p
- **The Oregon Silverspot Butterfly (OSB)**
  OSB is a threatened pollinator that is native to the Oregon Coast. Lincoln Soil and Water Conservation District, the Master Gardeners, and other community partners are working together to protect this species. Learn more about the OSB and what you can do to help at:
  - ◊ OSU Extension: Oregon Silverspot Butterfly
    https://beav.es/SGw
  - ◊ US Fish & Wildlife Service: Oregon Silverspot Butterfly
    https://beav.es/SGU

The Swallowtail is the Oregon State Insect

Integrated Pest Management

If there's an insect pest you need to kill, consider using an Integrated Pest Management (IPM) approach. Sometimes using an insecticide really is the best option, but often there are effective non-chemical options you can try, too. To learn more about IPM:

- Start with this primer on Integrated Pest Management for Home Gardeners
  https://pubs.nmsu.edu/_circulars/CR655/index.html
- Learn to identify the insects in your garden
  https://www.insectidentification.org/

Gardening Best Practices

And if you want to learn more about other aspects of gardening including how to get started, check out:

- Growing Your Own
  https://catalog.extension.oregonstate.edu/em9027
- Oregon State University's Garden Ecology Lab
  https://blogs.oregonstate.edu/gardenecologylab/

Ladybug

More Questions About Pests and Heroes?

Connect with the Master Gardeners™ of Lincoln County! Master Gardeners provide education to Oregonians about the art and science of growing and caring for plants. Join us at any or all of the forums listed below to be immersed in a culture of learning about sustainable, green gardening on the Oregon Coast!

Damselfly

Website: ***www.orcoastmga.org***
or
https://extension.oregonstate.edu/mg/lincoln
Keep up with the latest information about gardening, classes, round-tables. These sites are treasure troves of information for gardening aficionados!

Facebook: ***https://www.facebook.com/OSULincolnCountyMG***
Like us on Facebook and keep coming back to learn about gardening on the Oregon Coast!

Master Gardener Plant Clinic:

Tuesday and Thursday 9AM - 12 Noon

In-Person April - November; Remote December - March

Master Gardeners are on hand to provide research-based answers to all your horticultural questions with an emphasis on sustainable, coastal gardening. Contact us anytime with your questions via phone messages or email. Or better yet, stop by when the plant clinic is open! We love talking gardening!

Oregon State University Extension Service Master Gardener™

Lincoln County Master Gardener Association

Cutworm Chrysalis

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Damsel Bug

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