The Compiled BUGGY BITS

Written by Bob Grossmann, Yamhill County Master Gardener & Chairman of the Insect Committee
# Buggy Bits

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The Wonder of Metamorphosis

Now that winter is upon us, we aren't seeing too many insects around. But they are present, in one form or another. The insects are overwintering as eggs, hibernating adults and larvae, or as cocoons and pupae.

One of the most fantastic things in nature occurs with those insects such as moths and butterflies that form cocoons (silken protective structures) and pupae (the actual resting stage of the moth or butterfly enclosed in the cocoon). These critters started out as eggs laid by the adults during the summer, they hatched into caterpillars, which fed on plant leaves until they were fully grown larvae, and finally they spun their cocoons for the winter. It is this cocoon stage that is so fascinating. The caterpillar's body is tube-like, has chewing mouthparts, a head with tiny simple eyes and tiny antennae, prolegs (false legs) to hold on to leaves and branches, and a soft segmented body adapted to digest leaves. But, in the cocoon stage, as a pupa, this body structure completely breaks down into a nondescript mass of cells that does not resemble either the caterpillar nor the adult moth or butterfly. It is simply a blob of cells enclosed in the pupa. In the spring, these cells completely reorganize into the structures of the adult insect. A definite head with large compound eyes and large antennae develops. A thorax with two pairs of wings and an abdomen with reproductive organs is formed. Tiny scales cover the body and wings. The chewing mouthparts of the caterpillar are gone and in their place is a coiled tube for sipping nectar from flowers. Truly an amazing transformation! This dramatic change is called metamorphosis (Greek for "change of form").

To illustrate how dramatic this process really is, think of a cow melting into a big blob of cells and then this blob changing into a giant hummingbird. Impossible type of change? Metamorphosis occurs every day in the insect world!
Slime Wars

“Long ago and far away!” . . . wait, I digress! We are involved in a war here and now! An invading army is among us! It is attacking our plants, our shrubs, our very existence as Master Gardeners! Our invaders come in many forms, mostly at night, as an army that can wipe out our garden in a single swoop! We retaliate with poisons and traps, but the invaders persist!

In order to deal effectively with our enemies, we need to know more about them—a dossier, so to speak. The enemies I refer to are the slugs and snails, both known as prime devastators of our gardens. As everyone knows, an army moves on its stomach—quite literally with slugs and snails, which are classified as Gastropods, meaning “stomach foot.”

The muscular, undulating, slime producing foot of gastropods allow them to glide easily over the ground—even over the sharp edges of razor blades—without damaging their soft skin. You might think of this as a “bullet-proof” vest. They also have periscopes to view us, retractable eyes on long upright stalks. The armored division—snails—has strong, almost impenetrable shells that protect them as they foray over the countryside. All have “aqualungs,” (internal gills) that assist in crossing rivers, streams, and wet areas.

The invasive hoard reproduces quickly. Both mail and female organs are found in every soldier gastropod. Mutual impregnation assures that each is capable of producing hundreds of hungry offspring! No wonder it is so difficult to win the war!

How do we counterattack the invasive hoard? We do have a few tactics that are effective. A person I knew, I think his name was “Luke Slugwalker,” uses a pair of “slug boots,” rubber boots used to stomp on the insidious creatures. Other methods are not as direct! Since we know that rogue slug and snail warriors are insatiable drinkers, we can set up “slug bars,” containers full of beer, that attract reveling gastropods and allow them to drink ‘til they drown. We can also set up electrical barriers that consist of 3-inch copper strips set into the soil to keep them from entering our beloved gardens. Slugs touching the strips get an electric shock to turn them back. Chemical weapons can be used, but many of them are toxic to us or our pets. One that is not is a product called “Sluggo.” It is safe around pets and humans. Other methods of control and more information about slugs can be found in the publication Field Guide to the Slug in the General Pest Control section of our MG book collection. As we continue our quest for the perfect garden, remember the words of Obiwan Kenobe, “May the force (to battle slugs) be with you!” Good luck with your gardening this year.
Not All “Bugs” are Bugs!

Now that the insect population has pretty much settled in for the winter, let's review some information about a couple of orders of insects.

We'll look at the differences between true bugs and beetles. At first glance, they appear to be the same kind of critters. But there are important anatomical structures that make them belong to different insect orders.

Probably the most obvious difference is the type of mouthparts. Beetles have biting-chewing mouthparts, while true bugs have piercing-sucking beaks. Another characteristic is that beetles have the first pair of wings modified into hard covers (elytra) that conceal and protect the membranous hind flight wings. Bugs, on the other hand, have the first pair of wings half leathery and half membranous. This gives the true bugs their order name, Hemiptera, which means "half-wing". The first pair of wings also overlap at the outer, membranous half, giving the appearance of a triangle shape at the rear end of the "beastie". Beetles have the first pair of wings meeting in a straight line from front to back. Bugs are also usually flat on the top side of their body and rounded underneath, sort of a boat shape if you use your imagination. Beetles, on the other hand, are normally rounded on the top side.

O.K.! Here's your assignment (once a teacher, always a teacher, I guess)! Next time you have that horde of boxelder bugs on your house, pick one up and examine its mouthparts. The piercing-sucking beak is held on the underside in a rearward position between the pairs of legs. If you have a hand lens the parts will really show up. Also, look at the little triangle at the top rear of the bug. And if you can catch one flying, you will easily be able to see the "half-wing" structure of the forewings. Next, lift up some rocks or wood in your yard and look for a black beetle hiding here. Observe the front wings meeting in the middle in a straight line. Also note the hardness of those forewings. But be careful! Those biting mouthparts are used for defense as well as eating!

Write up your lab report, and I'll grade it the next time we meet!
Our Deceased Animal Composters

The focus for this Buggy Bits is going to result in a somewhat weird and perhaps nauseating topic, so if you do not want to read it, I will understand! The article is really about the insects that take care of the dead animals we so often see lying on the roadway. Without these insects, we would have a world piled up with animal carcasses and would have a great deal of trouble traversing our highways.

One of the beneficial "composters" is the Sarcophagid fly (sarcos = flesh, phagus = eating; a little Greek lesson here!). Sarcophagids normally get to a dead animal soon after it has expired, and the larvae begin their work of composting. Most sarcophagids lay live larvae on their host instead of eggs. I once had buried some fish heads in my garden and was walking near that burial ground when I heard a buzzing sound at my feet. As a good naturalist, I got on my knees and observed a female sarcophagid fly dropping tiny larvae on the spot where I buried the fish heads. She would crawl about, buzzing her wings, stop, drop a larva (which would immediately dig down into the soil to the fish), then she would walk around buzzing and start the ritual all over again. Fascinating!

Some other insects that take care of deceased wild animals are the burying beetles. These 3/4 - 1 inch beetles will excavate underneath a mouse or other small creature and actually bury it under the soil. After it is underground, they will lay their eggs on the critter and the larvae will feed on the interred specimen.

Other beetle larvae, such as the carpet beetles and relatives, feed on hair and feathers of deceased fauna. Once the insects are finished with the specimen, there is really not much left except bones. Many other insects and insect relatives assist in the breakdown of these bones and remaining parts.

Homicide forensic scientists use the types and ages of composting insect specimens found at crime scenes to determine evidence of the time and date of a murder. This evidence is invaluable in police work.

We might say that these composter insects are highly beneficial in a bizarre variety of ways. Hope you are still reading the article to this point (And who says we insect people are kind of weird?)!!!! Have a wonderful holiday this December!
Winter Mind Wanderings

Everybody is preparing for winter, and so are the insects and their arthropod relatives. I am seeing preying mantises flying around, looking for a good place to deposit their oöthecas (that's the name of the egg case that mantises produce). It is a wonderful structure made of a material that resembles the insulation foam that comes in a can (the kind that you spray where you want it and it hardens into a water-impervious mass). Inside the oötheca, about 100 eggs spend the winter in their little insulated foam nest. Several of these egg masses are usually brought in by clients each year for identification. Encourage clients to keep these structures and place them in their garden area for next year!

Moth caterpillars are spinning cocoons and butterfly larvae are turning into chrysalis (or pupae). One butterfly that has a little twist on this theme is the Lorquin's admiral. The last generation (they have several throughout the year) is too late to finish feeding before the cold comes and the leaves of its food-plant drop. As a little quarter inch larva, it eats away the base of a leaf of its food-plant down to the petiole, and then spins a tiny tube (hibernaculum) at the tip of the leaf by rolling up the remaining leaf parts and securing with silk. It also spins silk down the petiole and around the stem to keep the leaf from falling off during the winter. Then, it climbs into the tube and hibernates through the cold season. In spring, when the new leaves begin to emerge, it resumes feeding and finally matures into a butterfly. We have examples of the Lorquin's admiral, its chrysalis and the little hibernaculum" in the MG office insect collection. Next time you are in the office, take a look! They are in the LEPIDOPTERA drawer.

This is also the time of year for the standard pests, ladybird beetles and boxelder bugs. All they want to do is find a suitable place to spend the winter! But, because they like so much company, they are not too welcome in most folks’ houses. Hibernating ladybird beetles, unfortunately, give off a defensive bad odor when disturbed. Scooping them up "en masse" can be a stinky proposition. People need to make sure their houses have no cracks in the siding or loose fittings around the windows if they do not want ladybird guests for the winter! Somehow, they seem to get in anyway!

Boxelder bugs, the yearly nemesis, is the number one concern of clients in the fall. "Leave them alone, and they will go home" is good advice to those having a problem.

We could go on and on, but, as we prepare our gardens and homes for winter, let's think a little about all our "buggy" friends and foes out there preparing for the winter too!
It’s a cinch, it was a Chinch!

This seemed to be the year of the chinch bug. If you live close to a field of hay or wheat, you probably had an invasion of chinch bugs in July and August.

These small (less than a quarter of an inch) bugs tend to feed voraciously on grasses of various kinds. They suck the juices out of stems of the plants and become serious pests to agricultural crops. The immatures, called “nymphs” are reddish in color and cannot fly. So they remain in the fields until they are full grown and, as the field grasses mature and dry (or they are harvested by the farmers), the adults seek new feeding grounds and migrate “en masse” to other areas. This is when they invade our houses and yards in large numbers. The adults are black with a whitish spot on either side of the body, sort of in the middle of the critter. These features are best seen with a dissecting scope or hand lens. The minute plant bug, a beneficial, is similar in color, but is much smaller (about 1/8 inch). They are never found in large quantities, as are the chinch bugs.

The life cycle of the chinch bug is much the same as most true bugs. Eggs, laid in spring, hatch into nymphs which resemble the adults in shape, but do not have wings. The nymphs use their “beaks” to feed during the summer shedding their outside skeletons periodically, and finally mature and develop wings. This is when we get lots of calls from clients, as they “sort-of” swarm at this stage and really worry people that something is eating their house or yard!

One answer to the chinch bug problem is to just let them be or vacuum them up until the invasion is over. Another is to use an “approved” spray that can be used in the home or garden. Using sprays is always a last resort, as most insecticides are indiscriminate and will kill beneficials as well as nuisance insects. The ultimate solution is to move away to an area that has no agricultural fields around! But, who wants to do that? We love it where we are!!!
“Long Horn”, “Short Horn”, “No Horn”

I stopped for lunch one day at a little cafe called the Longhorn Bar and Grill and had a hamburger. Really good food! On the wall were three plaques, each one with a set of steer horns attached, and labeled with the titles above. They kind of depicted this month’s *Buggy Bits* topic. No, not cows, but beetles, called borers, that invade our trees and wood.

Longhorn beetles are so named because they have veeeery long antennae. In some instances, over twice as long as their bodies. One of the species that is commonly brought into the MG™ Office is the Banded Alder Borer. It is about 1 and 1/4 inches long. The body and the long antennae are banded with light gray (almost white), broad spots. The ground color is black. Or, is it the other way around? Describe a zebra’s color!! At any rate, the larvae of these beetles are described as “round-headed” borers, as the feeding tunnel they make in the wood of the alder is round in shape. They normally feed on stressed trees and are usually not a problem. The adults are active and fly around a lot, and therefore, they are brought into the office frequently. People find them on and in their houses and are panicked because of their fairly large size and those long “horns.”

Another longhorn borer is the Fir Sawyer. It is the same size as the Alder Borer, is black with tiny white dots on the body, and feeds on the wood of fir trees as a larva. It looks very much like the Asian Borer that is invading the east coast. If one of these Fir Sawyers is brought into the MG Office, assure people that the Asian beetle is not in the Northwest - yet!

In the “short horn” category are the Buprestid beetles. Their antennae are very short for their size. This group includes some of the most beautiful of insects. Buprestids are almost always shiny metallic, with greens, reds, copper and a myriad of other colors. The tropical species can get up to 3” long. Buprestid beetles are sometimes called flat-headed borers, because the larva carves an oval channel in wood as it feeds. We have several species here in the Northwest. One is a metallic green with iridescent overtones. Another is metallic bronze. Both are about 1 3/8” long and are rather slender. They are also quite pointed at the rear. Economically, flat headed borers can be a problem, as they bore into healthy wood and then leave channels, lessening the value of the wood.

Both the long horns and the short horns can be seen in our insect collection in the Coleoptera (beetle) drawer. By the way, I don’t know of any “no horn” beetles.
Do You Know What Galls Me?:
Cynipid Wasps!

Have you seen those round, ball-like growths on oak leaves? Or the fuzzy moss-like unusual structures on rose stems? These are the results of a tiny parasitic wasp called a gall wasp or Cynipid. Galls are caused by the reaction of a plant to specialized growth hormones exuded by the larva of these wasps. The adult wasp lays its eggs in the tissue of the host plant and, when the larva hatches, it begins feeding on the plant, all the while giving off a substance that makes the tissue grow in an exaggerated fashion. This substance develops structures that are very different from the normal plant growth. The larva feeds on the cells of these modified plant parts. If you cut open one of these galls during the period when the larva is feeding, you would find small grubs of the wasp crawling around inside. In some species there is a single worm. In others, the one egg that the wasp has laid divides up into many larvae. This is similar to the way identical twins develop in humans, except on a large scale (10-20 offspring).

Many different galls can develop on the same kinds of plants. In addition to the large golf-ball sized gall on oak, there is a smaller oak gall that is called the jumping oak gall. These small BB sized galls easily fall off the plant and bounce around, giving the appearance of the gall jumping off the plant and trying to escape. Some rose galls are of the fuzzy, mossy type, and some are of the spiny, stickery type. These are galls that develop from a different kind of Cynipid wasp. It may be that the spiny surface of spiny galls protect the wasp larva from being preyed upon by other insects and/or birds, the mossy type may be a camouflage mechanism.

The thimbleberry has a gall wasp that causes a swelling in the stem. If you find one of these galls, and if the swelling does not have tiny escape holes in it from the wasps, you can bring them indoors, place them in a jar and watch for the tiny wasps to emerge from the gall in the spring. The female wasps have long ovipositors that they use to lay eggs in new plants. The males lack these structures and simply actively seek a mate. Check out the Cynipid wasps and galls in the reference collection drawer (labeled HYMENOPTERA) in the MG room to see some of these specimens in person!

Galls form an interesting type of relationship between insects and plants. Usually, the plant is not harmed a great deal, and the relationship helps the wasp to carry on its life functions using the modified plant as food. I guess it is not unlike us growing and using genetically engineered plants for our own use. What do YOU think????
The Itsy-Bitsy, Nasty Spider Mite

Buggy Bits this issue is an article that first appeared in the Jan/Feb 2000 issue of "Gardening HOW-TO" Magazine. It is used here with permission from the magazine. Even though the reference is to winter care of house plants, the information is valid for summers, as well, here in Oregon.

Winter can be a treacherous time for houseplants. Humidity is low and houses are warm, plus many gardeners are too busy to notice subtle signs of danger on their plants. For example, take spider mites - nearly microscopic pests (1/50 of an inch) that feed on plant juices. Because mites are so small, it's easy to overlook them. They do leave their mark on plants though - usually tiny webbing, or a stippling or mottling effect like a coating of dust.

Because spider mites reproduce quickly (a new generation grows in under a week in dry, warm settings), it's tough to get rid of them. Fight them by raising the humidity around your plants. One simple help is to set your plants on water filled trays of pebbles. The bottom of the pot should sit on the pebbles, but above the water line. As the water evaporates, it adds moisture to the air around the plant.

Spider mites also love dry plants with dusty leaves, so washing plants repeatedly is also helpful. Give them a regular shower with a forceful spray of lukewarm or room temperature water. Not only will you help wash off mites, but you'll clean dust from the leaves. (Dust decreases the amount of light that your plant gets - just as light is dimmer when it shines through a dirty window.) Also, whenever you buy a plant, check it for webbing. Mites love to piggyback on nursery plants.

If you need stronger action, try spraying plants with insecticidal soap, which is widely available at garden centers. Be sure to follow label directions
Kids Do the Darndest Things!

A few years ago Bill Cosby had a TV show titled "Kids Say the Darndest Things." Reminiscing, I happened to think that some immature insects have really unique activities. So these "kids" are the subject of this months Buggy Bits.

The larvae of lacewings are voracious feeders. In fact, they are so vicious, the female lacewing lays her eggs on the end of one-inch hair-like stalks to keep the tiny hatchlings from eating each other. The larvae are unusual in that their large curved mandibles are hollow, and when one chomps down on its prey, it simply needs to hold on tight and suck the juices right out of the insect, like you would suck a milkshake through a straw.

Doodlebugs are the immatures of ant lions. The adult ant lion looks very much like a small dragonfly, but has long antennae. The doodlebug is shaped much like a hen's egg, but about 1/4 inch long. It also has huge hollow mandibles like the lacewing larva. Doodlebugs are found in loose sand where they dig, moving backwards in ever decreasing circles, a funnel shaped pit. The larva buries itself at the very bottom of this pit with just its jaws showing. Eventually, an ant or other small insect will venture by and begin to slip into the funnel. As the ant struggles, the sand grains give way, and the ant tumbles down to the waiting jaws of the young ant lion. If it looks like the ant will escape, the ant lion larva will use its jaws to flip sand up on the funnel to create an "avalanche" of sand and force the ant down to the bottom again.

Ants in the mature stage cannot produce silk. They can, however, as larvae, spin silk to make their little cocoons in which they transform into adults. Certain ants in the tropics are very migratory. They wander from place to place looking for new food sources. Once they have found a convenient source, the entire colony sets up camp to devour the food. They enclose an area by pulling together leaves and debris and cementing it together with silk. How? The adult ants grab a larva and give it a gentle squeeze. This causes the larva to spin out silk. The adult holds the larva in its jaws and literally "sews" the leaves together by moving the larva back and forth as the silk is given out. When the larva is out of silk, the ant simply grabs another one to continue the process. With hundreds of ants doing the same thing, the temporary "tent" is completed in short order!

These are just a few examples of the wonderful, unusual lives of immature insects. There are many more fascinating stories out there to be told. Oh well, there's always next month!
Rhodie Woes: Root Weevils

When we think of insect pests of rhododendrons, probably the first one to come to mind is the root weevil. Root weevils spend the majority of their lives underground as larvae. These little (about 1/2 inch) grubs love to feed on the roots of the plant and can actually girdle the roots to the extent that the rhodie will die. To identify a grub dug up at the base of the plant, you would note that they are white in color, have no legs, have a small black head and are curved into a fat "comma" shape. Other than the sickliness of the plant, and the telltale notching of leaves by the adult weevils, you would not know they were present until it is too late. If you see notched leaves, it is a good idea to do an exploratory dig to see just how many of the larvae are present. If there are many, a control measure is probably warranted.

Adults feed at night, and you can explore your plants in the evening with a flashlight to see if the chewings truly are weevils or one of several other pests. The adults emerge in May and June and are typical beetles, with a brownish-gray color on their bodies and a grayish head and prothorax. They are about 3/8 -1/2 inch long. If you find adults, you can easily take them off the leaves and dispose of them. A former extension agent used to say she really enjoyed going out, finding the adults and destroying ‘em. She said there is something extremely satisfying about the "pop" that they make as you squish ‘em! You know you are in control!

Control measures can be very effective for the larvae. Probably the most effective and least invasive is the use of beneficial nematodes. The solution of nematodes is poured at the base of the plant and the tiny worms invade and kill the weevil grubs. Hand picking for the adults is rather laborious, but the adventure of going out at night with a flashlight on a "snipe" hunt takes us back to our pleasant experiences of childhood. Otherwise, several chemicals are listed in the PNW Insect Control Handbook (look under "Andromeda"). Please use with care and be sure to follow directions! Most of these poisons will kill beneficials as well as the intended beetles, so they should be used as a last resort!

If you choose to utilize the "search and destroy" method, good hunting! Hopefully, you do not have a root weevil problem and will not need any of the chemical controls! Many of our clients will not be as lucky and will need all the information they can get.
Q & A

With spring just around the corner, it might be a good idea to review some of the questions regarding insects we might get from clients when we are working in the MG™ Office.

Q. I’ve got ladybugs everywhere in my house and outside on the walls! What do I do?
   A. 1. Leave them alone, they will be gone in a week or so! (Remember, they are beneficials)
       2. Inside the house, you can vacuum them up.

Q. I am cleaning up in my garden and every time I pick up a pile of leaves, there are huge black beetles under them. What to do?
   A. They are probably not that huge, just appear that way! More than likely they are Carabid beetles, predatory beetles that feed on garden pests! They should be encouraged to stay around.

Q. I’ve had plants growing in my greenhouse all winter to keep them from freezing. Now there are fine webs all over the surfaces of the leaves. What is this?
   A. Sounds like you have spider mites on the plants. Bring in a sample and we’ll check it out. Insecticidal soap should take care of the problem.

Q. My irises are sending up new leaves, but something is chewing holes in them. What can I do?
   A. Slugs are very active this time of year! Beer traps or safe commercial poison baits work wonders. Follow the directions carefully!

Q. Aphids are just covering the new growth on my roses. How do I get rid of them?
   A. Remember the ladybugs in question one? This is why you leave them alone! Or you can wash them off with a spray of the garden hose! Commercial systemics work well on roses, too! Follow directions!

Q. I have hundreds of big, black ants crawling around in my house! Most have wings and they keep flying to the windows.
   A. Most likely these are carpenter ants that are swarming. Bring samples in to the MG™ office. You may have to contact an exterminator to get rid of the colonies.

Q. I have lots of little moths flying around in my kitchen. What are they?
   A. These are probably Indian meal moths which were brought into the house as eggs or larvae in packages of cereal products. Try finding the source of the infestation. Open your cereal boxes, rice, grains, nuts, etc. Any webbing inside the container will indicate a source. Get rid of (destroy) those packages and get some sticky traps to catch the adults. Never spray insecticides around food products!

These are just some of the more common questions that are asked by clients in the spring. There are many, many more that are also brought into the office. Always refer to the Insect Control Handbook.
Tiny Invaders

Many times the insect specimens brought in to the MG Office are very small. Let's focus on some of the more common "tiny invaders" (about 1/8 inch or less) that harass our gardens and plants.

Master Gardeners sometimes have difficulty distinguishing between aphids and thrips. Aphids (Order Homoptera) can come in a variety of colors and forms. There are green, black, gray, brown and even red aphids. Many have fuzzy hairs on their bodies. (This last Fall, I had some winged, black aphids with long white hairs on their abdomens flying around our yard.) Aphids always have a specific body shape. The general body form is somewhat like an egg shape, tapering toward the head end. Mouthparts are of the piercing-sucking type.

Thrips (Order Thysanoptera) are always dark, mostly black, and have a long narrow head and body. Their wings are very narrow, all the same length and fringed with tiny hairs. This fringe characteristic gives them their Order name. The wings of aphids are never fringed and the front and hind wings are not the same length. Thrips feed in an interesting manner. They have mouthparts that are file-like. Thrips rasp the plant tissue and ingest what they scrape off. Close examination of the plant with a hand lens will reveal these little rasplings. Aphids, on the other hand, pierce the plant tissue and suck out the juices. Even when thrips are abundant, they don't "bunch up" like aphids do on a plant.

Whiteflies (Order Homoptera) are another bane to the home gardener. They also have piercing-sucking mouthparts. The immatures produce a protective wax-like cover over themselves, which makes them difficult to eradicate. Yellow sticky traps work well on the adult whiteflies, as they are attracted to the color yellow. It is usually easy to distinguish between whiteflies and other tiny pests because of their white color and their willingness to fly about the food plant when disturbed.

Flea beetles, because of their black color and tiny size, might not be noticed in the garden until they are abundant and are doing a lot of damage to plants by making myriads of tiny holes in the leaves. The annoying thing about them is that when disturbed, they hop off the plant and escape attempts to control them. Another problem is their life cycle. The tiny pupae of flea beetles hibernate in the soil until spring. When the new crop of beetles emerges, the problem starts all over again. Since they have wings, they can also invade from outside your garden plot.

Fungus gnats are a problem with houseplants. The larvae feed on the roots of plants, causing the plant to languish. They appear as tiny white worms in the soil. The adults are often seen when they fly around the house. They look a great deal like very delicate mosquitoes. Even though they are small, they are unwelcome little "beasties" in our homes.

Other tiny invaders can also be found in and around our living environment. Symphylans are found in our greenhouses, tiny grain beetles get into our flour and stored seeds; powder post beetles get into our wood furniture, etc. It is not always easy to see all of the wee insects that are causing us problems (but a hand lens helps!).

When you have identified these or other insects for a client, be sure to consult the PNW Insect Control Handbook for control measures. And remember, always recommend the least environmentally harmful control.
Aphids

Thrip

Fungus gnat

Flea Beetle

Whiteflies

Symphalan
Leave Me Alone!

Insects and other creatures can't really talk to us, but in some ways they say a lot! One such statement is by their color. This article is about warning coloration.

Certain color combinations in nature, especially in animals, warn us that the critter is inedible, poisonous or just downright nasty. Warning colors are usually combinations of black with yellow, orange, red, blue, green or white. Think of the poison arrow frogs of South America. They come in these patterns of colors and in some solid colors as well. Many insects use the combinations above to tell predators they are not to be eaten and should be left alone.

Monarch butterfly larvae feed on milkweed plants and concentrate a toxin from the plants in their bodies. They have orange, white and black stripes to warn birds and other predators that they are not good to eat! The adults are also poisonous and indicate that by their orange and black color. Another butterfly, the viceroy, is also orange and black, with markings closely resembling the monarch. It however is edible. Pretty sneaky mimicking the monarch, don't you think?

Boxelder bugs, being black with red, are also saying, "leave me alone." I'll bet you have never seen a bird eating a boxelder bug! That's why they are such a nuisance. Nobody feeds on them, so they multiply out of control.

Many spiders have warning coloration as well. Think of the black widow with the red hourglass on the underside of its abdomen. Some jumping spiders have black bodies with a red spot on the top of the abdomen. They are not dangerous, but are trying to fool us into believing they are. Even our friend the ladybird beetle is warning that it doesn't taste good. The orange and black colors give it away! It has a toxin in some tiny glands on its body. If you pick up a ladybird and squeeze it slightly (which I try never to do), it will exude some of this foul tasting material on your fingers. You can tell just by the smell of the stuff that it is nasty tasting!

Hornets and bees exhibit these colors too. There is one wingless hornet, called the "velvet ant", that should be avoided. Velvet ants are cute little creatures that look like large ants covered with long, dense hairs all over their bodies. They kind of remind me of little stuffed toys about 1 inch long! The color gives them away, though! Their bodies are black, the hairs are orange, yellow or white. Oh, oh! Better leave them alone, they sting!

As you do your gardening this next season, look at the different color combos of the little critters around you. Are some of them telling you that they are inedible or harmful, or are they just fooling you into thinking they are?
The Great Society: Ants

Many species of the insect Order Hymenoptera (ants, bees and wasps) live in societies with characteristics not much unlike our own. There are working members (farmers, butchers, builders, nannies, soldiers, etc.), the aristocracy (queens and drones), and even thugs and con men living among the productive members. Let's examine the ant societies and the similarities their activities have with our human society.

If we consider the working members of the ant society, we see that there is much specialization for various tasks performed by the worker. Ants with large heads and mandibles are usually soldiers, using their powerful jaws to attack enemies or their large heads to block the entrance of the nest against invaders.

In the leaf-cutting ants, some individuals have the task of caring for the mushroom garden (MG's?), mushrooms being the food of the colony. Medium sized ants gather the leaves and work them into the garden (leaves turn to compost on which the mushrooms grow) and the large workers act as guards and defend the nest. Some workers act as "nannies" to the eggs and larvae. Both eggs and larvae are licked over and over to keep them clean and free of bacteria. They are also put into piles, arranged according to age, and when they larvae pupate, these are taken to other chambers to incubate until the new ants emerge. The nannies also feed the larvae.

In some societies, the worker ants cut up food brought into the nest, in others the food is digested in a "social stomach" and is transferred to the nannies in a liquid form. Some ants mince the food before it is given to the larvae. (Baby food manufacturers?)

At certain times of the year, many of the emerging ants are males and females (winged princes and princesses, if you will). These swarm on prenuptial flights. After mating takes place, there really is no need for the male. He dies. The fertilized queen then sets up a purely female colony of working ants, each with its own tasks to perform. (Amazons?) Some ant nests are composite colonies, consisting of several species sharing the same chambers. This is especially true of the ants that capture slaves and have the slaves doing the majority of work in the nest.

There are thieving ants that live socially with other ants, but sneak into the brood chambers and consume the others larvae and eggs. Highwaymen ants make a nest near another species home and raid the home, stealing foodstuffs (robbery?). Other ants are social parasites, sneaking into another nest and killing the queen. Contact with her body makes them smell like the fallen queen, so the unsuspecting workers feed these ants as they would their own queen. Notice some resemblances (and, of course, differences) to our own society?
Rambling prose!

In mid-winter it is difficult to come up with new ideas to talk about insects, as most of them are hibernating, in the pupal stage or have died from the cold. I thought I would take this opportunity to review some of the experiences the Insect Committee had over the last year.

One of the most unusual insects that we were asked to identify turned out to be a Cossid moth larva. The caterpillar is sometimes called a carpenter worm, since it spends the entire larval stage boring into the healthy wood of trees. Like a termite, it actually subsists on the wood of the plant. The worm looks very much like a beetle grub and can travel backward or forward with equal dexterity. The adult moth is fairly large, mottled gray, with a 3 inch wing-span. These are not commonly seen moths, but occasionally come to lights at night. I was attempting to raise the caterpillar to adulthood as a specimen for our collection, but the little bugger escaped from the container I had him in in the house. I think he is now in my bookshelf eating our recipe books (How appropriate that he ended up in that section!).

And, of course, The spiders!, the spiders!!!! I don't know why everyone has been so panicked about spiders over the last few years, but we got several spiders in for identification every week! One thing we did note this last year is that there were a greater number of Hobo spiders brought in to the office than the last couple of years. I think that the dry spring and fall had something to do with the success rate of these critters. At any rate, clients were finding a lot more inside their houses. One of the cousins of the Hobo, a giant house spider, was brought in by a client. It was HUGE by spider standards. She said she went into the bathroom in the middle of the night, turned on the light and there it was in the sink bowl! As an arachnophobic person, I don't think I would have been so nonchalant about capturing it to bring it to the office. I would have squished the sucker!

The number of boxelder bugs and ladybird beetles did not seem to be as numerous at our house this year. Did you have that same experience? Could have been the weather, I guess. Also, the number of brown predatory stink bugs seemed to be on the increase this last year. They love to feed on caterpillars, and for one like me who likes to raise moth caterpillars, it was real hard on my stock.

We did not have many carpenter ants brought in this year. Perhaps we are doing a better job of educating the public about observing for these pests.

Finally, I want to thank all of you Master Gardeners™ for the support and assistance in making our insect collection and the Insect committee a success. Thanks to all on the committee members for your time and invaluable efforts for helping our clients! We'll see what the new year brings to our Extension Office doors from the insect world. Have a Happy New Year!
Insect Haute Cuisine

Now, don’t get nauseous reading this article. It is about insects and their relatives being used as food by humans. Insects are very abundant, so it is with good reason that they have been used as nourishment by people throughout the world. Silkworms have been used for centuries to make cloth, the silk being spun off the cocoons which are floating in boiling water. Inside the cocoon, the pupa or resting stage of the moth, is killed in this process. What to do with the expired pupae? The Japanese and Chinese deep fry them in oil and use them as a snack. Sort of like “popworm”??!

Australian aborigines use beetle grubs and caterpillars as a regular part of their diets. It sure beats trying to run down a kangaroo!

Grasshoppers are very abundant in Africa, and often become a plague, eating total crops of the farmers. Turn about is fair play, however, since the grasshoppers provide good protein when they are deep fried. Just remember to take off the legs before crunching down on them. hey say they taste like roasted nuts! I wouldn’t know!

There was a recent TV special about the Giant Forest Tarantulas of South America. It is a huge spider larger than your hand! The special also showed how natives hunted down these spiders and then roasted them over an open fire. This roasting burned and removed the irritating hairs covering the body of the spider. The legs and body were then cracked open and the flesh was eaten. The narrator claimed the spider tasted a lot like crab. A bonus came if the animal was a female, since the eggs in the abdomen are a delicacy.

Another TV special showed South American natives climbing high in trees to obtain caterpillars that live and feed in large groups. When they were brought down from the tree they were wrapped in banana leaves and steamed. All then partook of the delicate morsels.

You remember the fad of chocolate ants, don’t you? They tasted a bit sour, due to the presence of formic acid in the ants. There were other chocolate covered insects also, but I can’t remember what they were! I got some raw honey from a friend about a year ago and had to smile because it had bee parts mixed in. I called the inclusions “bee’s knees”.

If you take the Advanced Insect Identification class that we offer, I will give you a bonus prize. It’s called a “cricket lickit.” A lollipop with a real cricket inside. Only had one person eat the lollipop down to the cricket. Who knows? You might like this bit of bug cuisine!
Check your Kitchen Cabinets

Now that we have survived the doldrums of winter and have plants that are working us to death in the greenhouse and our secret growing areas, it behooves us to also pay a little attention to our kitchen larder supplies. I guess I go on about this every year, but the “bugs” get into our stored foods all the time! Most of the problem originates in the store from which we purchased the grains, flours, meals, and nuts that we brought home. Organic foods are not exempt. Anywhere you store materials that insects like to eat, “they will find a way” (as the “Jurassic Park” movie states) to find our stuff, feed on it and reproduce.

Probably the most common of these pests we bring into our homes is the Indian meal moth. They love everything that we do; pasta, rice, breakfast cereals, flour, jerky, nuts, - the list goes on. The moth larvae produce webbing that is easily seen in the containers of food. The most obvious indication of a real major infestation is when the 1/2” larvae are seen crawling across your ceiling to find a place to spin a cocoon and pupate. Happened to me once! Now I put all of that kind of stuff in the freezer for about a week until the ova (eggs) of the moth are dead. If you have an infestation, get rid of the offending material by freezing or placing in the oven at 300 degrees or so for a time. Then put it in the trash! You don’t want the neighborhood infested with these critters!

Many, almost microscopic, beetles also are brought into the home in our purchased food-stuffs. They represent many different species, such as grain beetles, drugstore beetles and dermestids. They will infest about the same things that the moths will attack. It is disconcerting to pour out some flour you have not used for some time and find tiny brown beetles cavorting through the white stuff! Of course, you CAN use the flour! The beetles just add a bit of protein!

Things like jerky are prone to beetle attacks as well. Dermestids, or carpet beetles and their relatives, love to feed on dried meats. I usually freeze this type of stuff for a week or so to make sure I have not brought home some unwelcome guests from the store.

I guess the bottom line here is to check everything you have that is stored every so often and look for telltale signs of pests. I have not mentioned the clothes moths, ants, silverfish, firebrats, isopods, etc. Oh, but that’s another story.
Insect Intake Insights!

So, an insect specimen is brought into the office by a client and you are the Master Gardener™ on duty that day. What do you do with it?

Most insects and other arthropods are brought into the office live, in jars, by the clients. If you do not know what the insect is, try to identify the specimen using the Insect Reference Collection in the cabinet so that you can give an answer to the client as soon as possible. If you cannot identify the specimen at all, leave it for the Insect Committee to identify and give the information to the client. (The Insect Committee meets the first and third Thursdays of the month).

If leaving for the Insect Committee, specimens should be killed and preserved by pouring rubbing alcohol into the jar. This is especially true for soft bodied insects and spiders. Once in alcohol, the specimens can be left in the intake box on top of the collection cabinet. Be sure to tape a label on the jar with the clients name and telephone number. The jar should be tightly covered to prevent the alcohol from evaporating. If a client has brought in a jar with holes punched in the lid (most do this), simply tape over the holes to close them off. Hard bodied insects and moths and butterflies can be placed in the freezer of the refrigerator in the MG office or kitchen. Do not tape specimens to the intake form! The tape covers important ID characteristics and, if the tape is removed, the specimen is “torn asunder”. If you need a small container for the “bug”, there are empty plastic film containers available on the cabinet. Caterpillars should be kept alive so that we can raise them to adulthood to get a positive ID. Put some food in with them also.

Be sure to fill out an intake form for each specimen with the following info:
1. Your name (MG on duty)
2. Client's full name (important!)
3. Client's address
4. Client's telephone number
5. Where the specimen was found (e.g., under fir tree, kitchen cabinet, etc.)
6. Note on the intake form where the insect is located (on cabinet, in freezer, or ?) so that the committee can find it. Always label the container with the client's name!
7. Leave the intake form in the “IN” box on the MG desk.

Taking these steps will make it much easier for the committee to answer the client's questions.

Thanks for helping us do our best to give timely information to our customers! Your efforts are always appreciated! By the way, we can always use new members on the Insect Committee! We have a great deal of fun, learn a lot and do a tremendous service for our customers. We meet from 10-12 noon the first and third Thursdays of the month in the Extension Office Auditorium. Hope you can join us!
The Flying Dragons

Now that summer is upon us, we are seeing wonderful sights around ponds and lakes. The dragonflies are emerging and showing us their bright colors as they cruise along searching for prey just above the water.

Dragonflies are built much like helicopters. They have long slender abdomens that function as rear rudders to stabilize them in flight, they have very large eyes reminiscent of the front sensors on military helicopters, and four large membranous wings. The front and hind wings alternate their up and down motion in flight and, if seen in slow motion, look all the world like a helicopter’s rotors. They can easily use their wings to hover motionless and can even move backwards.

Dragonflies catch their prey on the wing, and use their legs to catch the hapless creature they are having for lunch. The three pairs of legs are of different lengths, the front pair being the shortest and the hind the longest. These ‘flying dragons’ hold their spiny legs spread like a basket, and scoop up their quarry. The creature is then devoured by the incredibly large jaws that look like large teeth. It is this tooth-like appearance that gives the dragonfly its Order name “Odonata” which translates as “big tooth”.

The immature nymph form of the dragonfly is equally interesting. They are aquatic critters that breathe by means of gills. The location of this breathing apparatus is rather unusual. They are called “anal gills” for good reason. The nymph, or naiad as it is called, crawls along the bottom of a pond or lake and searches for its prey, which can include fish fry! The remarkable part of this form is its lower jaw. This is a long hinged structure that the naiad folds back between its six legs as it moves about. When prey is sighted, the immature sneaks up and, when it is within range, the lower hinged jaw is shot foreword and pinchers on the end of the jaw grasp the meal and then it is pulled back to the waiting mandibles. This is a lightning fast motion and reminds one of the tongue of a frog thrust out for a tasty morsel.

Closely related to dragonflies are the damselflies. They belong in the same Order as the flying dragons. They are much more delicate, but have the same general body form of the dragonfly. You can always tell the difference between the two by the fact that damselflies always sit at rest with their wings folded over their backs, whereas the dragonfly rests with its wings straight out from the body. The nymphs are similar to dragonflies, but they have feathery gills at the end of the abdomen. They also are much more slender.

Next time you see a dragonfly or damselfly, take a moment to watch it. They are truly fascinating creatures! By the way, fossil dragonflies from the carboniferous period had over two foot wingspans. Glad they are not around now!
Fly, Fly Away

Flies belong to the Order Diptera, insects with only two wings. The Order also includes midges, gnats, craneflies and mosquitoes.

Flies have complete metamorphosis, consisting of egg, larva (usually maggot-like), pupa and adult. Some have nasty habits - feeding on garbage, dead animals, some are parasitic, and a few even live in strong salt water (Mono Lake shore flies) or feed on oil seeps around oil wells.

The mouthparts of flies and their relatives vary greatly, which explains their diversity of feeding and living habits. Some have sponging mouthparts and can only feed on liquid food. To dissolve solid food, they "spit" on the material before they sop it up. This habit makes us disgusted at flies because of all the germs they can transmit this way and by the filth with which they come in contact. Other flies have biting mouthparts. Stable flies have a sharp proboscis for feeding on the blood of horses and cows. Tabanids (deerflies and horseflies) have slashing/lapping mouthparts. They slash their victims with saber-like mandibles and then lap up the blood that is released.

The common house fly is perhaps the most despised because of the unsavory habit of landing on our food. "Don't touch that fly, you don't know where it's been!" is probably an understatement, since we know they can carry many types of germs on their bodies. Houseflies love garbage, and will feed on anything they can dissolve with their saliva. EEEWWW!!!

Syrphid, or flower flies are much more pleasant fellows. The adults feed on the nectar of flowers and resemble bees, wasps and hornets. This gives them the protection of mimicry that they require as they feed. It is the larvae that are a real benefit to the gardener. They feed on aphids and other insects, have a voracious appetite and should be encouraged to remain in your garden. Most of the Syrphid larvae are light green with a golden stripe down their backs. If you see a maggot-like critter on your roses amongst the aphids that fits this description, please leave him there and let him feast. He is doing you a favor!

Flies may not be the most pleasant creatures to have around, but they have been helpful to us in a number of ways. The initial study of a genetic makeup was done using fruit flies, fly life stages have been used to solve homicides (forensic evidence), they serve as food for a multitude of other animals and they are ultimate garbage cleanup professionals on our planet.

Of course, I use a fly swatter as often as possible.
"Giant" Insects!

We all remember the Japanese Sci-fi movie “Mothra” don’t we? The giant silkworm caterpillar that wreaked havoc on Tokyo, then turned into a humungous moth that did like damage! Well, the insects in Oregon are not quite that big, but we do have some that are considered giants in the insect world.

The prionis beetle (a type of longhorn beetle) is often brought into the office because people think it is going to eat their entire house or garden. It sometimes flies around their house lights at night and really means no harm. At 2” to 2 1/2” this brown beetle (impressive and scary to some) is merely trying to find a mate, and is attracted to the ultraviolet light from the porch fixture or backyard light. Actually, the larva of this large beetle feeds on dead wood of stumps and assists in the natural environmental recycling sequence. It really is a beneficial when you get right down to it!

Another insect that is brought in occasionally to the office is the giant water bug. This guy can be 3” to 3 1/2” long, and is brown-gray in color! Not only that, but it bites. It is a true bug with a proboscis and has a bite that is not unlike a bee sting. It hurts for a while and usually subsides after about 20 minutes. Giant water bugs live near water, hence their name. They, and their immatures, feed on aquatic life, including minnows and tadpoles. An interesting thing about their life history is that the females of some species lay their eggs on the back of the males and the males protect the eggs until they hatch. Sort of like a pregnant dad, I suspect!

Certain other aquatic insects can attain a large size. The dobsonfly has an aquatic larva that is called a “hellgramite”. This is a favorite bait of fresh water fishermen. The adult is an insect with a 3” to 3 1/2” grayish wingspan, but a small body. They often come to lights at night. The males have huge mandibles. They don’t bite, but they look scary!

Dragonflies also have aquatic immature stages, but the adults are quite large and the record size is over two feet. Of course this was from prehistoric times!

In the MG office, we do get in a few of the “giant silk moths” as they are called. The polyphemus moth, 5” in wingspan, and tan in color with large “eye spots” on the hind wings is an endemic species that is common all over the U.S. and into Canada. A second moth of almost equal size is the ceanothus silk moth. This one is reddish in color and has some cream colored markings on the wings, with white spots shaped like commas in the center of each hind wing. I especially like these two moths, as I like to rear the caterpillars, which grow up to be about 3” in length and resemble fat, green sausages.

Some butterflies are large, but it really is only their wings that make them appear so. The west coast tiger swallowtail is large and showy, but not nearly as large as our other “giant” insects! These swallowtails are yellow with black “tiger” stripes on their wings. You may have seen them flitting among your garden flowers!

As you go about your daily business, look for these and other, “giant” insects in our Western Oregon environment. You will be amazed by the diversity in nature!

Next time you are in the MG office, check out some of these "giant" insects in our collection. Please don't pull out the drawers too far, they do not have stops!
**Night Creatures**

Collecting insects and getting specimens from clients is normally a daytime affair, but there are also critters out there that prefer the nighttime to carry on their activities. Just think of the mosquitoes that bother us as we sit on our decks and patios.

There are myriads of insects that are nocturnal (night active) and are very interesting. Among these are the moths (who hasn’t seen them around your porch lights?), beetles and even types of wasps, craneflies and other orders of insects.

One of the methods of attracting desirable insects at night is the use of a black light (ultraviolet). Hang a white sheet on a clothesline and place a blacklight so that the ultraviolet light bounces off the sheet. Insects that are attracted to the light and land on the sheet can easily be collected. It’s sort of like an insect smorgasbord, you get to pick and choose from a great variety of offerings. Of course, this type of activity cuts into our sleep time, since the best collecting times are between 10 PM and 2 AM!

Another method of taking an inventory of our nighttime insect visitors is to do baiting. A sweet syrupy compound of molasses, beer and brown sugar can be painted on a tree or board, and certain sweet-loving insects are attracted to the sticky stuff. Another bait, especially good for beetles, is fresh meat placed in the bottom of a glass quart jar and the jar buried up to the lip in the ground. Insects, smelling the offering, fall into the jar and cannot climb out.

For some undesirable insects baiting works well, too! Dampened, loosely rolled up newspapers left outside on the lawn or under your plants will attract earwigs by the score! To get rid of them the next day, simply unroll the paper and dispatch them.

One more method to collect is a nighttime insect hunt with a flashlight. No, this is not a “snipe” hunt! Root weevils feed on your Rhodies at night and can easily be discovered and destroyed using this method.

Please, however, do not use bug zappers or foggers to rid your yard of nocturnal insects! Bug zappers and poisons are indiscriminate in their killing power, and obliterate many beneficial or ornamental critters. Show appreciation for these denizens of the night that help pollinate our flowers and “light up” the night with their presence. Remember, there are many six-legged creatures that are active outdoors while we are sleeping snug in our beds indoors.
The Year (2003) in Review

Now that fall is here and the insects are settling in for the autumn/winter season, it's a good time to go over the Insect Committee's activities for the year. This was a rather scant year for insects being brought into the MG Office. Either we have educated the public well, or there were few insect problems this summer. I think the latter is probably correct.

In the spring we did have quite a few chinch bugs brought in by clients. These 1/8" to 3/16" true bugs feed on grasses. They especially like wheat and other grass crops. Their color is black with white blotches on either side of their bodies about half way between their front and back ends. Sometimes their population explodes, as it has done during the two previous years. They were getting into peoples houses (obviously searching for new food sources) and being general pests. It has been so dry this year that their numbers probably did not increase that much.

The usual spiders were brought in; jumping spiders, house spiders, grass spiders and Hobo spiders. However, again, not in the quantities we have seen in the past.

One man brought in some specimens for Id. that he dug out of some holes in his patio support posts. He thought they were boring into the wood. They turned out to be aphids. Aphids in holes? I still haven't figured that one out! Maybe they were escaping the heat or dry air! I haven't a clue!

Did you notice the lack of butterflies this year? I think the early freeze in September of last year killed many of the larvae before they could turn into pupae. I had some zelicaon swallowtail larvae feeding on my parsley when we had the first frost, and they simply disappeared. Apparently they froze to death. Too bad! I love to watch them flitting amongst the flowers! Only saw two adults all summer, usually see dozens.

One specimen brought in for identification did make the committee chuckle somewhat. The intake form said the insect had been hit by a weedwhacker. It was in a container and was lacking legs, antennae and various other body parts. It was obviously a prionis beetle, if for no other reason just for the 3" size. Anyone seeing one of these hacked up specimens for the first time wouldn't be able to make "hide nor hair" out of it! Is there a joke in there somewhere?
Tip the Scales

During the late fall and early winter it is fairly easy for us to see our plants that are infested by scale. Scale insects belong to the Order Homoptera. The Order also includes the aphids, cicadas, leafhoppers and treehoppers. Scales are particularly hard to control due to the fact that they have a waxy shell covering the soft parts of their bodies. Various chemical controls have dubious effect on them. Water based controls simply run off their shells like water off a ducks back. Oil based control chemicals work better because they stick to the shell, but the best method is probably to use a systemic poison, if possible.

Scale insects have a very interesting life history. As immatures, they live under their shells and take up plant juices through their short, piercing-sucking mouthparts (probosis). As they grow larger, they exude more of the wax-like shell from special cells in their bodies. The soft body is well protected by this “armor”. They do have legs at this stage, but, since they do not move around, the legs are almost useless.

Once mature, scale insects become reproductively active. The males develop wings and can fly about freely after leaving the protection of their scale. The females, on the other hand, are so full of eggs that they cannot get out from under the scale shell. Sort of a self imposed imprisonment, I guess! Males fly about seeking a female, and upon finding one, a mating takes place. The female lays her eggs under the shell and then dies. (I think this mating process has all the makings of a Shakespearian tragedy!) The ova overwinter under the shell and hatch out in the spring. At this point the immatures are called “crawlers” and have full use of their legs. When they find a good spot, or a new plant, they settle down and begin forming a scale over themselves. Then the growth process begins all over again.

An effective non-invasive method of control (If not tedious) is to scrape the egg-laden scales from the plants during the dormant period. Observing those plants that are susceptible to scale, and doing this every season, will ensure that you will have the scale insects under control. We can “tip the scales” on the scale!
Winter Musings

As the winter holidays approach and the gardening is over for the year, it gives us time to reflect on what is going on with insects right now. You know that working with, and thinking about, insects is one of my favorite things to do. So I’ll share some thoughts with you.

Most of the adult insects have expired, but they have left behind eggs, pupa or cocoons of their young. Some adults will actually hibernate over the winter in secluded niches, such as under logs or rocks, in our buildings (not as pests, we hope), underneath the bark of trees, in the soil, leaf litter and many other places of protection from the elements. I especially like to watch the praying mantis females lay their eggs in a frothy mass that hardens to a tough Styrofoam-like structure that protects the susceptible ova. The egg laying process starts in early October, and female adult mantises can be seen flying about looking for a good place to form this egg mass. An occasional male mantis can be found, but only because he has escaped, well, you know, from being eaten by the female during the mating process.

Some moths lay their eggs out in the open as bands around twigs to brave the winter weather. These “egg rings”, as they are called, can sometimes be seen in winter as a swollen structure on a twig. They are usually well camouflaged except for that apparent swelling. The eggs hatch in the spring, and the complete life cycle takes place before fall, when eggs are laid again.

Cocoons and pupae of butterflies and moths are everywhere, but they are always so well camouflaged that you may never see one. Swallowtail butterfly pupae look like little broken off twigs and are attached to a branch in a manner that suggests that condition. Moth cocoons are covered with a grayish silk that sometimes has hairs from the caterpillar woven in. Some caterpillars actually chew up wood and incorporate that into the cocoon, making it very strong and impervious.

Beneficial ground beetles normally hibernate under rocks or wood. In spring they become active again and go after those garden pests we hate so much.

Some butterflies, like the orange and black angle wings, hibernate under loose bark of trees and sometimes, on a warm, sunny day in mid-winter, can be seen flying about. The sun seems to bring them out of hibernation for a while and then they return to their little retreat.

Hornets have died out in their nests by this time. New queens (several per nest) have found a place to hibernate for the winter. I normally find several over wintering in my shop. In the spring, they will become active, form new nests and the process of nature starts all over again.

Winter is a good time to reflect on nature and dream a little about the coming spring and all it has to offer. Have a great holiday season!
Those Pesky Pests

As we are beginning to think ahead to spring and our gardens, it is probably a good idea to prepare for the onslaught of garden and house pests. The January snow may have slowed down a few of them, but there are certainly others to take their place.

Let's take a look inside the house first. Have you checked your stored grains for meal moth larvae or beetles? Be sure to get rid of any that have signs of invasion. The best way to do this is to seal the contaminated material in a "ziploc" type bag and put it in the trash.

Have you cleaned under the sinks lately? This is a place where many pests hang out. Silverfish love it under there because it is dark and sometimes moist. Ants also will be attracted if there are any tiny food particles that didn't make it into the trash can. Ants are not active yet, but will be very soon.

Carpet beetles can be continuous breeding in your house because of the warmth. It doesn't take very long for a generation to mature and soon you have a total infestation. Check your woolens, furs, and, oh yes, even your feather dusters for larvae or adult beetles.

Houseplants can have fungus gnats infesting the soil around their roots. If you see little gnats flying around inside the house, you may want to scrutinize your indoor plants. I have even seen various species of midges and gnats flying outdoors on warm days throughout the winter. I think some of their life histories are actually completed in winter!

Mice in winter can be a perpetual problem. I always leave traps set in our cold cellar that connects to the crawl space under the house. I usually catch one or two mice per week in the winter that way. Where they get in, I haven't figured out yet! Your garage is a great place for mice in the winter. It is usually not air tight and mice can sneak through the smallest openings. They love to get into and nest in cardboard boxes being stored in the garage! They really can make a mess of things!

OK, lets look outdoors now. Soon the boxelder bugs and ladybird beetles will come out of hibernation and, yes, those of us on duty at the MG desk will have to answer a million questions about control measures when they get into the house. Remember, the easiest way to handle these two is to "suck 'em up" with the vacuum cleaner.

The earwigs and slugs will begin to be active if the weather is warm (for Oregon, that is) during this month. Remember the rolled up newspaper trick for earwigs. No you don't smack them with it, you roll it loosely and lay it out in the garden and the earwigs seek shelter in the layers of paper. It's easy then to dispatch them in any way you see fit.

As we get closer to spring, we see visions of seedlings dancing in our heads. But, lets not forget those little pests that can make the joy of gardening sometimes a chore!
Generalists vs. Specialists

Insects can be general or specific in their feeding habits. A generalist has a much better opportunity to be successful and flourish in its environment. Take, for example, the large Polyphemus silk moth. The larva prefers to feed on oak leaves, but will also accept maple, ash, walnut, and many other deciduous trees and shrubs. Being a generalist, it is able to survive in almost any environment, and is the most common so-called “giant silk moth” in the United States. It can survive in the desert as well as in the mountains and forests. It is found in every state of the union because it can adapt to any climate and feeds on the plants indigenous to the area.

Garden pests usually are generalists to some degree, attacking the exotic or unusual plants you are trying to propagate in your growing space. The veined white butterfly, a native of Oregon, feeds mainly on wild mustards, but will also attack cabbage, brussels sprouts, and other members of the mustard family. The cinnabar moths were imported to feed on tansy ragwart, since this was their specialty food. MG’s are reporting to me that they are finding the larvae on asters in their gardens, indicating that the moths are not as specific in their feeding habits as we thought, although asters and tansy are in the same family.

The more specific an insect is in its feeding habits, the more fragile it is to environmental change. A good example of this is the Fender’s blue butterfly. It feeds exclusively on Kincaid lupine found only in specific locations and conditions in Oregon. Where the lupine grows, this butterfly can flourish. If the lupine is removed, as happens when farming and cultivation takes place, the butterfly all but disappears. Because of extensive farming in the Willamette Valley, the Fender’s blue was thought to be extinct. It was rediscovered in 1989, and has been on the endangered species list ever since.

Many insects are specialists like this blue butterfly. The mud dauber wasp uses a particular species of spider to feed its larvae. When these spiders are abundant, the mud dauber numbers increase. When the spider numbers are down, so are the numbers of the wasp. A good example of supply and demand, I guess!

“Adapt or perish” is a concept that allows some animals and plants to survive drastic change. Some scientists believe that the demise of the dinosaurs was, at least partly, due to changes in climate and food that were beyond their ability to adapt. Man, fortunately, has been able to survive in almost all climatic conditions - maybe TOO well! Only the future will tell us.
It’s that time again! Spider time, I mean. Clients will be bringing in many spider specimens for us to identify. Most of these are harmless, but people are generally afraid of or at least a bit queasy about spiders in their homes or on their properties. Many of these fears are undoubtedly the result of science fiction movies about attack spiders, or giant spiders, or radioactive spiders, or... well, you get the picture. Actually, as Master Gardeners™, the spider is our friend, a beneficial.

All spiders hunt for their living. They have venom to incapacitate their prey before they devour them. Some venoms kill the prey outright, but some simply immobilize the prey while the spider feeds. Rather ghoulish and draculan I realize, but that is what nature does. The spider cannot feed on the tissue directly and simply drinks in the fluids from the prey.

The spiders that are brought into the office this time of year vary greatly, not only where clients find them, but also in size, color and disposition. One of the most common outdoor spiders to be brought in is a medium sized (1/2 inch) jumping spider. People are frightened of them because they are black with a large red dot on top of their abdomens. Folks sense them to be black widows. Actually, this jumping spider does not build a web like the widow, but simply hunts down its prey and pounces on it. Also, the red spot is on the top of the abdomen, not on the bottom as in the widow. Watching this creature can be fascinating. The eyes are situated to the front of the cephalothorax and they really do have stereo vision. This is useful in estimating the distance to the intended victim. Seldom do they miss.

Another spider commonly brought in is a small black grass spider. You probably have seen them in quantity in your yard. Sometimes, you can’t take a step without a dozen or so scurrying away. With the next step another dozen, and so on. People relate to the movie “Arachnophobia”, I think, and panic. These are harmless little spiders and have their place in our environmental scheme of things. Later in the year you can see the females carrying egg sacks on their backs. A rather maternal gesture in the primitive animal kingdom.

In the fall, large bodied (abdomens to almost 3/4 inch) garden spiders are often brought in by the public. Since they are large, they seem to frighten people. Actually, they are probably the most useful of the spiders that are on our properties. They set up large orbital shaped webs, and feed on night flying insects that would attack your crops during that time and perhaps even in the future by keeping them from laying eggs. If these large spiders are received while you are on duty, don’t kill them. We will ID them and then let them loose in an appropriate area.

The spiders that are the greatest challenge for the Insect Committee are the Tegenarias, or house spiders. One is the Hobo spider which you know has a vicious bite. The other two are relatives, the giant house spider and the domestic house spider, but they are harmless. It is difficult to distinguish which one is which without some detective work. But, that is the subject of another article!
It's Not Ice in Their Veins, Just Antifreeze!

On a warm day in January ("warm" is relative here), it is not uncommon to see small insects flying about. There are even some small moths that come to our windows at night, seeking to get inside our lighted house. How do these survive the colder, freezing temperatures of winter? It turns out that insects have sort of an antifreeze in their blood. If it were not for this chemical substance, the blood and body tissue would freeze and ice crystals would penetrate the cells, causing the insect to die. It would be like untreated frostbite in humans, where tissues die from the cold and, you know, amputations are sometimes necessary! But insects do survive due to this substance in their blood. Of course, their blood isn't like ours with iron being the chemical that carries the oxygen to our cells. Insect blood is based on copper compounds, and the fluid is green instead of red as in our bodies. Many insects hibernate under rocks, wood, leaves and such during the winter. Their metabolisms slow down and they are almost lifeless. Bring them indoors and they will "thaw out" and begin movement again. Their blood has protected them from being destroyed by the freezing temperatures.

Some insects pass the winter in a cocoon or other type of resting state. As kids in Minnesota, we would hike through the snow and search for cocoons of moths that had been spun up on the branches of bushes and trees. Sometimes the temperatures would drop to 35 degrees below zero during winter. I'd say the antifreeze in these moths was pretty well concentrated! As humans, we always had to check the antifreeze in our cars to make sure the engine was safe for the winter. I wonder if the caterpillars had to check theirs before spinning the cocoons???

As with all the mysteries of nature, we don't have all of the answers. While these creatures must brave the cold, we get to stay indoors with our warm fires and some of us even put a little "antifreeze" in our toddies as we gaze at the fire and dream about the upcoming gardening season!
Dung Beetles

Yes, there really are dung beetles! These are members of the family “Scarabeidae” or scarabs for short. They get the common name for their habit of rolling up dung into round balls and using this as food for their young. The ancient Egyptians held these beetles as sacred, as they represented reincarnation. The life history of scarabs is fascinating. The adult beetles, after having mated, find a dung heap or large animal dropping and form large balls of the stuff (usually a lot larger than themselves). They roll these balls along on the ground until they find a suitable spot to bury it. Once a hole is dug, the ball is rolled into it and the female deposits an egg on the ball. The whole thing is then gently covered up. The larva hatches from the egg and feeds on the organic matter for up to a year or more before pupating in the empty ball. The adult finally emerges and the process starts over again.

I mentioned the Egyptians as holding the scarab as sacred. As they observed the beetle rolling the ball of matter along and burying it, then the next year emerging as a beetle again, this seemed to be a type of reincarnation. Scholars believe they equated this with the mystical idea of reincarnation of humans. If a person’s body was preserved and buried deep in the earth, perhaps the same thing would happen, and the human would be alive again. No wonder that the scarab was an important aspect of the Egyptian religious and cultural belief. But I digress.

Many scarabs live their life underground as larvae for several years. The largest dung beetle in the world, the Hercules beetle, spends at least two years feeding as an immature under the ground. Hercules larvae feed on elephant dung, and are only found in Africa. The adults are so large they weigh in at 1/4 pound or more. They’re about the size of your closed fist. That’s big!

Closer to home, the rain beetle (a 1 1/4” scarab) is found in our Oregon forests as an adult in October just about the time it begins to rain here, thus the name. Males fly during wet weather looking for females with which to mate. They use deer and elk droppings as their dung source, rolling it into balls for the larvae to feed on.

Beetles make up the largest group of insects in the world. The variety and adaptability of the beetles make them a truly wonderful insect to study and/or observe.

As Ed Sullivan once said when he had the fab four on his show, “Let’s hear it for the Beetles”, or was that “Beatles”? How soon I forget!
Water Creatures

Now that we are in mid-summer, we tend to go to places that are cool and inviting. One such place is our favorite lake or pond, where we can sit quietly, meditate a bit and take in the coolness of the water.

But, there is a lot of activity going on in our pond. Across the surface are some scurrying insects on the move, stopping for a few seconds, and then they are off again. They seem to be standing on the water and do not sink in. These are water striders, true bugs that have tiny hairs on their long feet which keep them from breaking the surface tension of the water. They literally “walk on water!” You can duplicate this feat by carefully placing a fine sewing needle on top of water on its side. The needle will actually “float” on the water. Note that only four of the insect’s feet are actually touching the water. The other two, the front pair, are poised to catch small insects which the strider will devour.

Another surface insect is the whirligig beetle. These beetles float on the water’s surface using air bubbles as floatation devices. Because they are half submerged in the water, they have developed two sets of eyes, one to see above the surface and another to see below the water. This way, they can keep an eye on both predators and prey. Whirligigs get their name by the habit of swimming round and round on the water surface.

We can watch dragonflies and damselflies floating in the air above the pond. Dragonflies hold their wings horizontal to their body when at rest, but the damselflies fold their wings together over their backs. The immature, or nymphs of both of these are aquatic. They have long hinged lower jaws that can shoot out and capture prey. These nymphs are very voracious and some of the larger ones actually feed on small minnows in the pond.

Diving Beetles live and hunt under the water. They occasionally come to the surface to get a bubble of air to breath. Their feet have been modified to act as oars and have long bristly hairs to increase surface area. The adults are attracted to lights at night and can sometimes be found struggling to move about on their “oars” on your porch in the morning.

Another water creature that is attracted to lights is the giant water bug. During the summer, these three to almost four inch true bugs sometimes are seen flying around street lights. They are so large that they look like bats. Their front legs are designed to grasp and hold prey (often tadpoles) while they sink their beaks into its body. The saliva of the bug is a poison and quickly kills the unfortunate victim. Don’t pick up one of these bugs unless you stay away from the beak. The bite can sting and the area will swell up. Fortunately, the reaction does not last more than a few minutes in most people.

Many other insect water creatures can also be found on or in the water. Next time you sit next to a quiet pond or lake, remember that there are some fascinating activities and life and death struggles going on at the surface as well as beneath the water. Nature is always busy!
The Insect “Revue”

This is the month when insect and arthropod identification eases off, so November is the month I usually review what the committee did for clients this year. I know I spelled review wrong in the title, but it sort of shows that a lot of insects were paraded by the committee. You know, like a Broadway “revue”? Just a little attempt at humor there!

We had another year when a lot of spiders showed up in the office. Brought in by clients, I mean. We had quite a few giant house spiders dropped off by the public for identification. Their large size (actually their long legs reaching out about 2 1/2 inches) makes them appear to be frightening and dangerous, even though they are not harmful. We also had many Hobo spiders brought in. We identify the Hobos by dissecting the males pedipalps to look at the structure. We also got our share of the beneficial black, hairy jumping spiders. We normally release them, unharmed, outside of the Extension Office because they control the undesirable insects in the MG garden there.

This was really the “year of the leafhopper”. Sounds sort of like a creature from the Chinese calendar! With the spring rains, we had an abundant growth of field crops. It also stimulated the reproduction of thousands of leafhoppers, especially in the grass fields. As the grasses dried out or were harvested, the little 1/8th inch Homopterans had no food and so went searching - into peoples yards, their homes and wherever, looking for green plants. People would go out in their yards and, as they walked, chase the leafhoppers up by the hundreds. They were usually described as “tiny hopping, flying things in my lawn”.

Another tiny hopper was brought in quite regularly. These were Collembola or “springtails”. In order to see them in detail, one needs a hand lens or dissecting microscope. People would see them in their kitchens around the sink or outside in damp areas. They were worried they had an infestation of something that might be harmful to their food or clothing. Springtails like damp environments. That is because they feed on molds and microscopic bits of food that we drop on the floor. They are very curious in that they possess a furculum, which is a forked appendage at the end of their abdomen. This fork is bent forward to a button-like knob on the bottom of their thorax and is fixed to this button. When in danger, the fork is released from the button and acts somewhat like an upside down mousetrap to propel the springtail through the air to another location. A very clever arrangement!

Other creatures were also brought into the office, but those above seemed to be the ones most often submitted to the committee during this growing season. Hope you had a successful and satisfying garden year and that the insects left your plants alone!
December Doldrums

The gardening period for this year is over, the crops are in, our freezers are full of the produce we raised. It's time to relax and think about next year's endeavors in tilling the land. Planning ahead for next year is the gardener's winter chore. What crops are insect resistant? What insects will I tolerate and which plants might set off a horde of six legged creatures on my property?

We must remember that many insects and other pests will be in some sort of resting stage now. Some overwinter in the pupa or cocoon stage, like cutworms, flea beetles and root weevils. Others diapause (that's a fancy name for the resting stage during winter) as eggs. Still others spend their time in the off season as adults. We all know that the ladybird beetles and boxelder bugs hibernate, since we see them getting ready for that process in October of each year. How many calls do we get about the myriads of these creatures on and in houses in the MG office every year? Some caterpillars also hibernate. Consider the wooly bear caterpillars. You know, those brown and black banded fuzzy little guys you see crossing the roads, crawling around our yards, and in general going hell bent for somewhere. They actually are just looking for a good, sheltered place to spend the winter. In spring, they resume activity and eat heartily to gain energy before they spin up a cocoon and finally become a moth.

Another method of winter survival calls for drastic measures. Hornets, for example, allow all the workers to die off during the winter. The lone survivor is the queen. She finds a shelter from the elements for the winter. On my property it seems to be my shop! In spring, she begins building a new nest and, because she is still fertile, lays eggs to form new workers. She finds food and tends them until the workers reciprocate and take care of her.

Insect lives are as varied as the soap operas on TV. Actually they are a lot more interesting than any of those shows, with truly real situations. Don't you agree? Have a great Holiday Season! See you next year!
Hoppin’ Homopterans!

The title for this month’s article may sound like an expression from a bad Batman and Robin movie, but it describes pretty well a characteristic of many of the insects belonging to the Order Homoptera. There are leafhoppers and tree hoppers, as well as some non-jumping members such as aphids, scale insects, cicadas, whiteflies and others.

The Homopterans are a very diverse group when it comes to body shape and structures, but all have the same distinguishing characteristics such as piercing, sucking mouthparts and wings that are very membranous and are held over the body in a tent shape.

Who hasn’t been outside in July and August and not heard the cicadas high pitched song during the day? This was the year of the 17 year locust (really a cicada) on the east coast. The sound that the male makes can be so irritating, that one puts their hands over their ears to shut out the sound. The sound can be deafening! Actually, he is looking for a mate and is serenading for a willing female.

Some Homopterans have extremely weird shapes. There is a lanternfly (a cicada relative) in the tropics that has a head shaped like a large peanut. The markings on this “peanut head” include a false eye and teeth markings, making the insect look like a newly hatched crocodile or lizard. The rest of its coloration enhances this effect, and, if that doesn’t work to scare off its enemies, as it flies away, it has two large eyespots on its hind wings to momentarily confuse the predator. Some of the tree hoppers have projections on the top of their thoraxes that are twisted into bizarre shapes. All of this is for camouflage purposes, of course.

Certain aphids and a few other genera try to make themselves distasteful by secreting a waxy substance over their bodies. Some actually have plumes of wax that form bushy “tails.” One species of aphid we have here in Oregon is black in ground color, but secretes long plumeous wax filaments that are very light blue in color. As it flies, it makes a very striking and beautiful insect. Spittlebugs secrete a soapy, waxy substance that the larva can whip up into a froth in which to hide as it sucks juices out of the host plant.

The Order Homoptera has many characteristics that are very unusual for the animal kingdom. Next time you are in the MG office, check out some of the books on insects that have information about the Homopterans. You will find some amazing information.
Lousy Insects!

This is a lousy article! No, really! Its about the group of insects that make some people and whole groups of animals miserable. These are namely: the lice. I realize that this is not a pleasant subject, but the two groups of lice, the chewing type and the sucking type, have raised havoc among human and animal populations for as long as we have been in existence. They say that Napoleons army in Russia was decimated as much by louse-borne typhus as it was by hunger and exposure. The opposing Russian army also suffered from that disease carried by lice.

The chewing lice, Order Mallophaga, use animals as their host. Some are very specific as to the species that they attack. Most of these feed on feathers of birds or hair of animals. Some feed on flakes of skin and can cause an irritation that will produce itching for the animal involved. The problem with these insects is the shear numbers that, when they find the correct host, will reproduce a thousandfold and cause a considerable loss of condition and life.

The other Order, Anoplura, are called the sucking lice. These are primarily important because they attack both animals and humans. Their mouthparts are modified into small stylets that penetrate the skin and a tubule sucks up the blood that is produced. Of course, these penetrations can easily spread disease organisms to the host. Two of the sucking lice that attack people are the crab louse that infests the hairy parts of the body and is shaped like a tiny wood tick, and the cootie, or body louse. The latter can be found anywhere on the body, but prefers to live in the hair of the head region. Elementary schools regularly check for infestations in their students. The eggs of these lice are quite large and can be easily seen attached to the hair. The eggs or “nits” as they are called, can readily be removed from the hair. Our expression “nit picking” comes from the practice of carefully going through the hair and removing the eggs. It now is meant to signify looking for any tiny fault in a person or thing. Under sanitary conditions, with regular hair and body washing, cooties are seldom a problem, although they can be transmitted from student to student quite easily.

I hope this “lousy” story shed a bit of light onto these tiny creatures that have helped shape human history and economics.
The Carpenters

If you are old enough, you will probably remember the singing duo called “The Carpenters”. One of their hit songs was “We’ve Only Just Begun”. This article, however is not about people, it’s about carpenter ants. It is said that if you live in Oregon, your house has carpenter ants, has had carpenter ants, or will have carpenter ants in the future. So, they’ve “only just begun” to live on your property.

I can attest to having had an infestation several times over the years we have lived in Oregon. Carpenter ants can be very devastating to the wood of your house. They don’t eat it, mind you, but they do tunnel through your beams and rafters and use these galleries to make their nests. They can even make their nests in boxes of old clothes, Christmas ornaments and other items stored in boxes in your garage.

Carpenter ants are fairly easy to recognize. They are normally black with a smooth rounded top to their thorax and are about 1/4 inch or so long.

The worker ants, looking for food, begin activity in early spring and often an individual or two can be found in your house during that time. Don’t panic! If you see only one or two it probably means only a scouting party foraging for food to take back to the nest. A swarm of winged ants, or many non-winged individuals in the house could indicate a problem. What to do if you do have an infestation? If you can locate the nest you can use some over the counter sprays or poisons to attack the nest directly. Most of the time, however, the nest is hidden away in the structure, and you need to use a slow-acting persistent insecticide that the foragers can take back to the nest and share with the other ants. Look at the recent edition of the PNW Insect Control Handbook to see other information on control measures.

Hopefully, you won’t have any trouble with the carpenters this year. The human Carpenters was a nice singing group!
How Does Your Garden Grow?

Now that summer is upon us, it is time to take note of the various insect visitors we have coming to our gardens. Some of these are welcomed by us, others not.

One of those that think we planted our garden just for its pleasure is the European earwig. Earwigs were imported (I hope accidentally) in the early 1900’s and, not having any natural enemies, have exploded in population numbers. They especially like to feed on our delicate flowers such as dahlias and daffodils.

One positive thing we can say about them is that they have a great maternal instinct. The female lays her eggs in a secluded cluster and then wraps her body around them until they hatch. She even “licks” the eggs frequently to keep molds from attacking the surface of her progeny. With all that motherly care the hatchlings are off to a good start.

Of course, in contrast to the earwig is our friend the ladybird beetle. Ladybirds help us both as larvae and as adults by eating aphids and other small garden pests. The warning colors of orange and black on the ladybird (both in the larva and adult) warn would-be predators to steer clear of these insects. If you pick up a ladybird beetle and it feels threatened, it will give off an orange liquid that has a disagreeable odor and also probably tastes bad. Lady “bugs” can therefore go on about their business and not have to worry about being eaten themselves.

We love to see butterflies in our gardens in summer. Many of the plants we grow also serve as food for their larvae. For example, the anise swallowtail lays its eggs on members of the carrot family. If you grow parsley, carrots, dill, fennel or other family members, you might observe the green and yellow striped larva of this butterfly. In the early stages, the larva looks exactly like a bird dropping (black with an irregular white blotch in its middle). Some camouflage, huh?

Hiding during the day, but active at night are the carabid beetles. These beetles are black, long legged and active. The various species are all predatory and are great beneficiaries to the garden. One species, the snail eater, actively feeds on snails and slugs. To promote this species, you should keep a good supply of slugs in your garden. JUST KIDDING!

If you have an outside light, you probably see lacewings being attracted to it at night. Lacewing adults and larvae are great garden predators. The larva especially is ravenous on aphids and small caterpillars. It has hollow mandibles that act like straws to suck the blood out of its victims. Quite a little monster (Dracula?)!

Observing the insects in our gardens puts a whole new perspective on gardening. Do your gardening with a watchful eye to the wonderful world of our insect friends and foes!
Leggy Beasts

What do you do when you come across a creature with more than 8 legs and is long and scary looking? Run? Call the authorities? Assume you have just seen a UFO occupant? Probably what you saw was a member of the order Chilopoda or Diplopoda! In layman’s terms, either a centipede or millipede. These creatures are very important in the ecological scheme of things.

Centipedes got their name because the first scientists that studied them decided that, since they had so many legs, there must be about a hundred of them. Thus, the Latin “centi” meaning one hundred and “pede” for legs. Rather logical don’t you think? Actually, the centipede has a lot less than 100 legs, and different species vary in this number.

Centipedes are actually beneficial critters in the garden. They feed on insects and should be encouraged to live in your garden by providing hiding places for them. Boards or rocks on the ground provide perfect “houses” for these animals. They catch their prey by injecting a poison into their blood stream. Interestingly, the poison is produced at the base of their first pair of legs, and these legs are modified into fangs. Most centipedes are harmless, but a few of the very large ones (up to ten inches in length) can inflict a very painful bite if they are mishandled. These large creatures are not found here, most of them are tropical.

The body of a centipede is flattened somewhat top to bottom, and the legs emanate from the sides of the body, one pair per body segment. Color varies from almost colorless and translucent to bodies marked in rainbow colors like greens, reds and blues.

Millipedes on the other hand are quite different from centipedes. Their bodies are a rounded, tube shape and their legs are situated on the underside of the body. They also have two pairs of legs per body segment, giving rise to their name, “milli” (one thousand) and “pede” (leg). This docile animal really doesn't have a thousand legs, but as you watch one move about, it appears like they do.

As opposed to the preying habits of centipedes, millipedes feed on decaying plant vegetation. They are a benefit in your compost heap and help to break down your compost into a usable form. These little helpers benefit from providing hiding places for them in your garden.

Millipedes have the habit of rolling up into a spiral when disturbed. It almost appears that they are trying to protect their legs by doing this. They are not harmful to humans, but do emit a substance that can irritate the skin of some people when they are handled. Simply wash your hands if you want to hold one of these little guys.

Centipedes and millipedes are good garden companions. So, when you see one of these multi-legged creatures, say hello. Unless, of course, it just stepped out of a UFO!
Asian Invaders Attack Oregon!

The title of this article sounds a bit like a branch of Al-Qaida terrorists are about to do us in, but actually it is really about the Asian brown marmorated stink bug that is starting to show up in Oregon. This pest is common in Japan and China, but it has hitched a ride from Asia to the U.S. via commerce. It looks a great deal like our local native brown stink bug which is a beneficial insect and feeds on many unwanted soft bodied insect pests. The Asian intruder, however, feasts on plants, notably vegetables and fruits. It is therefore a threat to farmers and to home gardeners alike.

The brown marmorated stink bug (“marmorated” means marbled) was imported accidentally on the east coast a few years ago. It has a habit of finding a warm place to stay for the winter, and what could be more inviting than the warm hold of a ship. Once here it has found a new homeland. This “true bug” has recently been spotted in houses in the Portland area, probably taking shelter from our cold winter weather. Undoubtedly, it was brought to our area in commercial ships. Entomologists are doing gene studies to determine if these are different from the eastern U.S. variety. If they are the same, they may have hitchhiked on trucks bringing merchandise here from the east coast. Once established, they have no natural enemies and could reproduce freely causing an epidemic in our agricultural community.

If any brown, oval shaped, somewhat flattened true bugs are brought into the office while you are on duty, please save them for the Insect Committee to identify. They can be put into the freezer or placed in alcohol to preserve them. Also, be sure to take down good notes on the intake form, as the agriculture department is very interested in tracing these insects. Take down the exact location they were found, and be sure to get the full name, phone number and address of the client.

Together, we can keep this foreign invader from causing an agricultural calamity! Thanks for your help!
The Things I Raised Last Summer

This title sounds a bit like a tune about garden crops. However, it relates to the insects I raised throughout the year. Moth larvae actually. Really BIG moth larvae. Caterpillars of moths known as “giant silk moths”.

I started the rearing year off last October raising some Atlas Moth larvae. Atlas moths are indigenous to the tropics and emerge throughout the year. A friend of mine sent me a surprise package of eggs of this huge moth (it has a wing span of 10-12 inches), because he could not feed the caterpillars over the winter. I discovered that the little worms would feed on our native Salal, which is evergreen. So, I hand reared them indoors for several months through the winter. They grew into caterpillars the size of a thick hotdog, being blue-green in color and with long white fleshy tubercles on their bodies. Quite handsome. They spun their cocoons and emerged a few months later as the biggest moths I have ever seen!

During the summer, I usually have 5 or 6 different species of caterpillars feeding in special sleeves that you can slip over the food plant and tie so that the larvae cannot escape, nor can the predators get at them.

Probably the most unusual larvae I reared were the so called “Hickory Horned Devils”. These large (6 inch) worms have 8 formidable looking spines on the front end of the body that stick up about 3/4 of an inch. The spines are harmless, but the appearance of the large body and horns at first sight is enough to unsettle a person. These larvae, when mature, burrow into the ground to pupate. So, when they were ready, I provided each one with a 4” X 4” planting pot filled with potting soil. It sort of felt like “planting” the caterpillars. They readily dug down into the soil and turned into pupae. A couple of pictures of the larva and adult are on the bulletin board of the “Insect Corner” in the Master Gardener room at the Extension Office. These are truly good looking insects at both stages of their lives.

Of course, rearing insects from outside our region puts a certain obligation on the “Butterfly Farmer”. One must never release non-native species into the wild. Most would not survive to the next generation, but you never know. On the east coast of the U.S. some imported Giant silk moths, called Cynthia moths, were released in the 1800s. They had been imported from China in the hopes that an American silk industry might get started. That didn’t work out, so the moths were released. They never did become a problem since their main food plant is the Ailanthus tree or Chinese Tree of Heaven. They are now considered to be almost an indigenous animal on the east coast because of their success in survival.

Raising insects and/or maintaining an insect zoo can be a fascinating hobby. Perhaps you would be interested in doing that some day! Let me know!