

Top Ten Pests and Their Natural Enemies

Sharon J. Collman

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The insect photos below were donated to OSU by the late Ken Gray. With a grant from EPA, the slides were catalogued and a basic set was distributed to WSU and UI Departments of Entomology. They have since been made available at <http://www.ent3.orst.edu/kgphoto/index.cfm>. Others photos are from Robin Rosetta's Nursery IPM Website at <http://oregonstate.edu/Dept/nurspest/index.htm>. The remainder were photographed by me.

Why Diagnose Plant Problems and Identify Insects

Choosing appropriate management options must start with diagnosis, followed by checking for the presence of natural enemies. Then select the right solution for the site (children, pets, waterbodies, drinking water wells) and the pest (species, life stage) and finally evaluating the results.

“Who cares what they are, if I can just spray and kill them?!”

- Greater than 50% of the problems are cultural or environmental so pesticides will not help.
- Pollinators and natural enemies of the pests may be mistaken for pests and sprayed.
- Timing of pesticide application differs for different insects.
- Pesticides may be differentially effective on different species of related insects
- Selection of pesticides should be based on pest, timing, life stage, and site conditions (water nearby)
- Many home pesticides are now found in urban streams and other waters; these impact salmon abilities and/or the insects in the food chain that they need to survive

How could pesticides get into lakes and streams?

- Overspray into water and deposition of small spray droplets drifting on air currents
- Run-off during rain storms (of soluble pesticides) to storm drains – some are located in landscape beds.
- Leach into the water table or groundwater that feed streams in summer, or seep onto pavement from springs.
- Ride attached to sediment eroding from “clean” garden beds or the pesticide granules are carried off-site.
- Dumping pesticides into storm drains, pouring them down the sink or emptying the sprayer into drains/sink.
- Under the right conditions pesticides can move from lawns and gardens, to ditches or storm drains, to water.

THE TOP TEN – ORDER MAY VARY FROM YEAR TO YEAR AND COUNTY TO COUNTY

10 Beneficial Insects and Arthropods



Parasitoid wasp (no stinger)



Paper wasp docile unless disturbed



Horntail wasp, borer attacks dying trees

- Listed because the public perceives these as pests, not knowing they feeding on garden pests.
- Pollinators, natural enemies of pests, and a variety of non-pest insects are simply present and part of the web of life, food for birds and other garden dwellers. These are the unintentional victims of whole-yard spraying.
- “When you kill beneficials, you inherit their work”. Dr. Carl Huffaker, Biocontrol Specialist, U. California.
- Beneficial insects need flowers with shallow nectaries and accessible pollen for energy and egg production.
- Resources for learning more: <http://pep.wsu.edu/hortsense/>, <http://www.nysaes.cornell.edu/ent/biocontrol/>
http://entomology.unl.edu/images/beneficials/beeswasps/bene_beeswasps.htm;

09 Walk-In / Carried-In: spiders, sowbugs, millipedes, centipedes, wasps, flies



Pillbug



Sowbug



Centipede

- Many non-pest insects ride or walk into houses in the fall; many die in the hot, dry house
- Spiders, yellowjackets, pillbugs (roll up), & sowbugs ride in on firewood or other items brought into the house.
- Horntails and golden buprestids) emerge from structural wood where they have been living many years.
- Some emerge from house walls and attic, where they were hibernating. On hot winter days they wake up and move toward the greatest heat which is inside the house. (Wasps, flies, ladybugs).
- Food pests emerge from stored foods like rice, flour, package mixes, pet foods; discard infested foods
- Spider control is as easy as fall housecleaning, vacuuming the corners & shelves, behind and under furniture.
- <http://pep.wsu.edu/hortsense/scripts/query/displayProblem.asp?tableName=Insect&categoryID=13&problemID=6042>

08 European Crane Fly



Crane fly larva in soil



Adult crane fly



White grubs of E. chafer and J. Beetle

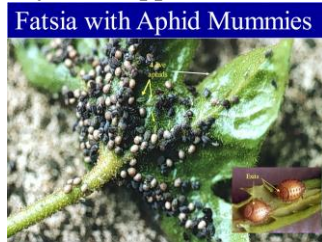


- Everything you want to know is on the crane fly website: <http://whatcom.wsu.edu/cranefly/>
- Remember that there are now two crane fly species, *T. paludosa* and *T. oleraceae*
- Most lawns sampled by Whatcom County Master Gardeners were not infested with crane fly. <http://whatcom.wsu.edu/cranefly/surveyresults.htm>
- Don't assume, sample. <http://whatcom.wsu.edu/cranefly/surveyresults.htm>
- Look also for other causes of a poor quality lawn. <http://whatcom.wsu.edu/cranefly/articles/index.htm>
- Crane fly and Billbugs in the Pacific Northwest (Gwen Stahnke) http://ipmnet.org/Tim/Pesticide_Ed/Pesticide_Courses_-_2011/Chem_App/Jim%20Frelich%20and%20Gwen%20Stahnke.%20%20Crane%20Fly%20and%20Bill%20Bug%20Control%20in%20the%20PNW.pdf

07 Plant suckers: aphids, whitefly, leaf hoppers, scales



Spirea aphid nymph



Parasitized aphid mummies not yet emerged



Armored, oystershell scale



Aphid nymph and winged adult



Whitefly adult and eggs



- Aphids have pronounced cornicles (sometimes very small) on their hind end, and long antennae. They usually produce winged forms for mating or for dispersal. In my garden, I've seen green apple aphid lay eggs on the most upright and tallest branch (prune away). Eggs overwinter, and the aphid stem mothers hatch in spring.
- Once hatched the stem mother gives live birth to young who in turn give live birth. They must reproduce rapidly to escape the parasitoids that will descend on them once the honeydew smell is strong.
- Aphids come in many colors and sizes: black, pink, green, yellow; winged forms they are about to leave.
- Scales are classified in the same order (Homoptera) as aphids, leafhopper, whiteflies and other suckers.
- Scales come in many forms: armored, soft, cottony, etc.
- Know your scales: Lecanium scale overwinters as soft nymphs on branches and is susceptible to dormant sprays. Oystershell overwinters as eggs under an impervious scale and is NOT susceptible to dormant sprays.
- Scale species produces eggs at different times of the year. Male and female scales may have a different shapes that, along with host, can be used in identifying them..
- Whiteflies can sometimes be found in large clusters on the undersides of leaves (rhododendron, Oregon grape), without producing young or causing damage.
- Many of the aphids, scales, whiteflies, leafhoppers produce copious honeydew (stick sugary excretion). The smell of honeydew calls the predators and parasites to dinner and is supports growth of sooty mold fungus.
- Predators include adult and larval stages of minute pirate bugs, ladybugs, lacewings, mites and syrphid flies.
- Parasitoids include braconid wasps and trichogramma (egg parasitoids).

06 Ants, Bees and Wasps



Carpenter ant worker



Dampwood Termite Adult (wet wood)



Yellowjacket

- Carpenter ants, termites and yellowjackets (a wasp) and even honeybees may nest in the walls of houses, as well as outside in the landscape. They can damage sound wood but often start where there is a moisture problem.
- Carpenter ants leave slick, clean galleries in wood and can be identified by their rounded thorax.
- Carpenter ants usually have a primary colony with the queen outside and a satellite colonies in the house. Target control on the primary or parent colony. (<http://whatcom.wsu.edu/ag/homehort/pest/carpenter.htm>; <http://gardening.wsu.edu/library/inse004/inse004.htm>)
- Dampwood termites are the large reddish “flying ants” seen flying in the fall (starting in late August). They nest primarily in moist, decaying wood and leave galleries filled with squarish pellets of frass. (<http://cru.cahe.wsu.edu/CEPublications/eb0787/eb0787.pdf>)
- Yellowjackets nest in cavities in logs, house walls, shrubbery and in the ground. They construct paper covered nests. <http://cru.cahe.wsu.edu/CEPublications/eb0643/eb0643.pdf>
- Both carpenter ants and yellowjackets are excellent predators, scouring the bushes for food for the colony but their damage to wood and walls can be significant. Comings and goings to a house should not be ignored.

05 Caterpillars



Young tent caterpillar larvae on tent



Egg beneath Styrofoam-like cover



Adult male moth



Photo by Marlin Rice, Ohio: Cutworm larva



Noctua pronuba moth



Cutworm (B) & Root Weevil (Top)

- Tent caterpillars hatch about the time that apples bloom. When they are young and actively feeding, *Bacillus thuringiensis* (*Bt*) can be very effective. Larvae must eat it, then they die. Dispersing older larvae have more body mass and are not actively feeding, so *Bt* is not as effective on them.
- Reach under tents on tree trunks and slowly peel the webbing and caterpillars off the trunk.. Toss in a paper bag, do a victory dance on the bag and toss in the garbage. Omit the dance and you have escaping caterpillars the next time you send someone out to the trash.
- Pupae begin to form in mid June and moths appear in early July.
http://whatcom.wsu.edu/ag/homehort/pest/tent_caterpillar_update.htm
- Prune out or pick off Styrofoam-like gray egg masses in winter fall and winter.
- Cutworms are nocturnal. Some species hatch and begin feeding in early winter. Check fuzzy leaf plants such as Verbascum, foxglove, and forget-me-not. They also feed on many other plants such as primrose, hellebore, etc. Damage could be confused with slugs or root weevil. Often C-shaped damage = Cutworm or Caterpillar.
- There are many species with different life cycles. The caterpillars of a new cutworm, *Noctua pronuba*, is very large and may account for the greater damage some areas experienced this spring. Being in the moth family these also respond to *Bt*. Apply when larvae are young. *Bt* is more active at warmer temps. Handpick at night.
- Some cutworms can climb fruit trees and damage fruit <http://www.tfrec.wsu.edu/worms/lacanobia.html>

04 Root Weevils



Obscure root weevil feeding



Cutworm (Bottom) and adult root weevil (middle top leaf and Right photo) damage



- Adult root weevils damage leaves by chewing irregular channels and notches at leaf edges.
- Distinguish between the small channeled notches of adult weevils from large swaths by cutworms.
- Root weevils have preferences among the rhododendrons. Avoid the susceptible, or replace with resistant, varieties: <http://cru.cahe.wsu.edu/CEPublications/eb0970/eb0970.pdf>



Black vine weevil larva



Larvae damage the root crown



Freeze damage to bark

- Larvae damage the fine roots, then chew through larger roots, then strip bark from large roots and root crown.
- Larval damage can be distinguished from freeze damage: larval damage is irregular with missed bits of bark. Freeze damaged bark splits and curls way somewhat uniformly and bark shreds hang loosely around the stem.
- There are many species of root weevils, each with a different life cycle and timing. It is important to know which species is present before selecting methods of control
- Because larvae are out of sight in the soil, pesticide applications are aimed at the adults.
- Larval control may be achieved with nematodes if soil temp is above 55 degrees and larvae are present at the time. http://www.meerkerkgardens.org/root_weevil.pdf
- Resources:
 - <http://lakewhatcom.wsu.edu/gardenkit/UnWantedPests/RootWeevil.htm>
 - <http://whatcom.wsu.edu/ag/comhort/RWEGGS99.htm>
 - http://oregonstate.edu/Dept/nurspest/clay_colored_weevil.htm
 - http://oregonstate.edu/Dept/nurspest/obscure_root_weevil.htm
 - http://oregonstate.edu/Dept/nurspest/Barypeithes_root_weevil.htm
 - An Aggregation of Root Weevils [file:///C:/Users/Owner/Downloads/SR_no.1065_ocr%20\(8\).pdf](file:///C:/Users/Owner/Downloads/SR_no.1065_ocr%20(8).pdf) p.1

03 Mites and Thrips



European Red Mite



Two spotted spider mite



Yellow stipples on strawberry = mites



A grass thrips



Thrips with wings



Thrips damage = white with black specks



Distorted new growth on maple



Severe distortion from thrips injury



Distortion on red-leaf plum

- Both mites and thrips stipple leaves by sucking out the contents of individual plant cells.
- Mite stipples result in lightly yellowed, reddish, bronzed, and, dusty or burned looking leaves. Look closely.
- Thrips damaged leaves can be yellow, silver with black frass specks, or bronzed.
- Nurseries her started reporting a relatively new symptom: the distortion of buds and new developing leaves seen above (see Nursery IPM Website) Also can be caused by environmental, virus or nutrition factors.
- Whap leaves over a white paper: mites = “dust specks” that walk away; little “slivers” that move are thrips.
- A good mite website with photos and information on common mites is Robin Rosetta’s Nursery IPM Website: <http://oregonstate.edu/Dept/nurspest/mites.htm>
- For thrips, same website: <http://oregonstate.edu/Dept/nurspest/thrips.htm>

02 Slugs and Snails



Slug on Hosta, note ratty damage



Slug eggs from under box



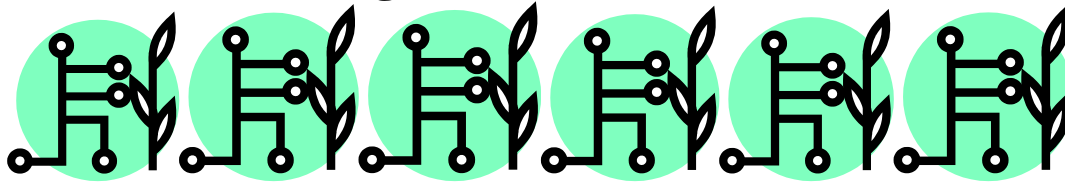
Brown garden snail

- There are a number of species of slugs, from the adult 1.5 inch small gray slugs to the large banana slug.
- Slugs require moisture and are most active in spring and fall and aestivate during hot dry spells.
- Slugs are ubiquitous, but less visible in dry years. As the temperature drops, and dew forms, slugs come creeping out of their moist hiding spots.
- Snails thrive when it is dry and hot. When it gets too hot, they just seal off their shell and wait for moisture wherever they are (on leaves, stems, house).
- How to tell the difference? Slugs are homeless, snails carry their home with them.
- Try this: during dry weather, water in morning so the soil will dry out by night making life difficult for slugs.
- Try this: when it is hot and dry, water a small section at night and pick off the slugs and snails that emerge.

(Cultural problems: Sun, shade, heat, freeze, wind, lightning, hail, snow. Another time.)

Here’s what you’ve been waiting for: Number ONE.

01 Gardener Blight



Preparation of the site



Watering Over or under watering



Placing wrong plant, wrong place



**60-75%
of the plant problems
submitted to the
WSU Plant Clinic
are cultural or
environmental.**

**Pesticides won't
cure these at all!!**

Poor pruning techniques



Planting



You call that pruning?

Maintenance



Half a hole, covered by bark is NOT planting.

More than mowing and raking

Sharon J. Collman, Emeritus Professor, WSU Snohomish County Extension, collmans@wsu.edu,
<https://bugsandblights.com> 425-357-6025, © 2021

WSDA PEST ALERT - JAPANESE BEETLE



Japanese beetles (*Popillia japonica*) are highly invasive pests of more than 300 plants, including roses, grapes, and hops. The adult beetles damage plants by skeletonizing the foliage. Adults also feed on buds, flowers, and fruit on the plants and are frequently intercepted with fruit from the Eastern U.S. The larvae are found in soil associated with the roots of host plants. They are common under turf/sod and can be moved in potted plants. Just found in WA near WA-OR border –

Please watch for it and help document its spread.

Questions? [e-mail us](mailto:collmans@wsu.edu) or call (800) 443-6684. To learn more about Japanese beetle, [click here](#)

For tips on how to identify this pest, [click here](#). e-mail: PestProgram@agr.wa.gov, or call 1-800-443-6684.