

Hemerocallis gall midge daylily gall midge

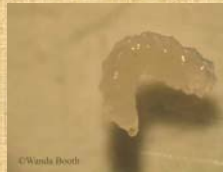
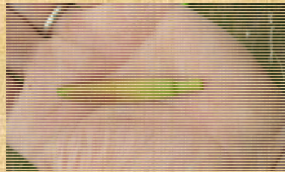
Contarinia quinquenotata

- **Thought to have originated from Asia**
- **Detected in Vancouver, British Columbia in 2001**
- **Found in 2007 in Washington**
- **There are reports of it in Whatcom, Skagit Valley, Bellevue, Everett, Granite Falls and in the Puget Sound area**

Hemerocallis gall midge

Biology

- Overwinter in the soil
- The adult midges emerge from the soil and lay eggs on developing buds of daylilies, *Hemerocallis* sp. usually in from May through June.
- The larvae that hatch from these eggs are small and legless maggots. The white midge maggots can be numerous and are usually found feeding within the buds but are sometimes seen on the outside of the buds.
- There is one generation a year.



Hemerocallis gall midge

Damage

- Feeding by the maggots on the developing lily buds causes the buds to become distorted.
- Buds appear swollen and discolored. Many buds are shriveled and may not completely form.
- Blossoms from affected buds are also deformed and often have crinkled petal edges.

Hemerocallis gall midge Damage



Allium leafminer (ALM), Onion leafminer

Phytomyza gymnostoma Loew

- Key pest of concern for *Allium* spp. (garlic, leek and onion)
- Detected in Pennsylvania in 2015
- ALM infestations have been found in 17 counties in Pennsylvania, three counties in New Jersey and possibly one county in New York.
- Threat to Oregon's \$125 M onion industry
- Threat to ornamental *Allium* spp. as well as native species.

Allium leafminer (ALM),

- High risk of importation as fly pupates in bulbs, including bulbs with no vegetative growth
- ALM has been moved throughout Europe but is native to Germany and Poland
- Risks associated with importing from any infested area
- USDA has deregulated this new pest
- Oregon is considering a quarantine on *Allium* from infested states
- ODA intends to eradicate this pest if detected

Allium leafminer (ALM)

- All members of the genus *Allium* are potential hosts, including leeks, onions, garlic, chives, shallots and green onions
- Leeks and chives appear to be preferred hosts.
- Larval feeding can cause the death of small plants and also twisted and curled leaves.
- Severe infestations can result in 100 percent crop damage.

Allium leafminer (ALM) Biology

- Fall populations overwinter as pupae.
- Two generations are expected: one in spring, possibly March to May, and another in fall, possibly September to October.



Allium leafminer (ALM) Identification

- feeding punctures made by the female
- curling of the leaves caused by larval feeding.
- Adults are gray flies about 3mm (1/8 inch) long with mostly yellow heads and yellow markings on the sides of their abdomen
- Larvae are yellowish white maggots up to 8mm (5/16 inch) long. Larvae feed down toward the base of the leaf and their "mine" becomes wider as they grow



Allium leafminer (ALM) Identification

- Pupae are reddish brown to dark brown and about 3.5mm (little over 1/8 inch) long
- Found at the end of feeding mines and can be down in the bulb.
- It may be necessary to peel back the leaves to see them.



Japanese Flower Thrips *Thrips setosus*

- Detected in a nursery in Michigan in 2016
- Hostas from this nursery shipped to nurseries throughout the US.
- Since then, detections in Rhode Island, Minnesota, Oregon (one location), and possibly Colorado (not confirmed).



Japanese Flower Thrips *Thrips setosus*

- APHIS is no longer regulating this pest!
- They feed on at least 14 plant families
- Fond of Solanaceous hosts such as tomato, pepper, and eggplant
- chrysanthemum, cucumber, hellebore, hosta, hydrangea, impatiens, petunia, poinsettia, and soybean

Japanese Flower Thrips *Thrips setosus*

Table 2. Plants on which *Thrips setosus* has been found. [Names given in bold refer to plants occurring in the open in the Netherlands]. Sources: (1) Miyazaki & Kudo (1988); (2) Mizobuchi et al. (1991).

Tabel 2. Planten waarop *Thrips setosus* gevonden is. [Namen in vet betreffen planten die in Nederland in de open lucht voorkomen]. Bronnen: (1) Miyazaki & Kudo (1988); (2) Mizobuchi et al. (1991).

Asteraceae	Chrysanthemum cinerariifolium (1), Chrysanthemum morifolium (1), Cirsium japonicum (2), Dahlia sp. (1), Kalimeris pinnatifida (1), Kalimeris yomena (1), Lactuca sativa (1), Sonchus oleraceus (1), Youngia japonica (1)
Balsaminaceae	Impatiens balsamina (1)
Brassicaceae	Brassica oleracea (2)
Caprifoliaceae	Abelia spathulata (2)
Convallariaceae	Ophiopogon jaburan (2)
Cucurbitaceae	Citrullus battich (1), Cucumis melo (1), Cucumis sativus (1), Cucurbita moschata (1), Momordica charantia (2)
Dioscoreaceae	Dioscorea japonica (2)
Ebenaceae	Diospyros kaki (1)
Labiatae	Lamium amplexicaule (2), Mentha arvensis (1)
Fabaceae	Dumasia truncate (2), Glycine max (1), Phaseolus vulgaris (1), Pisum sativum (1), Pueraria lobata (2), Trifolium repens (1), Vicia sativa (2)
Iridaceae	Iris sp. (2)
Moraceae	Ficus carica (1)
Onagraceae	Oenothera sp. (2)
Pedaliaceae	Sesamum indicum (1)
Polygonaceae	Polygonum sp. (2)
Rosaceae	Fragaria ananassa (1)
Rutaceae	Citrus sp. (1)
Simaroubaceae	Ailanthus altissima (2)
Solanaceae	Capsicum annuum (1), Datura stramonium (1), Lycopersicon esculentum (1), Nicotiana tabacum (1), Solanum melongena (1), Solanum tuberosum (2)
Theaceae	Camellia sinensis (1)
Vitaceae	Vitis vinifera (1)

Vierbergen and Loomans, 2016

Japanese Flower Thrips *Thrips setosus*

- Can vector of tomato spotted wilt virus
- “It can survive year-round in greenhouses and outdoors in USDA plant hardiness zones 4-11, which includes all of Oregon”
- Damage is similar to other thrips with silvery streaks and spots
- Although called a flower thrips, this species is actually a leaf feeder and does not eat pollen.

Japanese Flower Thrips *Thrips setosus*



Image: Wietse den Hartog

Japanese Flower Thrips *Thrips setosus*

- Adult females are dark brown with a pale color on the basal quarter of the wing
- Adult males are yellow and difficult to distinguish by non experts.



Japanese Flower Thrips *Thrips setosus*

- First detected in Michigan due to thrips biocontrol program failure
- ODA fact sheet has a list of insecticides that are known to be effective



Image: Wietse den Hartog

Salal damage



Greenhouse thrips



UC Riverside

Photo by Cheryle O'Donnell,
USDA-APHIS-PPQ

Photo by Lyle Buss,
University of Florida



Flatheaded borers Rose stem borer, Biology



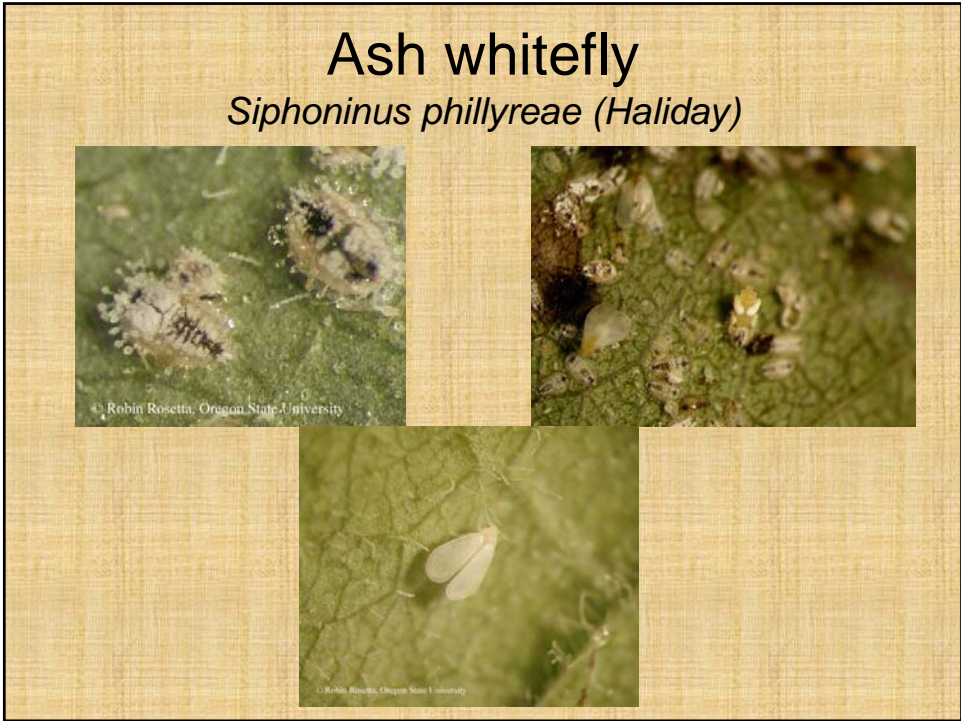
(*Agrilus cuprescens* Ménériés)



- Rose stem girdler had been captured in the Portland area (2015) and in southwest Washington (2014), as well as east of the Cascade Mountains.
- Detected in August at NWREC in caneberreries
- This beetle borer has the potential to cause damage to important plants in the Northwest, including caneberreries (*Rubus* sp.), and its namesake, roses.
- A buprestid beetle, it feeds in the cambium and girdles the plants.



Additional credits: Tom Peerbolt, Spokane Rose Society



Cabbage whitefly

Aleyrodes proletella (Hemiptera: Aleyrodidae)



Banded whitefly

Trialeurodes abutilonea (Haldeman),



Economic hosts: approximately 140 host species in 33 plant families.
Ornamental hosts: *Abutilon*, *Acacia*, *Aster*, *Banisteriopsis*, *Bidens*, *Brugmansia*, *Citrus*, *Eucalyptus*, *Euphorbia* (poinsettia), *Fuchsia*, *Geranium*, *Hibiscus*, *Impatiens*, *Pelargonium*, *Petunia*, *Solidago*, and *Veronica*. *Brassica*, *Citrus*, *Lactuca*, *Phaseolus* and *Solanum*. Weed hosts: *Ambrosia*, *Bidens*, and *Sida*; beggarticks and ragweed. "preference for feeding on plants belonging to the families Malvaceae and Solanaceae"



	<p>Highly susceptible:</p> <ul style="list-style-type: none"> • <i>V. dentatum</i> complex, arrowwood viburnums • <i>V. nudum</i>, possum-haw, smooth withered viburnum • <i>V. opulus</i>, European cranberrybush viburnum • <i>V. opulus</i> var. <i>americana</i> (formerly <i>V. trilobum</i>), American cranberrybush viburnum • <i>V. propinquum</i>*, Chinese viburnum, Taiwanese viburnum • <i>V. rafinesquianum</i>, Rafinesque viburnum <p>Susceptible:</p> <ul style="list-style-type: none"> • <i>V. acerifolium</i>, mapleleaf viburnum • <i>V. lantana</i>, wayfaringtree viburnum • <i>V. rufidulum</i>, rusty blackhaw, southern black-haw • <i>V. sargentii</i>, Sargent viburnum • <i>V. wrightii</i>, Wright viburnum <p>Moderately susceptible</p> <ul style="list-style-type: none"> • <i>V. alnifolium</i> (syn. <i>V. lantanoides</i>), hobblebush • <i>V. burkwoodii</i>, Burkwood viburnum • <i>V. x carlcephalum</i>, Carlcephalum viburnum • <i>V. cassinoides</i>, withered viburnum • <i>V. dilatatum</i>, linden viburnum • <i>V. farreii</i>, fragrant viburnum (except 'Nanum', which is highly susceptible) • <i>V. lantanoides</i> (syn. <i>V. alnifolium</i>), hobblebush • <i>V. lentago</i>, nannyberry viburnum • <i>V. macrocephalum</i>, Chinese Snowball Viburnum • <i>V. x pragense</i>, pragense viburnum • <i>V. prunifolium</i>, blackhaw viburnum • <i>V. x rhytidophylloides</i>, lantanaphyllum viburnum • <i>V. tinus</i>*, laurustinus viburnum <p>Viburnum most resistant to the viburnum leaf beetle:</p> <ul style="list-style-type: none"> • <i>V. bodnantense</i>, dawn viburnum • <i>V. carlesii</i>, Koreanspice viburnum • <i>V. davidii</i>*, David viburnum • <i>V. x juddii</i>, Judd viburnum • <i>V. plicatum</i>, doublefile viburnum • <i>V. plicatum</i> var. <i>tomentosum</i>, doublefile viburnum • <i>V. rhytidophyllum</i>, leatherleaf viburnum • <i>V. setigerum</i>, tea viburnum • <i>V. sieboldii</i>, Siebold viburnum <p>*Based on observations at the Van Dusen Botanical Garden, Vancouver, B.C. by Carolyn Jones</p>	
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PACIFIC NORTHWEST NURSERY IPM

WELCOME

Pest Activity Alerts On Twitter
[@PNWNurseryIPM](#)

[More Great Resources](#)



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Weeds	Vertebrates	Slugs/Snails	Abiotic

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Welcome to the Pacific Northwest Nursery IPM Website

Newest pages: [black cherry aphid](#), [oak twig gall wasp](#), [cabbage whitefly](#), and [black bean aphid](#)


Looking for trouble? [Thrips](#) populations are increasing in maples. Flights of [Pacific flat-headed borers](#) have started. Adults of the [coreopsis beetle](#) have been seen already. Adults and nymphs of [azalea lace bug](#) are out. Adult flights have been confirmed already in our area for summer borers such as the [Sequoia pitch moth](#) and [bronze birch borer](#). Be alert for [whiteflies](#) as temperatures warm. Black vine, rough strawberry, and strawberry root weevil adults are out at this time. Aphids still show up on some hosts this time of year. Check for aphids on [dwarf Alberta spruce](#), [maples](#), [nasturtium](#), and [beeches](#).

Now is a good time to monitor for two-spotted spider mite. Want information on biological control programs for two-spotted spider mites? Find it [here](#).

Hold the Date!


Oktober Pest

Pest Management Workshops for Greenhouse and Nursery Growers Every Thursday in October



PACIFIC NORTHWEST NURSERY IPM

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More Great Resources

Sometimes it takes a little digging to find gems. I've done the digging for you. Here you will find links to quickly learn about nursery IPM and the resources that can help you implement it.

Contents:

- [arthropods - the other guys](#)
- [Cover Crops and Green Manure](#)
- [Degree Day and Phenology Information](#)
- [Departments of Agriculture](#)
- [Diagnosis](#)
- [IPM Resources](#)
- [Invasive species](#)
- [Insectary Plants](#)
- [Pesticide Registration Activity](#)
- [Pesticide Information](#)
- [Pesticide Labels](#)
- [Phenology Reports](#)
- [Plant Pest Monitoring](#)

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**PACIFIC NORTHWEST
NURSERY IPM**

Horticulture Department

Photo courtesy Washington Department of Agriculture

Home	Insects	Mites	Diseases
Weeds	Vertebrates	Slugs/Snails	Abiotic

TOPICS
invasive species

To report a suspected invasive species in Oregon, call the Invasive Species Hotline:
1-866-INVADER

Invasive species
Invasive or exotic species are an increasing threat to nursery production due to the increased movement of plants and people across borders and continents. The following websites present useful information concerning this topic. For more specific invasive pest information, [click here](#).

Oregon
[Oregon Invasive Species Council](#)
This site includes the 100 most dangerous invaders [list](#) for Oregon. Additionally the [Invasive Species in Oregon Report Card for 2014](#) is useful reading.
[Oregon Department of Agriculture Pest Prevention and Management Section](#)
[Oregon Noxious Weed Control Program](#)
Included with lots of other useful information is the [Noxious Weed List](#) for Oregon. This site as well contains [noxious weed profiles](#).
[Oregon Forest Pest Detectors](#)
[Pacific Northwest's Least Wanted: Invasive Weed Identification and Management](#), Oregon State University Extension.
[OPD's Silent Invasion website](#)

Washington
[Washington State Invasive Species Council](#) General questions and reporting information: Please e-mail us at invasivespecies@rc.wa.gov or call 1 877 9 INFEST
[Washington Department of Agriculture Pest Program Contacts](#)
[Washington Department of Agriculture Exotic Pest Survey](#)
[Washington State Noxious Weed Control Board](#)
[Washington State Noxious Weed List](#)
This site contains definitions of Class A, B, & C weeds; the Washington's [monitor list](#) for weeds; a [list of weed seeds/plants whose sales are prohibited](#); both terrestrial and aquatic weed information. In development is a webpage where one can [identify weeds based on their flower color or habitat](#).

Idaho
[Idaho Invasive Species Council](#)
[University of Idaho's Center for Research on Invasive Species and Small Populations \(CRISSP\)](#)
[Idaho Noxious Weed Program](#)
Cramped with information, this site has many links to information of noxious weeds, regulations, and weed program.
[Idaho Noxious Weed's list](#)

Montana
[Invaders database system](#)
An interactive database covering exotic weed plants and their distribution in five northwest states.

California
This site includes the CalEPPC [Invasive Plant Inventory](#). Amongst the treasures at this site: [Invasive Plants of California Wildlands](#). See their [CalWeedMapper](#) website.
California Dept. of Food and Agriculture (CDFA) Plant Health and Pest Prevention Services (PHPPS) has developed a website on noxious weeds with lots of information and aptly titled [Encyclopedia](#).

US Government
[USDA Animal and Plant Health Inspection Service](#)
[USDA Honey Pests](#)
[Federal Noxious Weed List](#)
[State noxious weed lists](#)
invasivespecies.gov
[Honey Pests](#), USDA APHIS.
This is the gateway to the [National Invasive Species Council](#). Included at this site are many [papers](#) on the economic impact of invasive plants.
[BLM's Alien Plant Working Group's Weeds Gone Wild](#)
[BLM's Invasive and Noxious Weeds](#):
[National Plant Board website](#). Here can be found the [regulated pest information by state](#).
[USGS Nonindigenous Aquatic Species Website](#)

The screenshot shows the home page of the Pacific Northwest Nursery IPM website. The header features the OSU logo and the title 'PACIFIC NORTHWEST NURSERY IPM'. A navigation menu includes links for Home, Insects, Mites, Diseases, Weeds, Vertebrates, Mollusks, and Abiotic. The main content area is titled 'What, me worry?' and 'Specific invasive species', providing an overview of the site's purpose and listing various categories of pests.

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PACIFIC NORTHWEST NURSERY IPM

Photo courtesy of Washington Department of Agriculture

Home	Insects	Mites	Diseases
Weeds	Vertebrates	Mollusks	Abiotic

TOPICS
invasive species

What, me worry?

Specific invasive species

This is a partial list of exotic organisms which might be a threat to nursery production in the Pacific Northwest. Many of these pests have not been found in this region. Some have been detected and are/ or have been targeted with eradication efforts. This list is divided into four categories: Diseases; Insects; Slugs and Snails; and Weeds.

Diseases:
[alder root rot](#)
[boxwood blight](#)
[chestnut blight](#)
[Chrysanthemum white rust](#)
[davidly rust](#)
[Dutch elm disease](#)
[elm yellows mycoplasma](#)
[Eastern filbert blight](#)
[Japanese apple rust](#)

This screenshot shows a detailed list of specific invasive species categorized into Insects, Slugs and Snails, and Weeds. Each item is a clickable link to more information.

Insects:
[andromeda lacebug](#)
[apple ermine moth](#)
[Asian gypsy moth](#)
[Asian longhorn beetle](#)
[banded elm bark beetle](#)
[brown marmorated stink bug](#)
[cereal leaf beetle](#)
[cherry bark tortrix](#)
[cherry blossom moth](#)
[citrus longhorn beetle](#)
[Douglas fir twin weevil](#)
[Diponcheia fovealis](#)
[emerald ash borer](#)
[European chafer](#)
[European crane fly](#)
[European gypsy moth](#)
[European pine shoot moth](#)
[imported red fire ant](#)
[European vine moth](#)
[glasswinged sharpshooter](#)
[green alder sawfly](#)
[Hazelnut aphid](#)
[HemeroCallis \(davidly\) midge](#)
[light brown apple moth](#)
[lily leaf beetle](#)
[Japanese beetle](#)
[pine shoot beetle](#)
[viburnum leaf beetle](#)

Slugs and Snails:
[European brown garden snail](#)
[Wrinkled dune snail](#)

Weeds:
[African rue](#)
[giant horweed](#)
[Iberian starthistle](#)
[kudzu](#)
[purple loosestrife](#)



Oregon Invasive Species Online Hotline

Learn Search Reports Report Now Log in

or call 1-866-INVADER

Have you seen something suspicious in your backyard or neighborhood? Are you having trouble identifying something you've found? Report potential invasive species you've found to the Online Hotline. Your submission will provide vital early detection information to the experts working to stop the next invasion before it starts!

Report Now Search Reports About the Hotline

Portland State UNIVERSITY WIN WESTERN INVASIVE NETWORK OISC OREGON INVASIVE SPECIES COUNCIL

Final Thoughts

- One person CAN make a difference.

