

## Scotch Broom Gall Mite: A New Partner in Broom Management for California

**A** recent find in El Dorado County has weed scientists, land managers, foresters, botanists, and plant conservationists throughout Northern California very excited over a tiny mite.

The broom gall mite has recently been observed attacking the invasive plant Scotch broom (*Cytisus scoparius*) in California's natural landscapes. Scotch broom, desired for its bright yellow flowers and rapid growth, was first introduced into North America as an ornamental and for erosion control. However, its ability to outcompete native plants and form dense stands has also made it one of California's worst wildland weeds (Figure 1).

The mites cause galls, small abnormal growths on the plant's buds, to form during feeding, greatly reducing Scotch broom's ability to grow and reproduce (Figure 2). This mite is considered to be an ideal biological control agent due to its specialized feeding habits and the debilitating damage it can cause to invasive weeds. In some areas, the gall mite has already killed large stands of broom (Figure 3).

### The Mighty Mite

The Scotch broom gall mite, more closely related to spiders and ticks than insects, is a type of eriophyid mite that is nearly invisible to the naked eye, measuring roughly the width of a human hair (Figure 4). Although the mite is tiny, the galls formed by plants in response to the mite's feeding are quite noticeable. The small fuzzy masses occur along the length of the stem and can be quite numerous.



Figure 1. An infestation of scotch broom.



Figure 2. Galls on scotch broom.



Figure 3. Plant death due to gall mite.

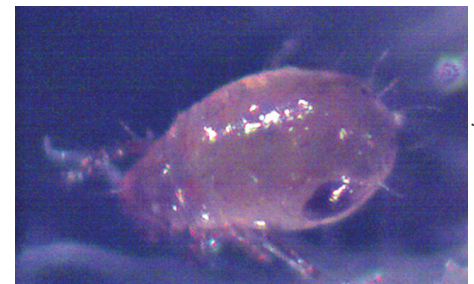


Figure 4. Close-up of broom gall mite.

Photos by S. Oneto, UCCE

Native to Europe, the mite was first found on Scotch broom in the Tacoma, Washington, and Portland, Oregon, regions in 2005. Since that time the mite has become established throughout western Washington and Oregon and even into parts of British Columbia. Up until 2013, the mite had only been found as far south as Ashland, Oregon, with no occurrences in California.

However in March 2014, a landowner in El Dorado County brought a sickly looking Scotch broom plant to the local U.S. Forest Service (USFS) office to

examine small growths on the branches. Farm advisors in the University of California Cooperative Extension's (UCCE) El Dorado County office have been monitoring this mite's spread throughout the Pacific Northwest for the past few years and identified the sample as a potential gall mite.

Since the first detection in El Dorado County, USFS, UCCE, and the California Department of Food and Agriculture have been on the lookout for other occurrences of the gall mite on Scotch

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broom. Surprisingly, the mite has since been found in many areas throughout El Dorado, Placer, and Nevada counties; but how it got there is a mystery. Mites are known to travel long distances using wind currents and by hitching rides on animals, humans and equipment. It is likely that many more finds will be forthcoming.

## What to Do If You See Broom Galls

**Since the mite is a beneficial biological control agent and not a pest, do not apply pesticides to kill it!** The broom gall mite can help greatly in the fight to control Scotch broom plants that have invaded wildlands throughout California. If customers bring you samples or photos of the plant galls, please share this mite information and suggest instead that they remove the Scotch broom from the landscape and plant a less invasive alternative species.

## Alternatives to Scotch Broom

Although some retail nurseries still sell a variety of broom species, homeowners should avoid planting them. Depending on your climate, a number of alternate plant species with similar attributes that are not invasive weeds may be available. See the PlantRight article from our April 2015 Retail IPM Newsletter about alternative plants to recommend to your customers or contact your county UC Master Gardener program or UC Cooperative Extension office for a list of local recommendations.

Scotch broom currently infests millions of acres throughout California, causing loss of native plant biodiversity and an increased fire risk. The USFS and other agencies spend a considerable amount of time and taxpayer money each year treating Scotch broom plants either by

applying herbicides or prying them up by the root. With the mites' help, we'll make much greater progress toward reducing Scotch broom infestations.

For more information about Scotch broom and other brooms, read UC IPM's Pest Note: *Brooms* at [www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74147.html](http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74147.html). For plant alternatives, see PlantRight's list at [www.plantright.org](http://www.plantright.org).

Help us track the spread of this beneficial mite! If you or your customers see evidence of Scotch broom gall mites, report it on the University of California Cooperative Extension website: [ucanr.edu/broomgallmite](http://ucanr.edu/broomgallmite)

— Scott Oneto, Farm Advisor, UC Cooperative Extension, Central Sierra, [sroneto@ucanr.edu](mailto:sroneto@ucanr.edu)

# Preventing Lawn Insects

**I**nsect pests, though actually quite rare in well-managed lawns and turf, can sometimes jeopardize a flawless appearance, potentially sending your customers running to you for help. The recently revised UC IPM Pest Note: *Lawn Insects* can prepare you with answers to keep lawns pest-free and BBQ-ready this summer: [www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7476.html](http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7476.html). This resource contains a wealth of information about lawn insect prevention and management, including coverage of most insecticides for use in residential lawns and an updated treatment table with many new IPM-compatible active ingredients.

## Early Prevention and Monitoring

Often times, damage due to lawn insect pests only becomes apparent during late summer and fall, when low soil moisture and heat stress take a visible toll on areas with damaged roots or tattered blades. Unfortunately, it is difficult, or even impossible, to reverse the damage at this point since pests may already be gone or

dormant and because grasses are no longer vigorously growing. For example, the larvae of masked chafers (the most common and damaging of the 'white grub' species, having only one generation per year in California (Figure 1)) have largely stopped eating roots and stopped growing in size when their damage is most observable (autumn). The most effective treatments should have been made in June or July, when grubs were small and damage had not yet appeared. Considering such delays in damage, remind your customers that prevention and monitoring are the most important management tactics for lawn pests and that they may have to plan ahead for the future if their goal is a pest-free lawn.

In fact, pest management for lawns and turf areas should begin during design and installation of the site, with species selection, proper grading and drainage, appropriate irrigation systems, and a maintenance plan. Choosing the appropriate turf species for the site by considering regional climate and water avail-



Figure 1. Masked chafer larvae (white grubs).

J. K. Clark, UC

ability is the single best way to reduce overall stress and to ensure longevity and resiliency of the grasses planted.

Refer your store employees and customers to UC IPM's online resources that can help them choose appropriate turf species based on tolerance to key stressors such as temperature, salinity, drought, and foot traffic: [www.ipm.ucdavis.edu/TOOLS/TURF/TURFSPECIES/index.html](http://www.ipm.ucdavis.edu/TOOLS/TURF/TURFSPECIES/index.html) and [anrcatalog.ucdavis.edu/pdf/8035.pdf](http://anrcatalog.ucdavis.edu/pdf/8035.pdf).

— Andrew Sutherland, SF Bay Area Urban IPM Advisor, [amsutherland@ucanr.edu](mailto:amsutherland@ucanr.edu)

# Dealing with Pantry Pests

**P**antry pests sometimes find their way into our homes undetected and can infest stored products like flour, cereal, pasta, dried fruit, nuts, and even pet food. Often, by the time these pests are noticed, they have infested and contaminated foodstuffs and may already be reproducing in your home, making management difficult. Below are some tips you can pass on to your customers to help them clean up, monitor, and prevent pantry pest problems.

## What are Pantry Pests?

Beetles and moths are the two most common groups of pantry pest insects encountered in California. The most common pantry moth is the Indian meal moth. Adults are small (about 1/3 inch), with characteristically broad-banded reddish-brown and cream colored wings (Figure 1), while the small, whitish larvae (caterpillars) grow up to about 1/2 inch long. Adults flying inside homes may be conspicuous during ongoing infestations.

Several species of beetles feed on stored food products, including the warehouse beetle, sawtoothed grain beetle (Figure 2), and the drugstore beetle, just to name a few.

While adult pantry beetles and moths are easy to tell apart, it is often the larvae that are found in the grain or flour; and these can be challenging to distinguish. Beetle larvae (Figure 3) are either grublike and legless or have three distinct pairs of legs, all located near the head. Moth larvae (Figure 4) have three pairs of true legs plus additional leglike structures farther down the abdomen known as prolegs.

## Damage

Pantry pests consume food but also can contaminate food with their bodies and by-products. Indian meal moth larvae produce frass (excrement) and webbing, and some beetle larvae produce secretions that give food a disagreeable odor and taste, or microbes that can produce carcinogenic compounds. Warehouse beetles have setae (hairs) that can irritate the mouth, throat, and stomach of people who eat infested products.



Figure 1. Adult Indian meal moth.



Figure 3. Sawtoothed grain beetle larvae.

## Prevention is Key

The keys to controlling these pests in the home are prevention and sanitation. Some important considerations include:

- Inspect newly-purchased grain products (including bird seed and dried pet food), nuts, dried fruits, potato chips, spices, and other foods of plant origin for signs of infestation.
- Seal any infested products in a plastic bag and dispose of them in an outside trash receptacle.
- Transfer pest-free products to hard-walled containers (glass, metal, hard plastic) that can be tightly sealed. Plastic bags aren't adequate, as they develop tiny holes over time and because they can't always be reliably sealed.
- Vacuum up any spilled products within food storage areas, including any crumbs or debris in shelving cracks and crevices or beneath shelf paper. Follow this up with a good wipedown with soapy water.

Some pantry pests can survive on other items in the house; if the infestation persists despite cleaning up the kitchen areas, consider inspecting the rest of the house. Art made of grain, nuts, or seeds; woolen articles; stored furs; animal skins; rodent droppings; and even uncontained aspirin or other pharmaceuticals can be used as a food source by some pests. Others can survive on dead insects, so wall voids and attic spaces may have to be checked as well.



Figure 2. Adult sawtoothed grain beetle adults.



Figure 4. Indian meal moth larva.

## Use Traps to Monitor

Many home improvement stores and retail garden centers sell pheromone traps which can be used to monitor for pantry pests and to help in managing pest outbreaks. Using traps alone, however, will not successfully control pantry pests if the measures above have not been taken to clean up and prevent pest invasion and reintroduction. Also, pheromone traps are pest-specific, so identify pests first, read labels carefully, and be certain you are steering customers to the right trap. Advise customers to place the traps within or near the previously-infested area and to check them weekly. Most traps remain effective for about three months. Newly trapped insects are a sign that stored foods may be infested and should be inspected or that hidden pupating larvae from a previous infestation have emerged as adults..

Read additional guidelines on preventing or managing pantry pests on the UC IPM website at [www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7452.html](http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7452.html).

— Steven Swain, *Environmental Horticulture Advisor, Marin & Sonoma counties, [svswain@ucanr.edu](mailto:svswain@ucanr.edu)* ;  
Karey Windbiel-Rojas, *Area IPM Advisor, Yolo, Sacramento, Solano counties, [kwindbiel@ucanr.edu](mailto:kwindbiel@ucanr.edu)*.

# IPM Pest and Weed Wheels Available for Purchase

The very popular IPM Pest and Weed Identifier Wheels are now available for purchase! The Pest Wheel helps the user identify and manage 12 common pests, including ants, snails, powdery mildew, and scale insects. The Weed Wheel covers 12 common garden and landscape weeds, including crabgrass and yellow nutsedge.

These interactive tools, developed by University of California Cooperative Extension Area IPM Advisor Cheryl Wilen and IPM Community Educator Scott Parker in San Diego County, help to identify each pest and provide pest-specific information, such as locations where the pest may be found, the damage it may cause, any special features of the pest, and least-toxic control options. Each wheel provides this information in both English

and Spanish. Although the wheels were developed for use in San Diego County, the pests and weeds included are common throughout the state.

Both retail nursery staff as well as landscape professionals will find these wheels useful tools when discussing pest management concerns with their customers

and clientele.

The Pest and Weed Identifier Wheels can be purchased for \$4 each; this includes tax, shipping and handling. For more information or to place an order, please contact Scott Parker at [saparker@ucanr.edu](mailto:saparker@ucanr.edu) or 858-822-6932.



R. Krason, UCCE



## New Resources

UC IPM recently revised Pest Notes:

Flies:

[www.ipm.ucanr.edu/PMG/PEST-NOTES/pn7457.html](http://www.ipm.ucanr.edu/PMG/PEST-NOTES/pn7457.html)

Skunks:

[www.ipm.ucanr.edu/PMG/PEST-NOTES/pn74118.html](http://www.ipm.ucanr.edu/PMG/PEST-NOTES/pn74118.html)



To access more than 160 other titles, visit UC IPM's Pest Notes Web page:

[www.ipm.ucanr.edu/PMG/PESTNOTES/index.html](http://www.ipm.ucanr.edu/PMG/PESTNOTES/index.html)

University of California  
Statewide IPM Program  
2801 Second Street  
Davis, CA 95618-7774



Editor:

K. Windbiel-Rojas

Production: K.E. Beverlin, F.G. Rosa

E-mail: [UCIPMretail@ucdavis.edu](mailto:UCIPMretail@ucdavis.edu)

Online: [www.ipm.ucanr.edu/RETAIL](http://www.ipm.ucanr.edu/RETAIL)

Produced by the University of California Statewide IPM Program with partial funding from the USDA NIFA EIPM Coordination Program. To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products not mentioned.

For more information about managing pests, contact your University of California Cooperative Extension office listed under the county government pages of your phone book, or visit the UC IPM Web site at [www.ipm.ucanr.edu](http://www.ipm.ucanr.edu).

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**WHAT IS IPM?** Integrated Pest Management (IPM) programs focus on long-term prevention of pests or their damage through a combination of techniques including resistant plant varieties, biological control, physical or mechanical control, and modification of gardening and home maintenance practices to reduce conditions favorable for pests. Pesticides are part of IPM programs but are used only when needed. Products are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment.