



California Places Further Restrictions on Rodenticides

In September 2020, Governor Gavin Newsom signed into law Assembly Bill 1788, which prohibits almost all uses of second-generation anticoagulant rodenticides (SGARs) statewide. Rodenticide products containing brodifacoum, bromadiolone, difenacoum, or difethialone have been restricted materials in California since 2014. They are only available for use by licensed pest control applicators (Figure 1).

The new restrictions are intended to reduce potential poisoning of non-target wildlife. According to the text of the bill, scientific research and state studies have found rodenticides in over 75 percent of animals tested. From 2014 through 2018, the Department of Fish and Wildlife found SGARs in more than 90 percent of tested mountain lions, 88 percent of tested bobcats, 85 percent of protected Pacific fishers tested, and 70 percent of northern spotted owls tested.

There are some exceptions to this law but almost all uses in and around structures have been banned. The

following uses are allowable under AB 1788:

- Governmental agency employees using SGARs for protection of public health or protection of water supply infrastructure and facilities.
- Mosquito or vector control district using SGARs for public health.
- Eradication of nonnative invasive species inhabiting or found to be present on offshore islands.
- Control of an actual or potential rodent infestation associated with a public health need, as determined by a supporting declaration from the State Public Health Officer or a local public health officer.
- Research purposes, with written permission from DPR's director.
- Agricultural activities, including use in
 - warehouses used to store foods for human or animal consumption.
 - agricultural food production sites, including, but not limited to, a slaughterhouse or cannery.
 - factories, breweries, and wineries.

- agricultural production sites housing water storage and conveyance facilities.
- agricultural production sites housing rights-of-way and other transportation infrastructure.

What are other options for rodent control in urban settings?

A successful rodent control strategy includes prevention through sanitation measures, physical exclusion methods, and a combination of effective population control methods. Traps may be useful alternatives in some cases around homes, garages,



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Figure 1. Rodenticide bait exposed outside a self-contained bait station.

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and other structures. For instance, small populations of house mice can be effectively managed with traps. It is important to always be mindful of nontarget wildlife when conducting a trapping program (Figure 2).

Rodenticides that are still available in California for licensed pesticide applicators include the first-generation anticoagulant rodenticides (warfarin, chlorophacinone, and diphacinone) and the non-anticoagulant rodenticides (bromethalin, cholecalciferol, and zinc phosphide).

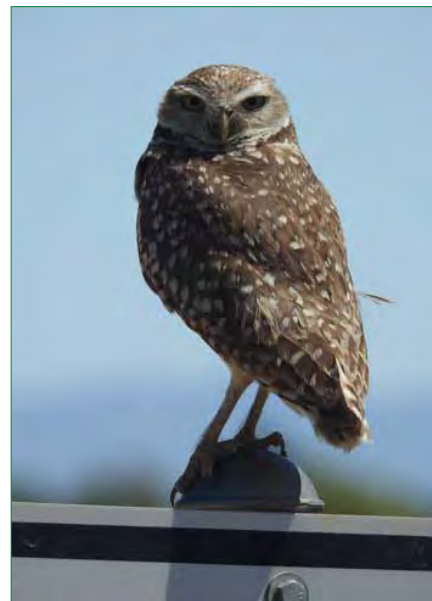
For more information about rodent management, see *Pest Notes: Rats* at ipm.ucanr.edu/PMG/PESTNOTES/pn74106.html and *Pest Notes: House*

Mouse at ipm.ucanr.edu/PMG/PESTNOTES/pn7483.html.

This new prohibition will be in effect until the California Department of Pesticide Regulation's Director certifies that specified measures have been taken to evaluate, restrict, and only use SGARs when necessary.

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Figure 2. Be mindful of nontarget species like this burrowing owl.

Distinguishing between Crab, Body, and Head Lice

Human lice (singular “louse”) are parasitic insects found on people. Adult lice are small (about 1/8 inch (3 mm) long or less) wingless insects that move by crawling. There are three species of lice that exclusively feed on humans: the head louse, the body louse, and the crab or pubic louse.

The head louse (*Pediculus humanus capitis*) and the body louse (*Pediculus humanus humanus*) are members of the same species, but the crab (pubic) louse (*Phthirus pubis*) is from a different insect family. All are pests of public health importance. Treatment is usually prescribed by medical professionals and should be focused on the infested person and their belongings. Use the following descriptions to identify these pests and help your clients seek out proper care from medical professionals.

Crab louse

These lice have a short, round body (not elongated), with hairy tubercles (small, knobby projections of the body wall) on the abdomen. The front

legs are shorter and slimmer than the middle and hind legs (Figure 1). Adults and eggs are usually found on pubic hairs but may sometimes be found on other areas of the body such

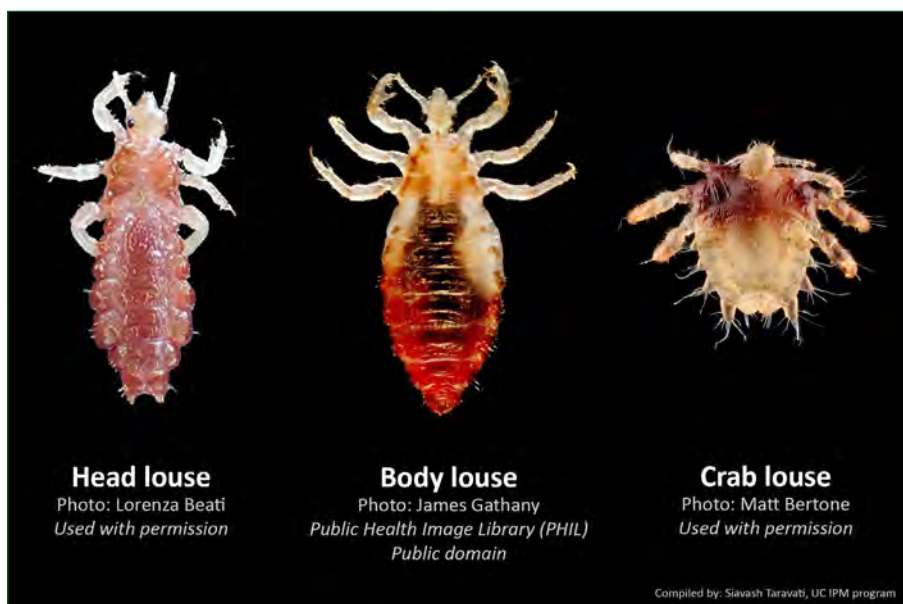


Figure 1. Species of lice found on humans.

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Human Lice ID *...continued from page 2*

as beards, mustaches, eyelashes, and underneath the arms.

Head louse vs. body louse

Unlike the crab louse, these lice have elongated bodies (Figure 1) and lack tubercles on their abdomen. Head and body lice look almost identical since they are members of the same species. Positive identification requires consideration of specific morphological and behavioral differences (see Table 1). Body lice are known to transmit serious human diseases such as epidemic typhus, trench fever, and louse-borne relapsing fever. Head lice are not known to be an effective vector of diseases even when a pathogen is found in the louse's body.

Human lice elimination involves removal of lice from human body as well as from clothing and living environments. A head lice infestation on a person should be managed by the client. Head lice can be removed with a lice comb or treated with special lice shampoo or lotions containing one or more active ingredients. Human lice have developed resistance to many over-the-counter products containing

Table 1. Comparison of characteristics of head lice and body lice.

Characteristic	Head Louse	Body Louse
Abdominal indentation	More obvious	Less obvious
Antenna shape	Shorter and thicker	Longer and thinner
3rd antennal segment	As long as wide	Slightly longer than wide
Body color (not always reliable)	Darker	Lighter
Oviposition site	Base of the hair	On clothing fibers
Primarily found	On human head	On clothing

permethrin or other pyrethroids. Therefore, it is believed that the most effective head lice treatment products are the ones containing ivermectin or spinosad. Body lice can be killed by dry cleaning clothing and bed sheets. Also, vacuuming and treating carpets may improve body lice management especially when the infestation is heavy. Body lice infestations can also be managed by reducing crowding and improving body and clothing hygiene. Head lice infestations, however, are not associated with poor hygiene, at least in developed countries.

For more details about the head louse, including thorough management options and guidance, see the recently revised *Pest Notes: Head Lice* at ipm.ucanr.edu/PMG/PESTNOTES/pn7446.html.

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GIVING TUESDAY

Join us on Tuesday, December 1 for #GivingTuesday, a global day of giving that harnesses the collective power of individuals to celebrate generosity worldwide. #PushPlayCA!

COVID-19 put the world on pause, but our mission to connect the power of UC research in agriculture, natural resources, nutrition, and youth development with local communities is moving forward. Your gift helps ensure UC ANR continues to provide essential resources and trusted information to the people of California in times of crisis and beyond. In these most challenging times, UC ANR's role as problem-solvers, catalysts, collaborators, educators, and stewards of the land is more important than ever.

With your support, we invest in research, education, and services in your community—to be a neighbor in times of need. We bring practical, trusted pest management answers to residents across our state.

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Detecting and Controlling Biting Mites within Structures

Most pest management professionals have served clients who swore they were being bitten by unseen pests. Perhaps the usual suspects (bed bugs, fleas, and mosquitoes) were ruled out by thorough inspection and monitoring devices. But what about mites? There are several species of mites known to bite humans within homes and other structures, many times causing significant physical symptoms and psychological distress. Clients can easily fall prey to misinformation online when learning about these tiny pests, however, so be prepared to educate them and help them solve their problem.

In all cases, biting mites found indoors are blood-sucking nest parasites of other animals living nearby, especially rodents or birds. The most common species in California, the tropical rat mite (*Ornithonyssus bacoti*) (Figure 1), is often associated with the nests and runways of roof rats and other commensal rodents. Also common are northern fowl mites (*Ornithonyssus sylviarum*), known to inhabit nests of commensal birds, such as pigeons, starlings, sparrows, and swallows. Less common but perhaps increasing in prevalence is the chicken mite or red mite (*Dermanyssus gallinae*).

All three of these common species will take blood meals from humans, especially if their primary hosts have been controlled, removed, or have migrated away. For instance, successful rat control programs (Figure 2) may result in hundreds of starving rat mites wandering nearby areas in search of blood. If rats were nesting in wall voids, attics, subareas, or living spaces, then there is a good chance the resident rat mites will be attracted to the humans in the structure when the rats are no longer around.

A similar phenomenon occurs when migratory birds leave nests in autumn if nests are situated in window alcoves,



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Figure 1. Tropical rat mite. Actual size is about 1/16 inch (1.5 mm).



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Figure 2. Roof rat captured in a live trap.

eaves or other areas abutting a living space. With the rise in popularity of backyard chickens (Figure 3), primary hosts for both northern fowl mites and chicken mites, problems can occur when coops are adjacent to walls of the home or near windows or exterior doors. Mite populations associated with chickens reportedly peak and are most likely to affect humans in spring and summer, while rat mite issues tend to be most common in late summer and autumn. Problems can occur any time of year, of course, when the primary host has been removed.

Detecting Mites

Mites may become trapped on sticky traps and glue boards placed at floor-to-wall junctions and in corners; look at the edges of the glue deposit on these traps with a 10X hand lens. Another detection trick is to use double-sided tape. With the client's permission and guidance, apply double-sided tape to walls and furniture legs near areas where bites have occurred; wandering mites may become stuck on the edge of the tape. Sticky traps and tape may not preserve mites well enough for positive identification, but they can confirm that mites are present and may be responsible for the bites.

Such monitoring tools can also give clues as to where the nest of the primary host is or was. In multi-unit

housing situations, the source of these wandering mites may be in adjacent units, the hallway, stairwells, or utility areas. In single-family homes, the source may even be outside, such as a bird or rat nest in the landscape. Tropical rat mites are known to travel along pipes, utility wires, tree branches, fencing, and exteriors of structures to find new hosts.

Identifying Mites

The best way to confirm a biting mite issue is to capture a specimen. Though very small (about 1/16 inch (1.5 mm) or less in diameter), all three common species can be observed without magnification. Mites may be yellowish or whitish before feeding but will be dark red when engorged with blood. Ask the client about areas of the home where bites are most common. When active, mites may be seen crawling on walls, floors, or furniture. For positive identification, mites should be captured alive and preserved in rubbing (isopropyl) alcohol or ethanol (at least 70%). This can be accomplished with the help of a fine wet paintbrush and a ready vial of alcohol.

Identification to species requires clearing and slide mounting of the specimen and close examination by an acarologist (mite specialist). Some county vector control programs can identify mite specimens and some

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entomologists can prepare and photograph specimens, but there are few acarologists in California who may be able to provide identification services. Be prepared for such positive identification to take a week or longer.

Managing Mites

Once mites have been confirmed, management should focus on removal of the primary hosts and their nests. Humans are incidental hosts and are not known to support reproducing populations of *Ornithonyssus* and *Dermanyssus*. That means that, in theory, once the rat or bird hosts have been eliminated from the structure, the mites will slowly die. Depending on temperature, season, and mite life stage, however, this could take weeks. Some experts report that tropical rat mites can survive without primary hosts for six weeks or longer, feeding incidentally on humans and their pets that entire time, often causing red itchy welts.

If the source of the mites is known, exclusion services can be offered to seal the pest's access points. Regular vacuuming and surface cleaning will remove or kill wandering mites and so should be recommended to your client or provided as part of your service. Also, pulling beds away from the walls can be very effective. As soft-bodied arthropods, mites are vulnerable to contact insecticides such as soaps and oils, but these products may not

be labeled for indoor use and may damage wall coverings, flooring, and other furnishings. Some professionals have had success with essential oil products and even claim they provide short term repellency, but research has not been conducted to confirm these observations. Residual insecticides, especially pyrethroids, may be effective against mites, and some are labeled for use indoors. Such products should be applied between suspected mite sources and areas where bites occur, in narrow bands on surfaces unlikely to be touched by residents. Insecticides will not solve a biting mite problem if the primary hosts are still present. In all cases, refer to product labels to ensure legal application site, method, and rate, and to prevent damage to furnishings.

Biting mites may be more common than we realize, escaping detection due to their small size and their cryptic habits. Much research still needs to be done to better understand the biology and ecology of these pests as well as to develop effective monitoring and management tools. Sometimes, mites cannot be detected, and rodents and birds are seemingly not present, but your client's dermal symptoms ("bites") persist. In such cases, it may be prudent to consider other causes of dermatitis, such as environmental irritants, reactions to medications or drugs, stress, some medical conditions, or even delusional infestation (aka delusory parasitosis), a psychiatric



Figure 3. Backyard chickens can be a source of biting mites.

condition. A newly revised UC IPM publication, *Pest Notes: Itching & Infestation: What's Attacking Me?*, may help identify the problem ipm.ucanr.edu/PMG/PESTNOTES/pn7443.html.

To learn more about management of commensal rodents and birds, review these UC IPM titles:

Rats: ipm.ucanr.edu/PMG/PESTNOTES/pn74106.html

House Mouse: ipm.ucanr.edu/PMG/PESTNOTES/pn7483.html

Cliff Swallows: ipm.ucanr.edu/PMG/PESTNOTES/pn7482.html

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SUBSCRIBE TO THE UC IPM URBAN PEST MANAGEMENT BLOG!

UC IPM's blog provides readers with timely information about pests in and around homes, gardens, landscapes, and structures in California. We post articles about common seasonal pests, invasive pests, beneficials, and new UC IPM resources, including new and revised Pest Notes, training events, and other educational materials for residential audiences and pest management professionals.

View or subscribe to the blog at ucanr.edu/blogs/ucipmurbanpests/

Revised Pest Notes



Houseplant Problems

If your houseplant is looking unhealthy, our new publication *Pest Notes: Houseplant Problems* can help you find out what may be wrong. Authored by UCCE Environmental Horticulturalists Dennis

Pittenger and Donald Hodel, this new resource can help you narrow down the cause of a plant problem and decide what actions to take.

ipm.ucanr.edu/PMG/PESTNOTES/pn74172.html



Itching and Infestation: What's Attacking Me?

Unexplained itching feeling can be stressful to those experiencing it. In UC IPM's *Pest Notes: Itching and Infestation: What's Attacking Me?* UC Davis entomologists Lynn Kimsey, Robert Kimsey, and

Eric Mussen updated the publication to include information about the causes of itching sensations and an extensive reference section.

ipm.ucanr.edu/PMG/PESTNOTES/pn7433.html



Pokeweed

American pokeweed is a large weedy shrub native to the eastern U.S. but spreading in parts of California. This weed has increasingly been seen in backyard gardens and home landscapes. All parts of the plant, includ-

ing the glossy purple-black berries, are poisonous to humans. For details about identification and management of American pokeweed, see the new *Pest Notes: Pokeweed*, authored by UC Cooperative Extension advisor Scott Oneto.

ipm.ucanr.edu/PMG/PESTNOTES/pn74173.html



Sooty Mold

Sooty mold is a black fungal growth that looks like a layer of soot covering the leaves of a plant or a sidewalk. The aptly named disease is common in gardens and landscapes, appearing wherever a large infestation of plant-sucking insects are

found. The key to reducing this sticky sooty mold is management of honeydew-producing insects and ants. See *Pest Notes: Sooty Mold*, updated by Karey Windbiel-Rojas and Belinda Messenger-Sikes of the UC Statewide IPM Program for tips.

ipm.ucanr.edu/PMG/PESTNOTES/pn74108.html



Spiders

Whether you are curious as to what kind of spider you found or are looking for ways to get rid of them, you can find answers in the newly revised *Pest Notes: Spiders*. Author Richard S. Vetter, UC Riverside arachnologist and a world-renowned expert on spiders, has added more details about biology and identification of the diverse spiders in California, including new high quality images.

ipm.ucanr.edu/PMG/PESTNOTES/pn7442.html

Visit UC IPM's *Pest Notes* web page for these and many more titles
ipm.ucanr.edu/PMG/PESTNOTES.

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.

Ask the Expert!

What did you think about this newsletter?

We want your feedback!

<https://bit.ly/3fMEwCv>

Q: Where can I find UC IPM information specific to structural pest management professionals?

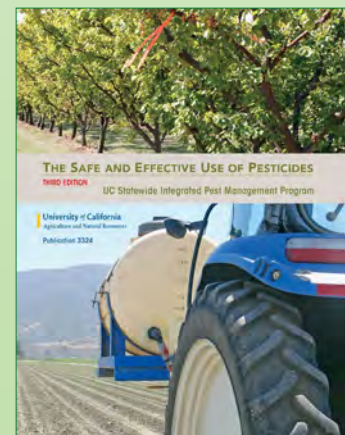
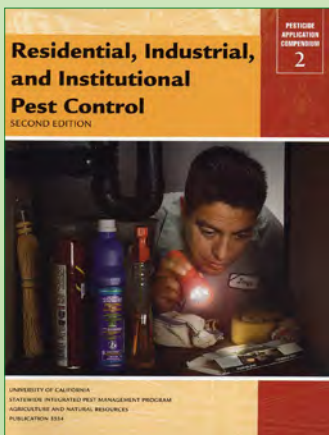
A: The UC Statewide IPM Program created a web page where structural pest management professionals can find collected information and links to training events, customer materials, events, research, and other useful resources.

You can also find online CEU courses, publications to help prepare for taking DPR and SPCB licensing exams, and contact information for UC IPM Advisors who are engaged in structural pest education and research.

<https://www2.ipm.ucanr.edu/structural>



CA REYNOLDS, UCIPM



Some UC ANR Publications available for structural pest management professionals preparing for licensing examinations.

All pesticide products mentioned have been reviewed by the UC Office of Pesticide Information and Coordination and are current at the time of publication.

Always read and carefully follow all precautions and safety instructions provided on the pesticide container label, as well as any other regulations regarding the use of pesticides. Not following label directions, even if they conflict with information provided herein, is a violation of state and federal law. No endorsements of named products are intended, nor is criticism implied of products not mentioned.

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