Myth or Fact? Debunking Pest Myths

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UC IPM | UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources | Statewide Integrated Pest Management Program

Overview

- There are tons of myths out there!
- Instead of directly mentioning the myths, I will share truthful statements or responses to address these myths
- Some of these may surprise you. You may be upset to learn that some of these statements are myths

How do pest myths originate?

Personal anecdotes or coincidences	• I put banana peels in my houseplants and didn't have fungus gnats all year, they must not like the banana peels! I'll tell all my friends to do the same!
Cherry-picking data and lack of research	• Exaggerating research findings • "Facts" that are relying on only one scientific study, or observation
Passed down through generations	• Grandma always said to throw dimes in the garden to ward off pests

Some unfortunate truths...

Opossums don’t eat ticks, or at least, less than we thought!

- Ticks are not a preferred diet item
- Opossums do not transmit rabies but are carriers of diseases like:
  - Rocky Mountain Spotted Fever
  - Lyme disease
  - Chagas disease
  - Tuberculosis
  - Leptospirosis
- They are hosts for cat and dog fleas
- Can get into fights with pet animals and damage gardens

Opossum sources

- Do Chickens, Guinea Fowl, or Opossums Control Ticks?, PennState Extension https://extension.psu.edu/do-chickens-guinea-fowl-or-opossums-control-ticks
- Are Virginia opossums really ecological traps for ticks? Ground truthing laboratory observations https://www.sciencedirect.com/science/article/abs/pii/S1877959X21001333
- UC IPM *Pest Notes: Opossum* https://ipm.ucanr.edu/home-and-landscape/opossum/pest-notes/
- *Didelphis* spp. opossums and their parasites in the Americas: A One Health perspective https://link.springer.com/article/10.1007/s00436-021-07072-4

House flies vomit on your food…

- They spit up food stored in their crop onto new food sources to make room and help digest
- This “vomit” may contain disease-causing organisms
- Flies can also transmit bacteria and diseases to food when they land on it
  - Strongly suspected of transmitting at least 65 diseases to humans

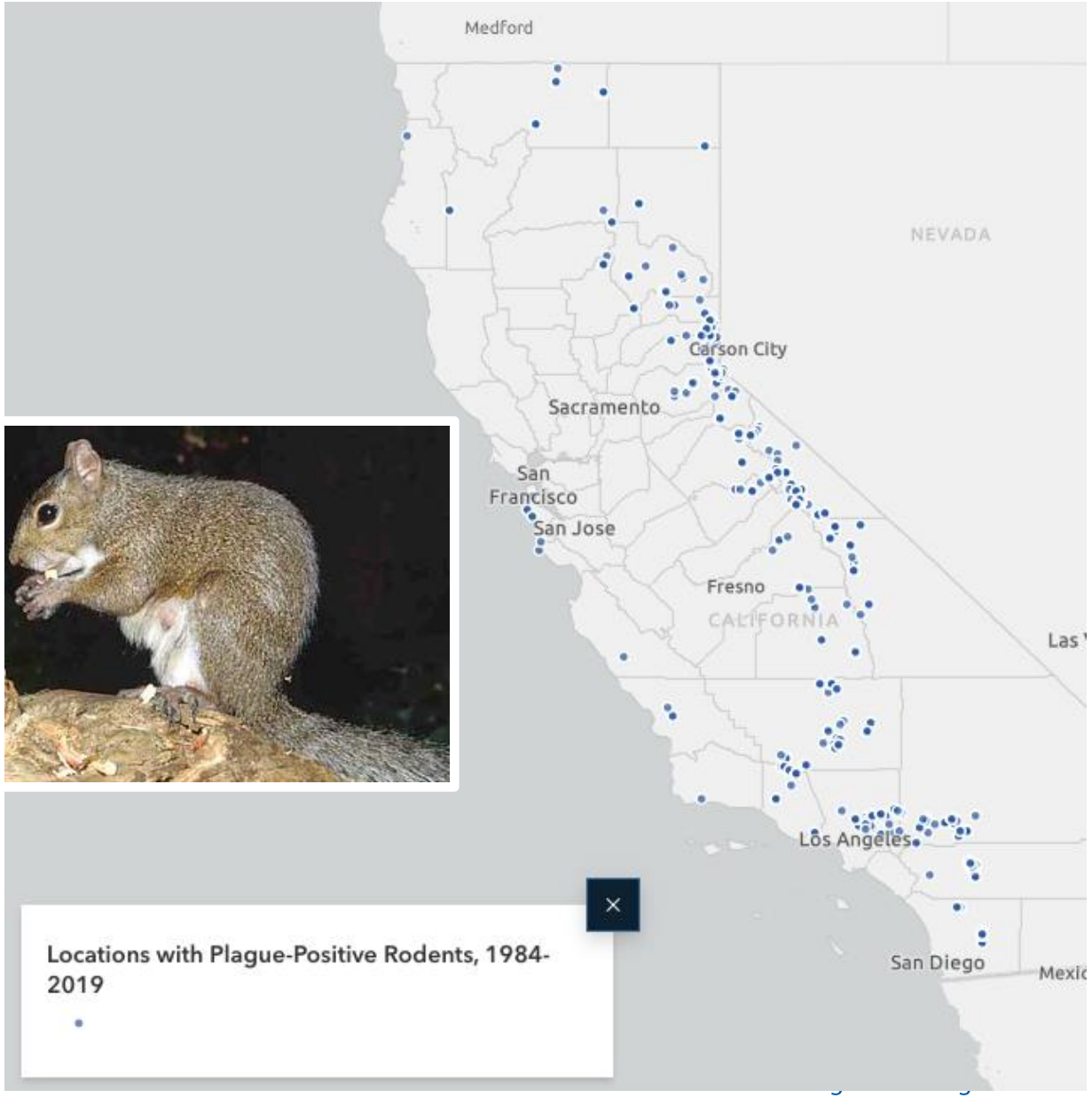
Adult fly feeding on animal manure. Whitney Cranshaw, Colorado State University, Bugwood.org

Fly sources

- UC IPM *Pest Notes: Flies* https://ipm.ucanr.edu/PMG/PESTNOTES/pn7457.html
- Stoffolano, John. (2022). Synanthropic Flies—A Review Including How They Obtain Nutrients, along with Pathogens, Store Them in the Crop and Mechanisms of Transmission. Insects. 13. 776. 10.3390/insects13090776.
- Do flies really throw up on your food when they land on it? https://news.fiu.edu/2021/curious-kids-do-flies-really-throw-up-on-your-food-when-they-land-onit
- House Flies, PennState Extension https://extension.psu.edu/house-flies

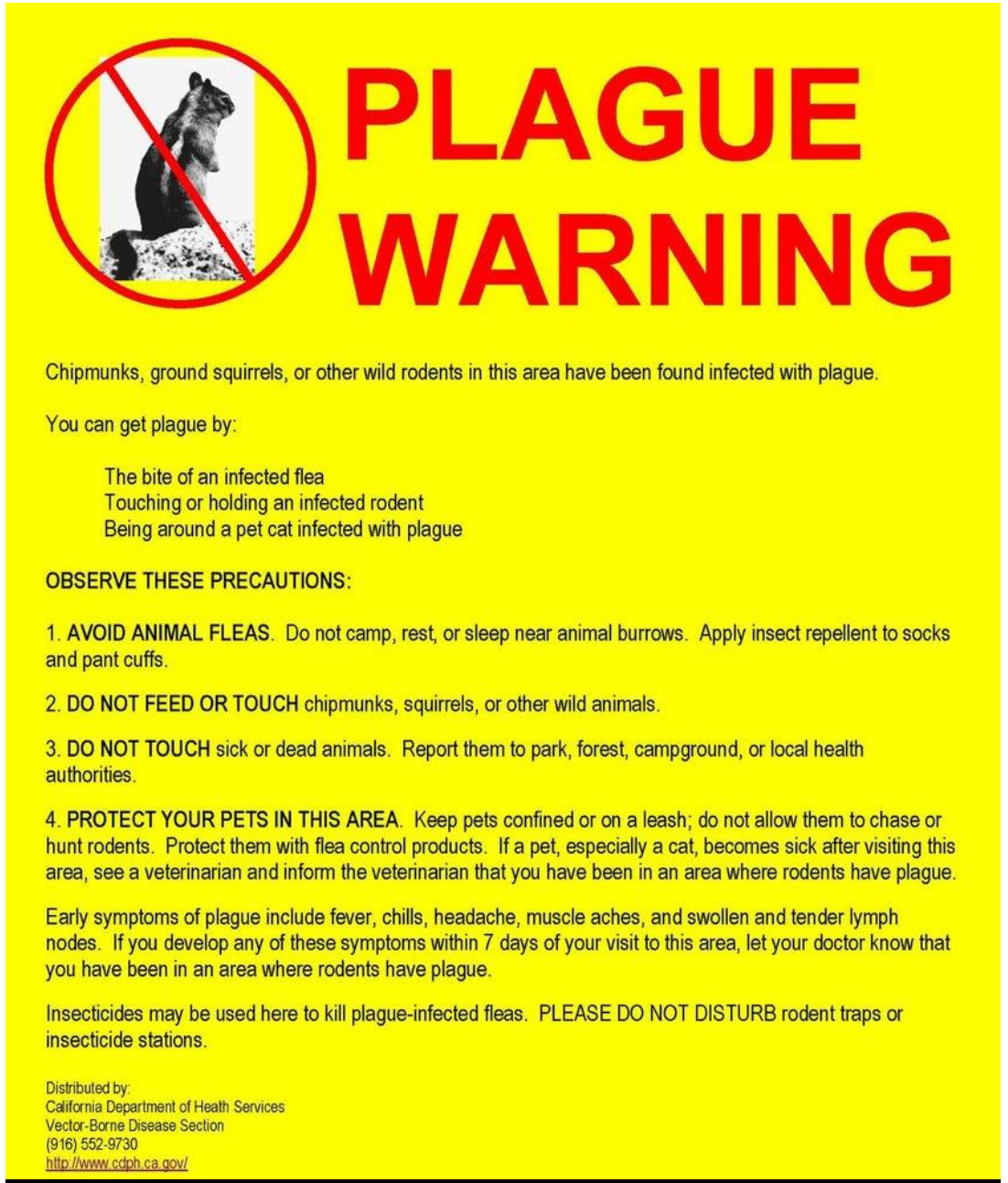
Plague is not just a disease of the past

- Commonly found among squirrels, chipmunks, and other wild rodents
- Found in foothills and mountainous areas of CA
- Transmitted by fleas
- Pet cats are highly susceptible and can spread plague to humans



Plague sources

- Plague in California, CA Dept. of Public Health, Vector-borne disease section https://www.cdph.ca.gov/Programs/CID/DCDC/pages/plague.aspx
- UC IPM *Pest Notes*: *Ground Squirrel* https://ipm.ucanr.edu/home-and-landscape/ground-squirrel/pest-notes/



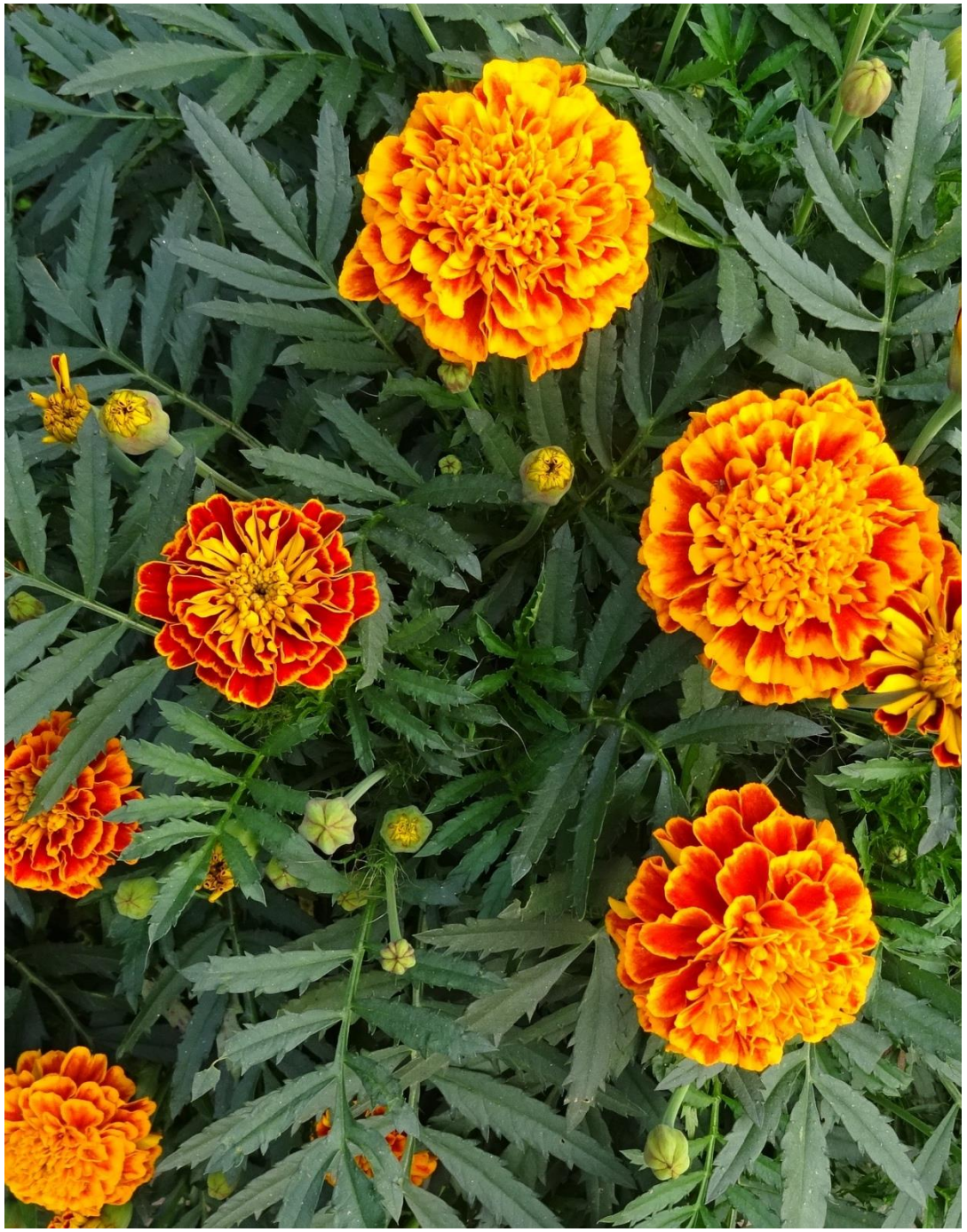
Plague warning sign for Taylor Creek Visitor Center and Kiva Beach. Posted to X by Lake Tahoe USFS.

Honey bees die after they sting you

- Honey bees have barbed stingers that get stuck in our skin after they sting
- When the bees try to remove the stinger they end up rupturing their body causing them to die
- Wasps, bumblebees, and hornets can sting you multiple times

Honey bee sources

- UC IPM *Pest Notes: Bee and Wasp Stings* https://ipm.ucanr.edu/PMG/PESTNOTES/pn7449.html
- Most bees don't die after stinging – and other surprising bee facts https://theconversation.com/most-bees-dont-die-after-stinging-and-other-surprising-bee-facts-227162
- Bee Frequently Asked Questions, Texas A&M Honey Bee Lab https://honeybeelab.tamu.edu/beekeeper-resources/bee-removal-and-sample-submission/bee-frequently-asked-questions/
- Why do honeybees die when they sting? https://www.pbs.org/newshour/science/honeybee-sting-kill-bee



Marigolds don’t ward off garden pests

- They may be less susceptible to feeding by rabbits and deer
- Can control certain nematodes!
-
- May attract beneficial insects which can help with pest control

Marigold sources

- Marigold (*Tagete erecta*): an effective Meloidogyne incognita trap plant. https://www.cabidigitallibrary.org/doi/full/10.5555/20210125472
- Effects of Selected Marigold Varieties on Root-knot Nematodes and Tomato and Melon Yields, UC Riverside https://faculty.ucr.edu/~atploeg/PDF%20PAPERS/PLANT%20DISEASE/PLANTDISEASE.pdf
- Marigolds (*Tagetes* spp.) for Nematode Management, University of Florida https://edis.ifas.ufl.edu/publication/NG045
- Magical Repelling Powers of Marigolds — Myth or Fact? https://piedmontmastergardeners.org/article/magical-repelling-powers-of-marigolds-myth-or-fact/

“Mosquito eaters” or “mosquito hawks”

- They don’t eat mosquitoes and they’re not hawks…
- They ARE crane flies!
  - Adults are harmless and don’t bite. Some don’t even have mouthparts
- Larvae resemble caterpillars and can be a pest of lawns

- Source: https://ipm.ucanr.edu/TOOLS/TURF/PESTS/incrane.html

Other mosquito eaters

- Bats may eat mosquitoes but they aren't a larger part of their diet
- Amphibians may prey on mosquitoes
- Dragonflies feed on mosquitoes
- Mosquitofish are commonly used by MVCA's to control mosquitoes in ponds and man-made waters
- "…**Supportive data is anecdotal and there is no documented study to show that bats, purple martins, or other predators consume enough adult mosquitoes to be effective control agents**." - AMCA

Mosquito sources

- Bats, birds, turtles, frogs, fish, Wisconsin Mosquitoes and Mosquito-Borne Diseases https://mosquitosite.russell.wisc.edu/preventing-mosquito-bites/bats-and-birds/
- Debunking Myths: Bats for Effective Mosquito Control https://www.vdci.net/blog/debunking-myths-bats-for-mosquito-control/
- Amphibian abundance is associated with reduced mosquito presence in human-modified landscapes https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.4484
- Mosquito Control, AMCA https://www.mosquito.org/mosquito-control/
- Mosquitoes and their control, IFAS Extension https://fmel.ifas.ufl.edu/media/fmelifasufledu/fmel-publications/fl-resident-guide-to-mosquito-control-ifas.pdf

Figs may have dead insects inside

- Figs are pollinated by tiny wasps
- Many commercially grown figs are grown without pollinators
- Figs produce a chemical that breaks down the fig wasp bodies

- **Most fruits and other foods do have dead insects in them….more on that next**

Fig sources

- Fig Wasps, US Forest Service https://www.fs.usda.gov/wildflowers/pollinators/pollinator-of-the-month/fig_wasp.shtml

- Figs Without Wasps?, Arizona State University https://askabiologist.asu.edu/figs-without-wasps

- Are there dead wasps in figs?, PBS https://www.pbs.org/video/gross-science-why-are-there-dead-wasps-figs/

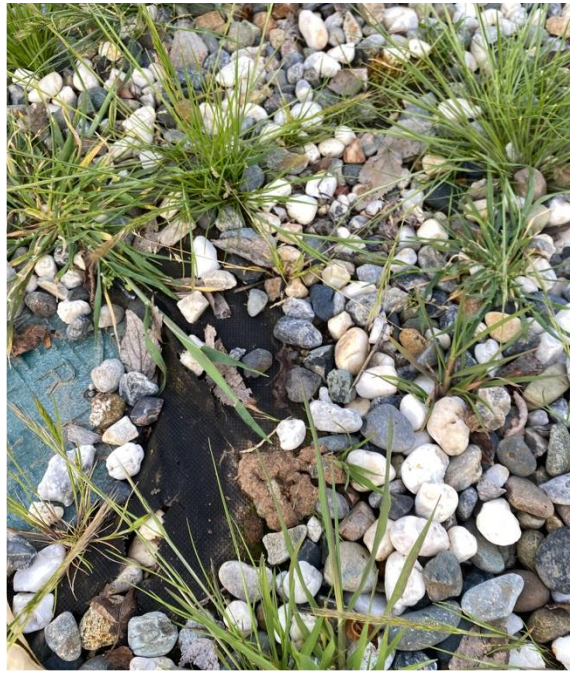
There are insects and rodent hairs in your food

- FDA establishes maximum levels
- Raspberries & blackberries:
  - 4+ larvae or 10 whole insects per 500 grams
- Ground paprika:
  - 75+ insect fragments or 11+ rodent hairs per 25 grams
- Tomato puree:
  - 20+ fly eggs or 2+ maggots per 100 grams

- Source: Food Defect Levels Handbook, FDA https://www.fda.gov/food/current-good-manufacturing-practices-cgmps-food-and-dietary-supplements/food-defect-levels-handbook

Landscape fabric and mulch won't permanently control weeds

- Initially keeps weeds down but only temporarily
- Weed seeds can germinated on top of the fabric and grow through mulch
- Fabric not a good choice for beds that are replanted often
- Can make it harder to remove perennial weeds



Mulch sources

- The disadvantages of landscape fabric, Illinois Extension https://extension.illinois.edu/blogs/good-growing/2021-06-25-disadvantages-landscape-fabric
- The Myth of Landscape Fabric, Washington State Univrsity https://s3.wp.wsu.edu/uploads/sites/403/2015/03/landscape-fabric.pdf
- *Pest Notes: Weed Management in Landscape*, UC IPM https://ipm.ucanr.edu/PMG/PESTNOTES/pn7441.html

Repellents don’t work for rodents

- No scientifically-proven effective repellents
  - While they may not initially like the scent, they will get used to it and gnaw through to get what they want
- Including:
  - Irish spring soap
  - Dryer sheets
  - Moth balls (can be dangerous!)
  - Predator scent or urine
  - Human scent
  - Castor bean

Ultrasonic devices don’t scare away rodents

- Ultrasonic sounds, those above the range of human hearing, are directional and don’t penetrate behind objects
  - They lose their intensity quickly with distance
- There is little evidence that sound, magnetic, or vibration devices of any kind will drive established mice or rats from buildings or provide adequate control
- Gophers don’t frighten easily so these devices don’t work on them

What does work for rodent control?

- Covering or filling entry points to buildings (1/4 to 1/2” gaps)
- Removing hiding spots and harborage (ivy, wood piles, boxes)
- Proper food or feed storage (sealed containers; not plastic)
- Trapping

Rodent sources

- *Pest Notes: Rats*, UC IPM https://ipm.ucanr.edu/home-and-landscape/rats/pest-notes/
- *Pest Notes: Pocket Gophers*, UC IPM https://ipm.ucanr.edu/home-and-landscape/pocket-gophers/pest-notes/
- *Pest Notes: House Mouse*, UC IPM https://ipm.ucanr.edu/home-and-landscape/house-mouse/pest-notes/
- Ultrasonic Devices? Ultra-Ineffective, NYSIPM https://blogs.cornell.edu/nysipm/2016/08/16/ultrasonic-devices-ultra-ineffective/
- Sonic Pest Repellents, University of Arizona Cooperative Extension https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/AZ1639-2015.pdf
- Surveillance and Management of Common Structure-Invading Rats Household Pests https://content.ces.ncsu.edu/surveillance-and-management-of-common-structure-invading-rats

Dish soap is not the same as insecticidal soap

- Dish soaps are actually man-made detergents designed to be powerful chemical cleaners and degreasers
- Dish soaps can strip plant leaves causing them to become dry and damaged
- Insecticidal soaps are formulated for use on plants and EPA registered

Insect soap sources

- Managing Plant Pests with Soaps, IFAS Extension https://www.researchgate.net/profile/Matthew-Borden/publication/342533561_Managing_Plant_Pests_with_Soaps/links/5efa23a445851550507b3c04/Managing-Plant-Pests-with-Soaps.pdf
- Pesticide Home Remedies, NPIC https://npic.orst.edu/pest/home-remedies.html

Some interesting facts

(that you may have thought were myths!)

Opossums can eat (some) venomous snakes!

- Opossums are resistant to poisonous vipers
  - The eastern and western diamondback rattlesnake, copperheads and many South American viper species

- Researchers trying to understand how this feature could be used to treat humans bitten by venomous snakes

https://www.abc.net.au/news/2018-05-04/python-fights-possum-mother-freeing-baby-from-snake/9726566

Python picks on wrong possum after mother scratches, bites snake to free its baby

By Patrick Williams

Animal Attacks

Thu 3 May 2018

The mother possum bit and clawed her way to victory. *(Supplied: Christine Birch Williams)*

Opossum sources

- GVSU biochemistry researchers studying why opossums can resist venom of some snakes https://www.gvsu.edu/gvnext/2022/gvsu-biochemistry-researchers-studying-why-opossums-can-resist-venom-of-some-snakes-.htm

- Resistance of the opossum (Didelphis virginiana) to envenomation by snakes of the family Crotalidae https://www.sciencedirect.com/science/article/abs/pii/0041010177900666

- Snake-venom resistance as a mammalian trophic adaptation: lessons from didelphid marsupials https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1469-185X.2012.00222.x

Cockroaches cause asthma

- Indoor infestations can lead to development of asthma in children
- Identified as one of the strongest risk factors for the development of asthma in low-income urban populations
- Cockroach allergens can be found in their body parts, saliva, and fecal matter

Cockroach sources

- *Pest Notes: Cockroaches,* UC IPM https://ipm.ucanr.edu/PMG/PESTNOTES/pn7467.html
- Cockroaches, American Lung Association https://www.lung.org/clean-air/indoor-air/indoor-air-pollutants/cockroaches
- Cockroach Allergen Exposure and Risk of Asthma, NIH https://pmc.ncbi.nlm.nih.gov/articles/PMC4803579/

Invasive and non-native are not the same

Non-native species

1. organisms that do not occur naturally in an area but are introduced

Invasive species

1. organisms that do not occur naturally in an area but are introduced **AND**
2. cause harm to the environment, economy, or human, animal, or plant health

Bed bugs can be seen with the naked eye!

- Fortunately, bed bugs are not microscopic
  - Adult bed bugs are 1/5 inch long
- Immature bed bugs and their eggs are smaller but still visible
- You can spot them on furniture or look for dark fecal spots
  - Not always found in beds
  - Can be found even in the finest hotel and living accommodations
- Not known to spread diseases

Source: *Pest Notes: Bed Bugs*, UC IPM

Snails and slugs like bread and beer

- Yeast traps attract slugs and snails
- Use a container with deep vertical sides so they can't escape; or a commercially available trap
- OSU trapped over 18,000 snails in 48 hours in one instance

Tony Cyphert, Flickr.com

Snail and slug sources

- Slugs and snails, destructors of crops and gardens, could be controlled by bread dough https://news.oregonstate.edu/news/slugs-and-snails-destructors-crops-and-gardens-could-be-controlled-bread-dough
  - How to create a slug trap using bread dough slurry https://extension.oregonstate.edu/gallery/how-create-slug-trap-using-bread-dough-slurry
- Fermenting Bread Dough as a Cheap, Effective, Nontoxic, and Generic Attractant for Pest Snails and Slugs https://www.mdpi.com/2075-4450/12/4/328
- *Pest Notes: Snails and Slugs, UC IPM* https://ipm.ucanr.edu/PMG/PESTNOTES/pn7427.html

Brown recluse spiders are not found in CA

- Brown recluse is found mostly in the southeastern US
- Similar looking spiders are often misidentified as brown recluses
- Medical professionals are not trained arachnologists
  - Cannot link a “bite” or skin reaction to a spider or any pest
  - Often misdiagnosed for skin infections like MRSA
- The only medically significant spiders in CA are widow spiders

Joe Culin, Clemson University, Bugwood.org

Recluse spider sources

- *Pest Notes: Brown Recluse and Other Recluse Spiders*, UC IPM https://ipm.ucanr.edu/PMG/PESTNOTES/pn7468.html
- Diagnoses of brown recluse spider bites (loxoscelism) greatly outnumber actual verifications of the spider in four western American states https://www.sciencedirect.com/science/article/abs/pii/S0041010103001739
- The Persistent Myth of the California Brown Recluse https://www.pbssocal.org/redefine/the-persistent-myth-of-the-california-brown-recluse
- Brown Recluse Spiders? Not in California! https://ucanr.edu/blog/pests-urban-landscape/article/brown-recluse-spiders-not-california
- Recluse Spiders https://bohart.ucdavis.edu/recluse-spiders

Moles do have eyes and they're not rodents!

- Moles have very small, poorly developed eyes covered by skin or fur
- Can detect light vs. dark but are virtually blind
- Rely on their great sense of smell instead of vision
- NOT rodents like gophers and voles
  - Insectivores!

Mole sources

- *Pest Notes: Moles*, UC IPM https://ipm.ucanr.edu/home-and-landscape/moles/pest-notes/
- Managing Human-Wildlife Interactions: Moles, Virginia Cooperative Extnesion https://www.pubs.ext.vt.edu/420/420-201/420-201.html
- Identifying Moles, Voles, and Shrews, PennState Extension https://extension.psu.edu/identifying-moles-voles-and-shrews

Fact-check your “facts”!

- If it sounds too good to be true, it probably is!
  - Be cautious with “miracle” remedies to pest problems

- Everything you see on the internet isn’t true
  - Take the time to do some research on a given “fact”, making sure to rely on science-based resources
  - Sometimes the truth gets twisted

Thank you!