

# **Thirteen Spooky Facts about Mites**



**For Innovate Chatham**

**Thursday, October 12, 2023**

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# Spooky Fact #1: You may not see them, but Mites are Everywhere.

- In soil, In water,
- In the flour in your cupboard
- in your sheets, eating dead skin cells.



# Spooky Fact #2: Mites live on animals.

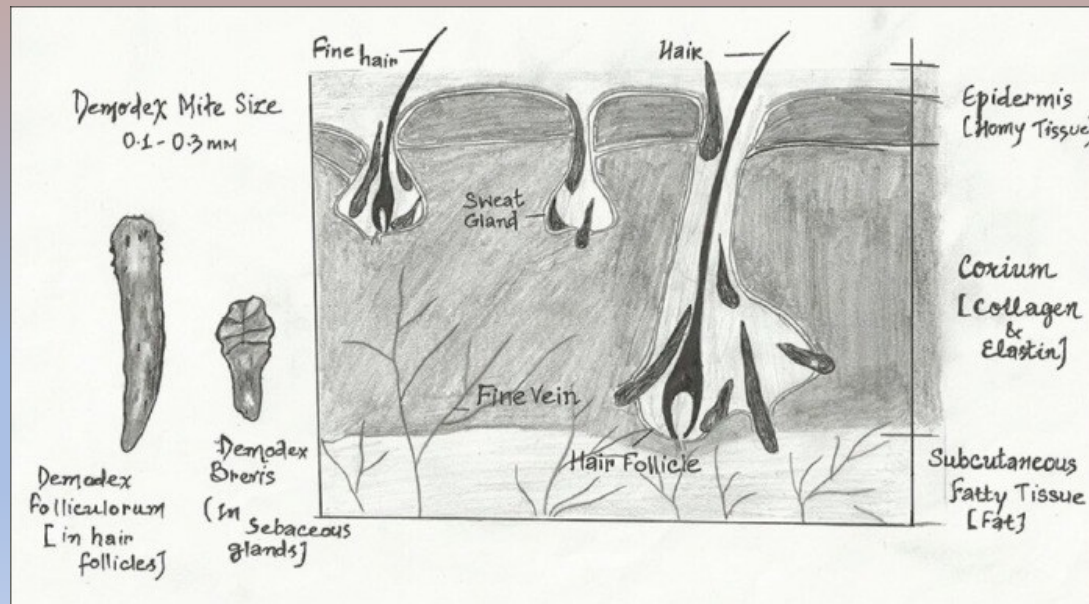
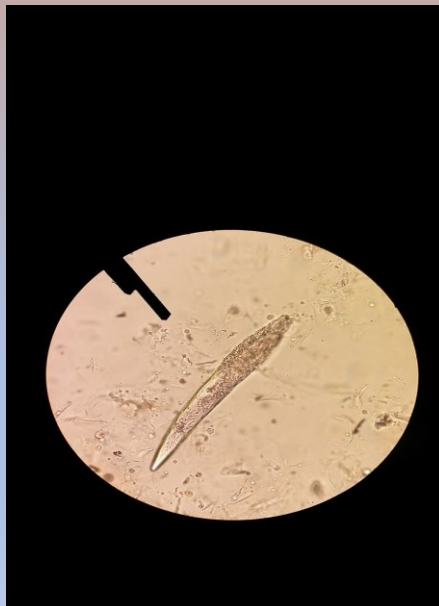
- In the ears of moths
- In the nostrils of hummingbirds
- In the lungs of seals
- In the throats of honeybees





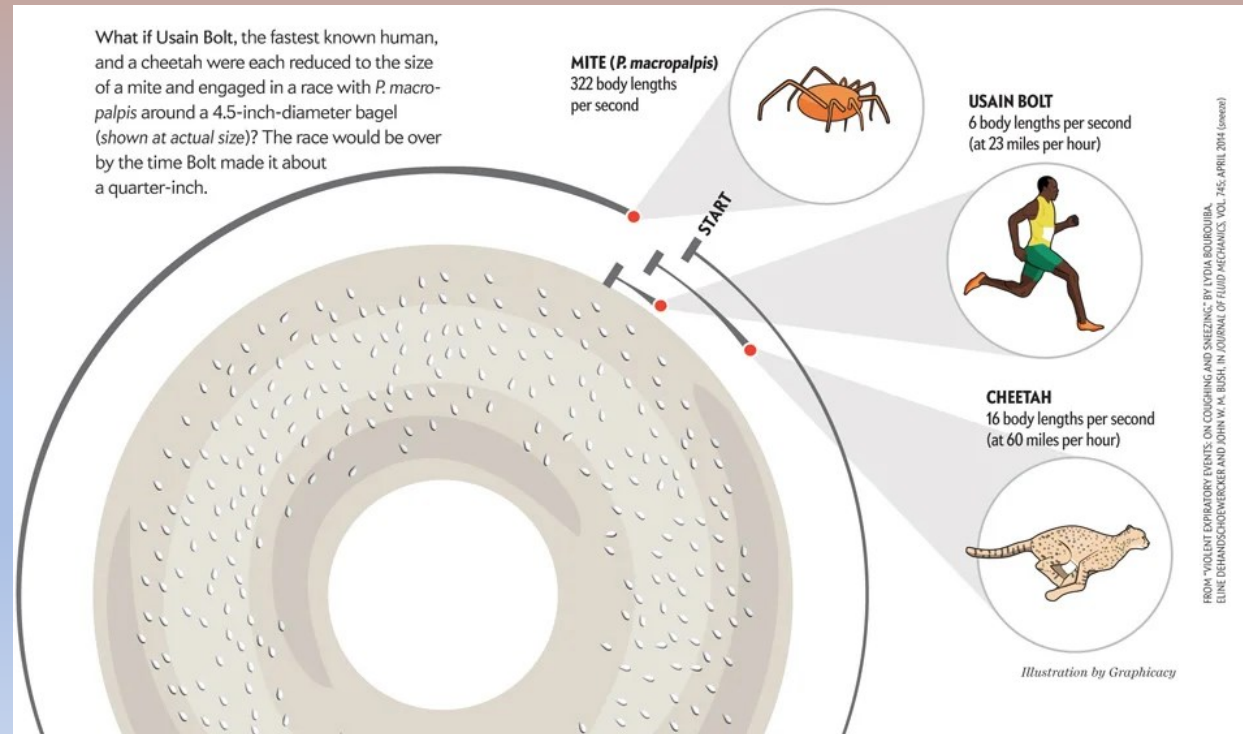
# Spooky Fact #3: Demodex mites live on you.

- live in facial hair follicles, sweat glands
- Consume eyelash gunk, etc.
- Controversy re whether they have an anus



# Spooky Fact #4: One species of mite is the fastest animal on earth.

- Of the two million species of plants and animals, about half are mites.
- hard to detect: too small to see, too quick for microscope viewing
- *Paratarsotomus macropalpis* travels at 322 times its body length per second.

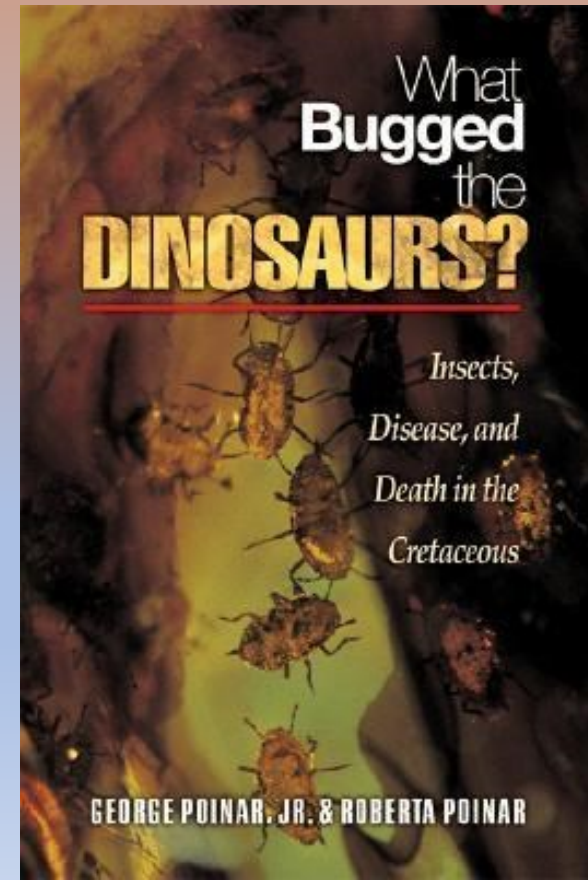


# Spooky Fact #5: Some scientists think bugs (e.g., mites) killed the dinosaurs.

George Poiner, the paleontologist whose research inspired Jurassic Park, claims arthropods such as mites killed off the dinosaurs.

Should we revive dinosaurs – and  
Their pathogens?

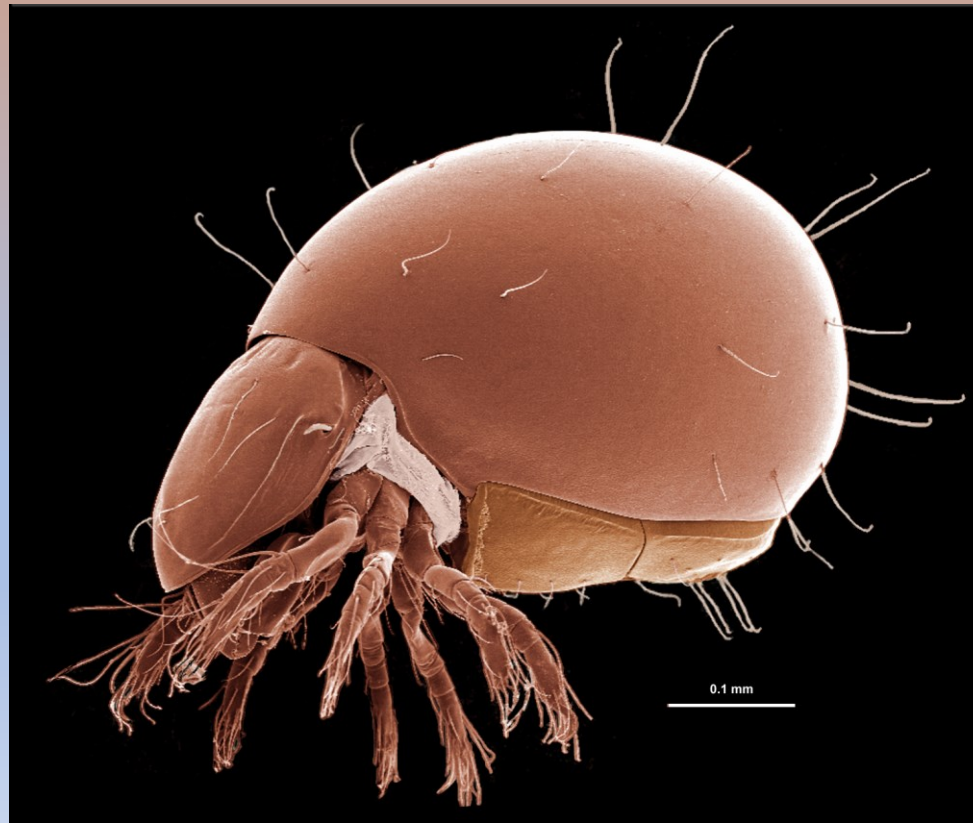
“Don’t bring them back,” he says.



# Spooky Fact #6:

## Mite Reproduction is Bizarre, Part 1.

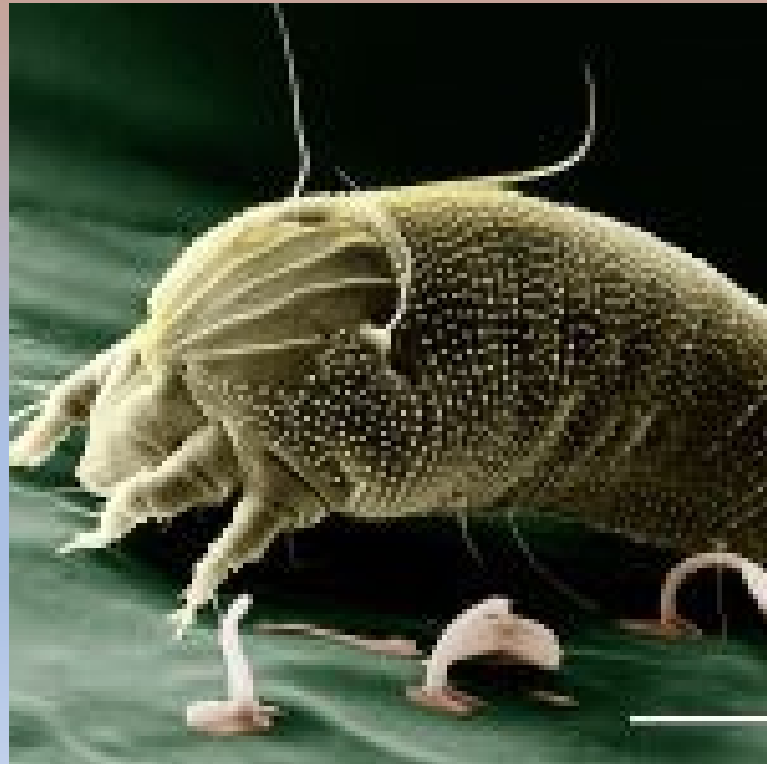
- Mites of the order *Orbatida* reproduce by parthenogenesis: Females produce female offspring, no males involved.
- rare process in multicellular organisms.



# Spooky Fact #7:

## Mite Reproduction is Bizarre, Part 2.

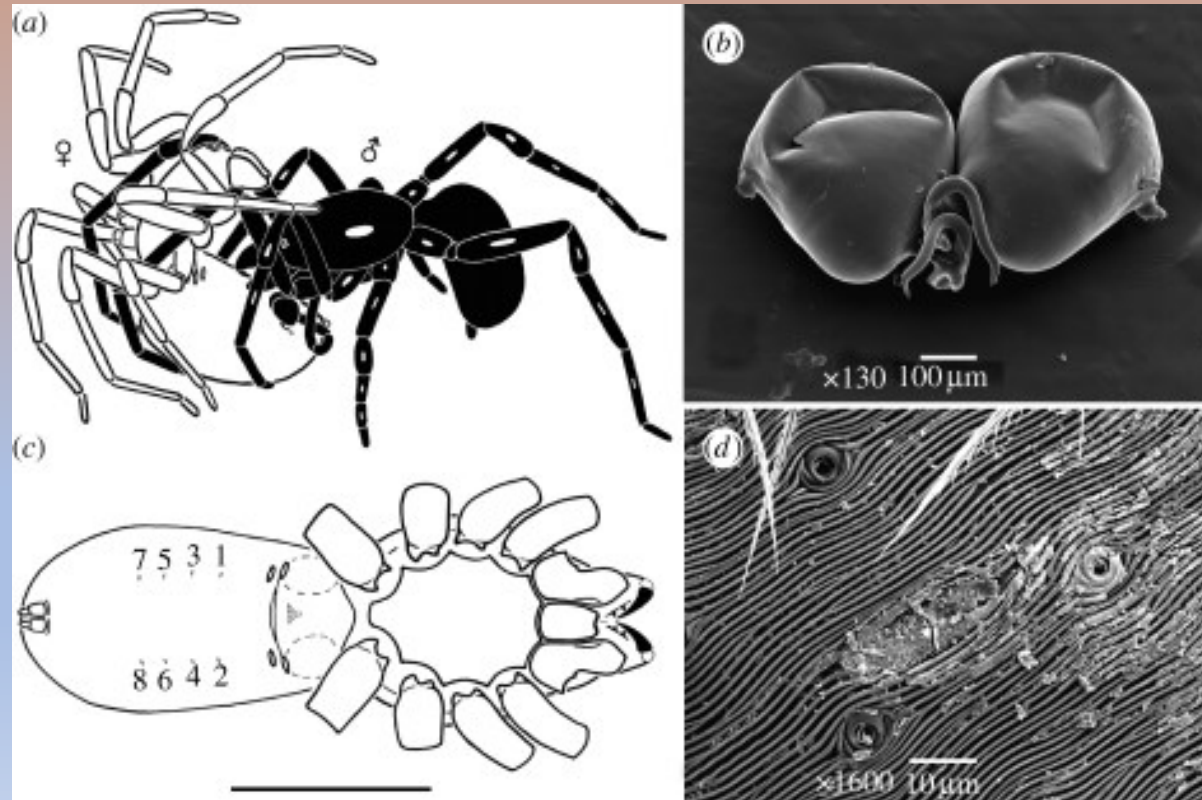
- ***Adactylidium* mites: the pregnant female incubates 5-8 female offspring and one male offspring.**
- **The male mates with all females before birth**
- **then the children devour the mother from the inside out.**





# Spooky Fact #8: arthropod Reproduction is Bizarre: A word about spiders.

- *H. sadistica*: The male mates by piercing the female carapace.



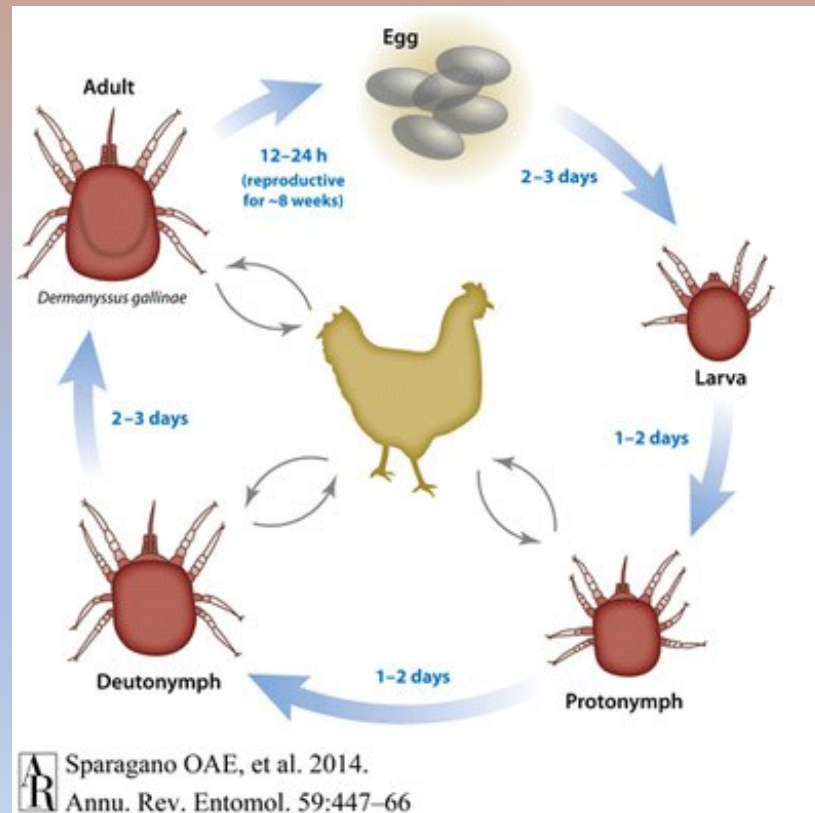
# Spooky Fact #9: Many mites are parasites.

- Carl Zimmer (in *parasite rex*) says more parasitic than free-living species of animals on earth
- Zimmer claims western medicine underemphasizes parasites
- Scabies Mites – Example of a mite that parasitizes humans



# Spooky Fact #10: *Dermanyssus gallinae* Is a major bird parasite.

- Infests many wild birds, e.g., 99% of pigeons
- Infests over 90% of commercial poultry operations
- Can carry encephalitis and other human diseases





# Spooky Fact #11 *D. gallinae* an underrecognized human parasite.

- Can affect poultry workers
- North Carolina now produces 500 million chickens per year (vs. 9 million hogs), with minimal regulation





# Spooky Fact #11 Part 2: *D. gallinae* an underrecognized human parasite.

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<https://doi.org/10.1080/03079457.2019.1633010>



REVIEW

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## *Dermanyssus gallinae* attacks humans. Mind the gap!

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### ABSTRACT

*Dermanyssus gallinae* is a haematophagous ectoparasite primarily known as a pest of domestic and wild birds. It occasionally feeds on a range of mammals, and, more importantly, is of growing concern in human medicine. This review highlights mite attacks on people working with poultry, and updates the increasing incidence of dermanyssosis in urban environments in Europe. Although several cases of dermanyssosis have been documented, there are a number of reasons why diagnosis of *D. gallinae* infestations in humans is likely to be underestimated. Firstly, medical specialists are not well aware of *D. gallinae* infestations in humans. There is also a lack of collaboration with specialists from other disciplines. The problem is compounded by misdiagnoses and by the lack of diagnostic tools. We review the literature on human dermanyssosis cases in Europe, and also provide information on the epidemiology, clinical, histo-pathological and immunological aspects of dermanyssosis. We stress the need for improved recognition of this challenging infestation in humans, and provide straightforward recommendations for health practitioners, starting with collection of the correct anamnestic information and including appropriate management methods for case recognition and resolution. Finally, we indicate the most urgent areas to be addressed by future research.

### ARTICLE HISTORY

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### KEYWORDS

*Dermanyssus gallinae*;  
humans; Europe; dermatitis;  
diagnosis; management;  
future needs

# Spooky Fact #11, Part 3:

## *D. gallinae* an underrecognized human parasite.

George et al. *Parasites & Vectors* (2015) 8:178  
DOI 10.1186/s13071-015-0768-7



*Parasites  
& Vectors*

REVIEW

Open Access

### Should the poultry red mite *Dermanyssus gallinae* be of wider concern for veterinary and medical science?

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#### Abstract

The poultry red mite *Dermanyssus gallinae* is best known as a threat to the laying-hen industry; adversely affecting production and hen health and welfare throughout the globe, both directly and through its role as a disease vector. Nevertheless, *D. gallinae* is being increasingly implemented in dermatological complaints in non-avian hosts, suggesting that its significance may extend beyond poultry. The main objective of the current work was to review the potential of *D. gallinae* as a wider veterinary and medical threat. Results demonstrated that, as an avian mite, *D. gallinae* is unsurprisingly an occasional pest of pet birds. However, research also supports that these mites will feed from a range of other animals including: cats, dogs, rodents, rabbits, horses and man. We conclude that although reported cases of *D. gallinae* infesting mammals are relatively rare, when coupled with the reported genetic plasticity of this species and evidence of permanent infestations on non-avian hosts, potential for host-expansion may exist. The impact of, and mechanisms and risk factors for such expansion are discussed, and suggestions for further work made. Given the potential severity of any level of host-expansion in *D. gallinae*, we conclude that further research should be urgently conducted to confirm the full extent of the threat posed by *D. gallinae* to (non-avian) veterinary and medical sectors.

# **Spooky Fact #12: You can lower your chances of being bitten by mites.**

- **Inspect your home regularly for birds' nests (current or abandoned); get rid of them and sanitize area**
- **Keep your home cool and dry**
- **Get rid of clutter**
- **Hardwood or tile floors – not carpeting**
- **Do not bring birds' nests into your home**
- **Promptly get rid of rodents, squirrels, bats in your home**
- **If you keep poultry, bathe with miticide; inspect for mites; change shoes at the door**
- **An ounce of prevention is worth a pound of cure!**


# Spooky Fact #13: If you are infested by mites, you can get rid of them.

**use the least toxic effective methods. Follow product directions. Consult your MD.**

## **Step Zero: Get rid of Vectors**

## **Step One: Diagnosis**

- If you are bitten by something you cannot see, it may be mites.
- Hard (but not impossible) to locate specimens
- **Research Associates Laboratories in Austin does PCR testing for mites, bedbugs, etc.**

	<b>Research Associates Laboratory (R.A.L.,Inc.)</b> 411 East McDermott Drive Ste B. Allen, TX 75002 Phone: (972)960-2221 Fax: (972)960-1997 www.vetdna.com	
<b>TEST RESULTS</b>		
Acct ID: <b>S1645</b> JODY SAVAGE Attn: 56 CLARENCE LANE PITTSBORO, NC 27312 Phone: 510-967-1940 Fax: -- Email:	Owner Name: <b>JODY SAVAGE</b> Lab ID: <b>357236</b> Test Date: <b>04/30/2021</b> Animal Name: <b>BEDROOM</b> Species: <b>ENVIRONMENTAL</b> Medium: <b>Swab</b>	
Test Description	Result	Comments
Head and Body Lice (P. Huamnus)	Negative	
Cheyletiella Mites	Negative	
Collembola	Negative	
Dermanyssus Mite	Positive	
Pyemotes	Negative	
Ringworm:M. canis/gypseum/T. mentagrophytes	Negative	



# Spooky Fact #13: If you are infested by mites, you can get rid of them.

**Always use the least toxic effective methods. Follow product directions. Consult your physician.**

## **Step Two: Make your environment mite-unfriendly**

- Get rid of rugs in home and car. Replace curtains with blinds.
- Throw out non-essentials: stuffed animals, throw pillows, magazines, etc.
- Lower home temperature and humidity (whole house dehumidifier)
- mite-proof coverings on all mattresses and pillows



# **Spooky Fact #13: If you are infested by mites, you can get rid of them.**

**Always use the least toxic effective methods. Follow product directions.**  
**Consult your physician.**

## **Step Three: Cleaning Protocols**

**Laundry: All loads on hot water with detergent, Borax, and bleach or colorfast bleach; dry on hot. Dry cleaning ineffective. Buy machine washable shoes and wash them every day.**

**Floors: Vacuum every day, then empty canister and spray inside of canister with miticide**

**Car: Vacuum every day; wipe inside with Clorox wipes**

# **Spooky Fact #13: If you are infested by mites, you can get rid of them.**

**Always use the least toxic effective methods. Follow product directions.**  
**Consult your physician.**

## **Step Four: Personal care**

**Spend as much time out of the house as you can (but come home to clean every day).**

**Always wear shoes to walk around your home.**

**Keep your hair short. Wash it with a tar shampoo every day.**

**Swim in a chlorinated pool, daily if possible**

**Shower every day using a rough washcloth to scrub**

**Spooky Fact #13: If you are infested by mites, you can get rid of them.**

***Always use the least toxic effective methods.***

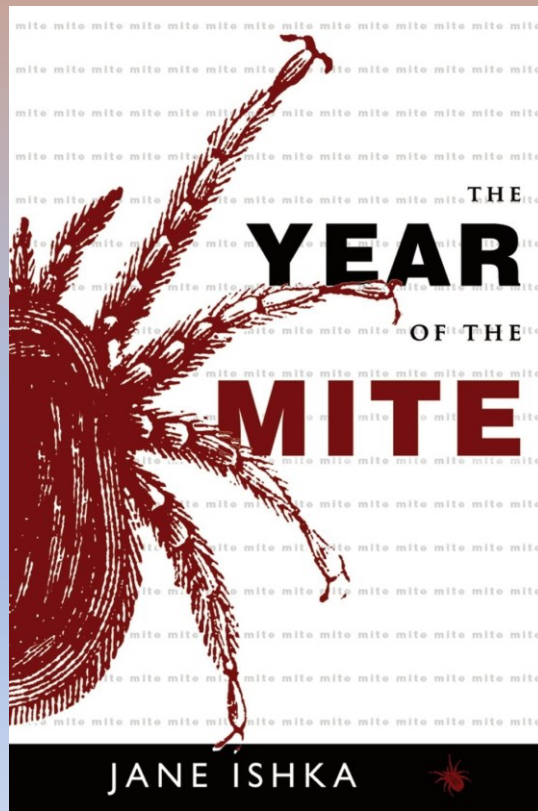
***Follow product directions. Consult your physician.***

### **Step Five: miticides**

- **Pest control operators must have species identification**
- **Mites are evolving around pyrethrins**
- **Pest control operator will also use growth hormones**
- **Do-it-yourself pest control sells Steri-Fab for use on upholstered furniture – use only according to directions**



# Thank you for being here for “thirteen Spooky Facts about Mites”



For up-to-date protocols, visit visit  
[www.yearofthemite.com](http://www.yearofthemite.com)