

# Diagnosing Mysterious "Bug Bites"

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Parasitosis is the condition of being parasitized, bitten, or lived on by another organism. Recognizing this condition in people, however, is not always easy, and undiagnosed "bites" are one of the most frustrating of all pest control problems. This fact sheet is intended to shed some light on situations where diagnosis of a biting problem is difficult to obtain.

## Q. What could be biting me indoors?

Not many arthropod pests actually infest human skin or clothing. The few that do include:

- Lice. Includes head lice, body lice, and pubic lice. 1-3 mm in length. Feed on blood. Transmitted by close physical contact with another infested person. Head lice live exclusively among the hairs on the head. Body lice, which resemble head lice, live in clothing and are rare in the U.S. except among some homeless populations.
- Scabies mites. These mites are microscopic and feed in human skin. They are transmitted mostly by physical contact with an infected human or pet. Only the human scabies mite (not found on pets) can propagate and sustain infestations in human skin. Not treatable with pesticides applied to the home or bed.
- Hair follicle mites. These are also microscopic mites. However, these mites live in the hair follicles and sebaceous glands of humans. They are considered harmless, or at worst associated with some forms of acne.

Other arthropods that are sometimes found indoors and are capable of biting humans include:

- Fleas. 2-6 mm in length. These are parasitic insects that must feed on blood to survive. Fleas in this country require an animal (non-human) host, such as dog or cat, on which to breed. Bites tend to occur mostly on lower legs.
- Chiggers. Microscopic mites that live outdoors. Only the larval form (smallest life stage) of the chigger mite is parasitic on man. Chiggers are found exclusively outdoors in grass, soil, weedy areas; however itching may not occur for several hours after encountering the mites. Chigger bites are usually concentrated around areas of tight clothing, such as under socks and around waist.
- Bed bugs. Adults reach 5 mm- (1/4 inch-) long. Bed bugs are flattened, oval-shaped insects that hide during day and emerge at night to feed on warm-blooded animals. Human bed bug infestations are increasing in frequency in Texas, especially in apartments and hotels where residents come and go, and where the bugs can move from one unit to another. Nevertheless, they are still relatively uncommon, especially in single-family homes. Bird and bat bugs, relatives of the bed bug, may also be rarely encountered. Bites to humans generally occur only in areas of a structure next to the nesting sites of bats or birds, such as chimney swifts and purple martins. Bed bug bites are painless but can lead to itching and inflammation, and are sometimes accompanied by series of red blotches on the skin.
- Conenose (or kissing) bugs. These are relatively large insects, 10-30 mm- (3/4 to 1/8 inch-) long. They emerge at night to feed on vertebrate blood, but are uncommon in well-constructed homes. Bites occur most commonly on hands, arms, feet, head or other areas exposed during sleep.
- Mosquitoes. These are delicate, generally small (2-4 mm) flies that live mostly outdoors, but can enter homes. Adult mosquitoes feed on the blood of humans, birds and other animals. Most species are active mostly in evenings and mornings. They cause flat, raised welts on exposed skin.
- Thrips. Thrips are minute, elongated insects (1-2 mm long) that feed exclusively on flowers and growing plants. However, thrips occasionally land on skin and bite people, especially outdoors. Thrips bites are a temporary, minor irritation but causes no visible welts or bites. Washing the arms or hands immediately cures a thrips "infestation".
- Spiders. Spiders are a diverse group of eight legged arthropods. Spider bites are rare, and thus can be ruled out in cases of people with multiple lesions or bites. Individuals vary in their reactions to bites, though spider bites are generally harmless. The only truly dangerous spiders in Texas are the black widow and brown recluse.
- Bird and rodent mites. Minute, 1 mm long mites that can be difficult to diagnose. These mites normally infest rodents and bird nests, but will occasionally disperse from these sites and bite humans. See the following section on mites.

Most of these pests infest homes temporarily and can be controlled via pesticide treatment, or by eliminating the source of the infestation. Arthropod bites are often hard to diagnose without an examination, good description of the bite(s), information about how and when the bites occurred, and (ideally) a specimen of the suspected pest. Although many biting arthropods leave clues that help with diagnosis (such as the pattern and types of lesions), it is often very difficult to determine the cause of a bite with certainty without a specimen or observation of the bite or sting taking place.

## Q. Do I need to know what it is before I treat?

It is essential to diagnose, at least in a general sense, the cause of a problem before prescribing a treatment. Without a confirmed pest identification, use of pesticide sprays or lice creams should be avoided. Pesticides generally kill insects and mites by affecting the nervous systems of these pests. Pesticides can affect humans in the same way if overused, or used improperly. Creams and shampoos designed for the control of scabies or lice are pesticides. These products are generally safe when label directions are followed; but even over-the-counter medications can be dangerous if over-applied or used improperly. In the same way, household pesticide sprays and foggers should not be used repeatedly against unseen pests. Although people may initially believe that such applications help (usually temporarily), these types of applications may cause more long-term health problems than they solve.

## Q. How can I get a specimen to help with diagnosis?

To be certain about a diagnosis it is best, of course, to capture the pest in the act of biting; however, this is sometimes not possible. Wiping up a crawling insect and placing it in alcohol is fine for larger specimens. In cases where pests are extremely small or difficult to observe (such as with mites), tape or sticky traps are useful for specimen collection. Use tape to pick up small specimens directly from the skin. Sticky traps are cardboard cards with a glue surface for capturing small crawling insects. They can be purchased through do-it-yourself pest control stores, online, or through pest control companies. Roach hotels, such as are commonly sold in grocery and hardware stores, are also suitable for small specimen collection. Place several sticky traps in areas of the home or office where bites are believed to occur. Along the edges of walls and under and around beds are good locations. Even very small

mites can be seen with the naked eye or a 10X magnifying lens once trapped on a sticky board surface.

Many different kinds of harmless insects are liable to be trapped on sticky boards. Field guides with pictures can help with identification and are available in most libraries and bookstores. When identification is in doubt, bring the sticky board to a pest control company or other qualified expert. *Samples of vacuum cleaner bag contents, or sweepings, or general collections of dead insects are seldom helpful in diagnosing problems with biting arthropods.*

### Q. What kind of mites bite people?

Mites are small arthropods with eight legs, more closely related to spiders than insects. Several mite species can be found in homes and offices. Some are associated with stored foods, such as grain, cheese, and flour mites. These are most commonly found in food storage areas with high humidities. Others, like bird and rodent mites, are found in buildings with bird or rodent infestations. Bird and rodent mites, like the northern fowl mite, house mouse mite, and tropical rat mite, are among the most common culprits in difficult-to-diagnose arthropod infestations. These mites live in bird and rodent nests. Although these mites occasionally bite humans, they do not feed, nor can they successfully survive or reproduce, without their natural hosts. The most effective method for eliminating such mite infestations is to control and remove any rodents (e.g., house mice, rats, squirrels, etc.) or birds (e.g., swallows, sparrows, starlings, pigeons) from the structure. This is best accomplished with the help of a professional pest control company familiar with control of these pests. Once the hosts of these mites are eliminated, insecticidal sprays can be used by a professional pest control operator to reduce any residual mite populations.

Only two kinds of mites actually live and feed in human skin: the scabies mite and the hair follicle mite. Of the two, only the scabies mite commonly causes bites or itching. Scabies must be diagnosed by a physician, usually via scrapings from the skin. Treatment consists of various prescription medicated creams and ointments. Hair follicle mites are harmless, though may be associated in some individuals with a type of acne. Follicle mites can be found in the skin of most adult humans.

### Q. If the problem isn't a "bug", what could it be?

When all attempts to identify a biting arthropod fails, or when a description of the affliction fails to fit the criteria of any known parasitic arthropod, there must be an alternative explanation. A variety of environmental factors, for example, can produce the false perception of insect bites. Medical conditions such as diabetes, liver disease, thyroid disorders, kidney disease, icterus, lymphoblastoma, pellagra, and others can cause perceptions of parasitosis, dermatitis, or hives. In addition, certain medications can cause unusual skin sensations and itching. Changes in medication can cause a variety of novel side effects that mimic parasitosis.

Enzyme-based detergents, fabric softeners, soaps, creams, makeup, deodorants, perfumes and other toiletries can cause skin sensations or reactions that can be mistaken for insect bites. House plants, cold water vaporizers, humidifiers, and dirty air vents can be sources of airborne mold spores, mildews, and bacteria that could cause skin reactions. Higher indoor humidities combined with dust and dander accumulations in furniture can support populations of house dust mites.

Contrary to popular opinion, dust mites do not bite or feed on people. Instead, it is the tiny, airborne fragments of dust mite shed skins and feces that cause allergies for people. Reducing indoor humidity and consistent, thorough vacuuming with a HEPA-filtered vacuum can help reduce dust mite allergens in homes.

Allergies due to pollens, molds and mildews and cockroach infestations can cause skin sensations and reactions that can be mistaken for insect bites. Also, weather with lower humidities, such as during the winter months, can increase static electricity in a home or office environment. Static charges can cause small “shocks” that feel like bites. Fibers, paper slivers, and the like, attracted by static charges to legs and skin of workers have been implicated in “bite” complaints that sometimes occur among office workers. In offices, chemicals in carbonless paper and photocopier chemicals can cause reactions in some individuals.

## Q. Can bites be imaginary?

A delusion is a “false belief that cannot be corrected by reason... or even by the evidence of the patient’s own senses”. Delusory parasitosis is a recognized medical condition characterized by an unfounded, yet unshakable, belief that live insects are present in the skin. Classified as a form of hypochondria, delusory parasitosis, like other mental disfunctions, arises from emotional or physiological problems over

which the sufferer may have no control. In some cases, this condition can be traced to stress or trauma in the patient's life. The following description from the Physician's Guide to Arthropods of Medical Importance (J.A. Goddard, CRC Press, 1993) further describes patterns and circumstances typical of delusory parasitosis:

*Sometimes an initial and real insect infestation precedes and triggers the delusion. ...the "bugs" may appear and disappear while they are being watched; they enter the skin and reappear and invade the hair, nose, and ears...The patients claim that the "bugs" are able to survive repeated insecticidal sprays and the use of medicated shampoos and lotions. Frequently there is a history of numerous visits to medical doctors and dermatologists. Lesions may be present, although neurotic excoriation (self-inflicted skin wounds) may be the cause. ...Out of desperation the victims may move out of their home, only to report later that the "bugs" have followed them there too. An affected person may be so positive of his infestation and give such a detailed description that other family members may agree with the patient. They may even be "infected" themselves, thus the delusion has been transferred.*

**Q. "I know I am being bitten by tiny bugs that you can't see! They come in and out of my skin. They're in my clothes! They jump on me! They only come out after 5:00 at night! Sometimes they change color. "**

None of these statements are likely to be true, based on the appearance and behavior of medically important arthropods. Taken individually, each one could be a reasonable (if inaccurate) response by someone who believes they are suffering from an arthropod infestation. However, when no insects or mites can be found by pest control professionals, the problem is confined to one or very few people, reasonable environmental or medical explanations have been ruled out, and a pattern of unreliable statements (such as the examples above) are produced by the victim, the possibility of self delusion must be considered.

**Q. I just want to get rid of this problem. What should I do?**

Here are some suggestions for dealing with an undiagnosed itching or "biting" problem: Vacuum and dust the premises thoroughly. Clean office equipment, such as

paper handling machinery, frequently. Vacuum cleaners with HEPA filters are most effective in preventing recirculation of allergens during cleaning. Change or clean air filters in air handling units monthly. Consider replacing standard fiberglass filters with electrostatic-type filters. Experiment with discontinuing use of any “new” laundry, dishwashing soap, air fresheners, cosmetics, perfumes or other personal care products. Reduce mold and mildew problems by installing a vapor barrier and vents in crawl spaces, or installing a dehumidifier and/or air conditioning in damp rooms. Correct plumbing leaks or condensation problems. Consult with your doctor about possible allergies or other undiagnosed medical conditions that might cause skin reactions. Consult with your doctor about possible adverse reactions to “new” medications. Have pets checked by a veterinarian for possible mite or scabies infestations. Consult with a pest control professional or Board Certified Entomologist concerning identification of suspected insect or mite infestations. Eliminate rodent or bird infestations with the help of a pest control professional. Seek professional psychiatric assistance for suspected cases of delusory parasitosis. Effective medical and psychiatric treatments are available for this condition through either physicians, dermatologists or psychiatrists.

## For more information

For more information about the various pests mentioned in this publication, contact your county Extension office. For general information about mental illness, contact the National Alliance for the Mentally Ill ( Department P, 200 N. Glebe Road, Arlington, VA 22203-3754; 1-800-950-6264; <http://www.nami.org/>) or the National Institute for Mental Health (301-443-4513; <http://www.nimh.nih.gov/>).

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