

Bird Mites as a Pest within Homes in Colorado

Wild and domesticated birds may be fed upon by a variety of mites and insects. A few of these, notably some of the “bird mites” and swallow bugs, may also bite humans when humans come in close contact with areas where birds nest or regularly roost.

The common bird feeding mites one can find in Colorado are northern fowl mite (*Ornithonyssus sylviarum*), chicken mite (*Dermanyssus gallinae*), and American bird mite (*Dermanyssus americanus*). All of these are external parasites of birds and may build high populations when birds are confined or remain in one location for extended periods, such as during nesting.

Life cycle of bird mites

Bird mites go through five life stages in their development: egg, three immature stages (larva, protonymph, deutonymph), and adult. During the last three stages mites will seek a blood meal. All of the bird mites are very small with northern fowl mite reaching a maximum size of about 0.02 inches (0.5 mm). Chicken mites are larger, about 0.06 inches (1.5 mm) and are most easily seen when engorged with a blood meal.

In the case of the northern fowl mite all stages take place on the bird host. Eggs hatch a day or two after they are laid producing a six legged stage (larva) that does not feed. Within about eight hours the larva molts to the protonymph stage, which does bite and feeds on blood. Five to seven days later, they become full-grown and reach the adult stage. The adult female will take one blood meal then lay a small number of eggs (typically 1-4). Adults are short-lived and the entire life cycle of the northern fowl mite, from eggs being laid until death, will usually be completed within a couple of weeks. Experimentally, well-fed mites have been observed to survive up to 2-3 weeks off their bird host when temperature and humidity conditions are favorable (moderate temperature, high humidity).

Chicken mite (also known sometimes as the poultry mite or red poultry mite) spends most of its time off the host birds, and in day time normally is hidden in sheltered areas of the nest, amongst surface litter where birds are confined, or in cracks and crevices. They emerge at night to feed. Feeding on a bird is normally brief, typically completed in about an hour, then the mite retreats to a sheltered area. There the mites will stay to digest the meal, resuming feeding at 2-4 day intervals.

In poultry houses, chicken mites will lay 4-8 eggs/week over the course of several weeks; on average a chicken mite can be expected to produce about 30 eggs in a lifetime. The first stage (larva) that emerges from the egg does not feed and molts within a day. Two immature stages (protonymph, deutonymph) follow and the adult stage is usually reached about a week after egg hatch. Unfed mites are black, gray or white. After a blood meal they may be bright red.

Chicken mites are substantially longer lived than is the northern fowl mite and are more resistant to starvation. Under moderate temperatures and high humidity (>70%) some mites

have been shown to be able to survive as long as eight months. However, survival is greatly reduced and far shorter in the conditions of low humidity which are normal in Colorado. Under the very low indoor humidity conditions typical of winter in Colorado it is unlikely chicken mites would survive more than a month or two in the absence of a live bird host.

The northern fowl mite and chicken mite are both common, and can be serious, pests of poultry operations, but they also can colonize some wild birds – including starlings, pigeons, house sparrows. American bird mite is known from some kinds of birds that may nest on buildings, such as robins.

All are ectoparasites that feed on the surface of the skin and *all are incapable of burrowing into the skin*. The only mites that do burrow into skin are *Sarcoptes* species, very different mites which include the scabies mite in humans and various mange mites that affect some wild and domesticated mammals. No mites, of course, can fly and move only by crawling.

Bites of humans

Bites of humans in homes usually occur when birds nesting on buildings leave the nest or die. In the abrupt absence of their bird host the starving mites may scatter and incidentally enter living areas where they may bite humans and pets. Late spring and early summer are often reported to be peak periods when bird mites enter homes. However, some bird mites may wander into living spaces when birds nest or roost for extended periods in/on the structure, potentially entering buildings in late summer or other times.

Individuals being bitten by bird mites may feel the bite as a small prick when it occurs. This is more likely to happen with the chicken mite, which is capable of taking a blood meal from a human or mammal host. The much smaller northern fowl mites are unable to successfully feed and draw blood from a human.

Skin reactions to the bite of any bird mite may develop from the saliva introduced by the mite as it attempts to feed. This may produce symptoms of itching, development of small bumps (papules) on the skin, and/or a slight rash. Since these reactions are related to an individual's immune response to the saliva there can be a substantial range in symptoms development; some people may not react with any symptoms from bites. Furthermore, there is nothing specific about the skin reactions resulting from bird mite bites that can distinguish it from many other, far more common skin conditions that do not involve insects or mites (e.g., allergic eczema). Positive diagnosis of bird mites as a cause for such generalized skin symptoms requires collection of the mite.

Although starving bird mites may bite humans and other mammals, the evidence is clear that they cannot sustain themselves and reproduce when humans are the only remaining host. Regarding other mammals that may be incidentally bitten, aside one report suggesting bird mites survived on pet gerbils, there is nothing to indicate other mammals can support

reproduction of bird mites. However, bird mites can survive and reproduce on birds that are kept as pets.

There are other mites that can develop on rodents - such as the tropical rat mite (*Ornithonyssus bacoti*) and house mouse mite (*Liponyssoides sanguineus*) – that may occasionally bite humans. Rodent mites are a problem in some areas of the country. However, rodent associated mites and subsequent biting of humans appears to rarely, if ever, occur in Colorado. *Cheyletiella* mites, associated with dogs, may also sometimes bite humans.

Detection of bird mites

The most positive diagnosis for bird mites would be to collect the mite when it was biting. Ideally this would be done by picking it off with a moistened finger or tiny brush then transferring it to a small vial of alcohol, which can preserve features used for identification. However, a piece of clear sticky tape can also be used to pick up the mite, with the tape then affixed preferably to a piece of thin clear plastic.

Trapping mites on a sticky surface may be more effective at capturing bird mites, particularly night feeding chicken mites. Small sticky traps, commonly sold by many hardware stores, can be used. Clear sticky tape, with the sticky surface exposed, can also capture mites. These traps should be placed strategically at sites where mites are most likely to pass. Areas around windows, particularly windows near nesting birds, would be suggested areas for setting traps. Cracks/crevices near areas where biting is suspected, such as areas in a bed frame or molding, may also be a good location to attempt to capture mites. Collected samples can then be examined under a microscope to determine if mites are present.

Control of bird mites

Prevention. Problems with bird mites in buildings originate from nesting birds residing in or on the building. Steps can be taken to deter nesting, such as blocking entrances to cavities in siding or roof areas, eliminating ledges and other sites where nests may be successfully constructed. All such efforts must be done before birds have established a nest as disturbing active nests can be a violation of the Migratory Bird Act and illegal.

Mites that are migrating from nests can be excluded by caulking/sealing entry points into living areas. Areas around windows are a particularly common point where mites may travel. If birds are known to be nesting on the building attention should be given to sealing off areas around the nest site.

Vacuuming. Vacuums can be used to eliminate mites that are present on exposed surfaces. Vacuums with crevice tool attachments can be used to eliminate chicken mites that hide in sheltered areas. After vacuuming the bags should be discarded to prevent the chance that some mites may escape.

Desiccant (drying) dusts. Certain powders that accelerate water loss by mites can be used to create barriers to mite entry and to kill mites. Perhaps best known is **diatomaceous earth (DE)**, which is made of the remnant “skeletons” of freshwater diatoms. Large deposits of DE occur in many areas of the world and can be mined. DE would be used as a fine layer of dust injected into cracks and crevices used by bird mites. A layer of diatomaceous earth should be able to provide a physical barrier for mites and also may kill mites by disrupting the water-proof surface covering of the mite. Diatomaceous earth products are commonly available through many retail stores.

Diatomaceous earth is a form of amorphous (non-crystalline) silicon dioxide, one of the most common compounds on earth and a primary constituent of quartz. In another man-made formulation silicon dioxide can be formed into *silica aerogel*, an extremely low density material that can provide excellent control of many insects (e.g., bed bugs). Its mode of action is as a “sorptive dust” that wicks up some of the protective waxy layer that prevents excessive water loss in insects and mites. Silica aerogel is applied to provide a very fine layer of powder, puffed into crevices and on surfaces the mites would travel. Presently there do not appear to be over-the-counter formulations available of silica aerogel; CimeXa is a silica aerogel product that is used by professional pest control operators, mostly for bed bug control.

Other Insecticides. Several insecticides commonly sold at retail outlets for household insects can be useful for killing bird mites. Most useful are various pyrethroid insecticides that can provide some residual control of mites for days after application. Active ingredients of such products include bifenthrin, cyfluthrin, cyhalothrin, cypermethrin, deltamethrin and permethrin. All are used appropriately as treatments only to cracks and crevices, targeting sites where mites travel or rest during the day.

Essential oil insecticides are also commonly marketed with various claims for being able to control insects in homes. One of these, thyme oil, has shown potential to control chicken mites in poultry houses.

Self-medication of the body. Unfortunately many people who are dealing with symptoms of biting or itching that they suspect are caused by bird mites will self-medicate in various ways. Often this may involve washing the body with alcohol, strong detergents, or even insecticides. None of these treatments will assist with eliminating a problem with bird mites in a home. Instead, such treatments often can aggravate the situation, causing skin damage that increases skin irritation symptoms. In extreme cases individuals may cause serious damage to their health with such treatments.

Mineral oils and most skin creams are used commonly to relieve minor itching and effects of some skin conditions, including itching caused by dry skin. As oils are commonly used as smothering agents for many kinds of mites and insects, these types of products likely would also kill any bird mites that happened to be on the skin and were covered with the oils or cream.

Concluding Comments

Eliminating the bird host will eliminate the production of new mites. In time, and in concert with the above management steps – sealing entry points into living areas, spot treatments with desiccant dusts or insecticides, vacuuming, reducing humidity - bird mite infestations will be eliminated in a building.

If symptoms of biting/itching thought to be caused by bird mites persist more than a few weeks, one should seriously consider alternative diagnoses of the situation. If problems persist more than a few months, an alternative diagnosis to bird mites must be considered probable.

Some alternative diagnoses involve insects or mites. In areas where rats and other rodents live in close proximity to humans, tropical rat mite or the house mouse mite is a possibility. (Note: rodent mites are very uncommon in arid areas of the country, such as Colorado.) Bed bugs can be found throughout most of North America and where cliff swallows are allowed to nest on buildings their relative the swallow bug can be a problem. Other insects and mites that can cause human biting in Colorado are covered in the publication [*Mystery Bites and Itches – Arthropod and Non-Arthropod Causes in Colorado.*](#)

Many other alternative diagnoses for itching and prickly sensations on the skin do not involve any kinds of insects or mites. These include various chemicals or particles that are skin irritants, various allergens and reactions to some kinds of drugs. More seriously, many kinds of medical conditions can produce symptoms that can be perceived as being caused by a biting mite. Proper attention to these medical problems will require the attention of a physician.

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