The oak leaf itch mite, *Pyemotes herfsi*, bites humans causing itching that can lead to secondary bacterial infections. The oak leaf itch mite may have originated from Europe and is closely related to the straw itch mite, *Pyemotes tritici*, which also bites humans. The oak leaf itch mite was first detected in the Midwest in 2004, and was responsible for widespread occurrence of itching bites from 2014 through 2017. In addition to biting humans and pets, oak leaf itch mites have been found feeding on the eggs of the 17-year periodical cicada (*Magicicada* spp.)

**Biology**

The oak leaf itch mite is 0.2 mm (1/125 inch) long (Figure 1) and difficult to see with the naked eye. The oak leaf itch mite is associated with the oak marginal leaf fold gall, produced by the midge gall-former, *Macrodiplosis erubescens* (Diptera: Cecidomyiidae), on pin oak (*Quercus palustris*) leaves. In spring, adult midges emerge from hibernation. Mated females fly to pin oak trees and lay eggs on the newly emerging leaves. Larvae hatch from eggs and inject a hormone-containing saliva into the leaf margins or edges, causing them to curl upward (Figure 2). Mature midge larvae develop in the leaf folds, drop to the ground in late fall, and find protected places to spend the winter. Pin oaks are highly susceptible to the midges; however, red and black oaks are also susceptible. The gall-forming midge has one generation per year.

The mated female oak leaf itch mite enters the leaf fold through a small opening. The female then injects a neurotoxin along with saliva that paralyzes the midge larvae so she can feed (Figure 3). A single female can produce between 200 and 300 eggs. Females deposit eggs into a pouch or ovisac that forms at the end of the abdomen (Figure 3). In about seven days, larvae hatch from eggs. Many larvae can be produced within a short time (less than one week) and eventually develop into adults. Males mate with females and then die. The entire life cycle, from egg to adult, is approximately seven days. Because of the high number of offspring produced and seven-day life cycle (egg to adult), the oak leaf itch mite has one of the highest rates of population increase. Cooler temperatures and moist conditions can increase population growth.

Figure 2. Folds caused by the oak marginal leaf fold gall-former.

![Figure 1. Close-up of oak leaf itch mite. (Photo by Eric Erbe, USDA Agricultural Research Service, Bugwood.org)](image1)

![Figure 3. Left: Oak leaf itch mite feeding on a gall midge larva. (Photo by Matthew McKernan, Horticulture Agent, Sedgwick County); Right: female oak leaf itch mite with ovisac protruding from the abdomen. (Photo by Rick Grantham, Oklahoma State University)](image3)
Oak leaf itch mites typically emerge from the gall folds from late July through late fall but only on pin oak trees infested with the oak marginal leaf gall folder. The mites eventually fall from pin oak trees. It is estimated that nearly 400,000 oak leaf itch mites per day can fall from a large pin oak tree. The mites can be carried by wind for many miles before landing on humans and pets that will soon be bitten. Oak leaf itch mites overwinter in protected areas or within leaves/leaf litter in the ground.

Bites and Symptoms

Oak leaf itch mite bites occur on the upper body, usually the neck, shoulders, and chest because the mites drop from the canopy of gall-infested pin oak trees. Oak leaf itch mite bites are different from chigger bites, which occur where clothing is pressed against the body such as underneath belts, underwear, and socks. Once oak leaf itch mites land on a human, they start biting, and symptoms appear in 10 to 16 hours. The bites of the oak leaf itch mite appear as raised, red areas with a small, centralized blister. Bites are very itchy and can be painful when scratched. Scratching oak leaf itch mite bites can lead to secondary bacterial infections. Problems associated with oak leaf itch mites bites are more serious in the fall during gardening activities or when handling mite-infested oak leaves. People are susceptible to oak leaf itch mite bites when:

- sitting under gall-infested pin oak trees
- raking pin oak leaves
- handling pets (dogs and cats) that have been around gall-infested pin oak trees

Prevention

Repellents used to prevent bites from mosquitoes, chiggers, and ticks are not effective against the oak leaf itch mite. There are very few strategies to prevent humans from being bitten by oak leaf itch mites. Spray applications of miticides (acaricides) to pin oak trees do not reach mites protected within the leaf folds. Tree Tanglefoot (Figure 4) can be applied in a 2-inch band around pin oak trees about five feet from the base. This sticky substance captures mites as they try to move up pin oak trees to reach the leaf folds.

One of the best ways to mitigate being bitten by oak leaf itch mites is to reduce time spent under or near pin oak trees infested with the oak marginal leaf fold gall-former. Bathing thoroughly after spending time near a gall-infested pin oak tree and washing clothing daily can reduce the likelihood of being bitten.

Wear rubber gloves and a long-sleeved shirt when raking up oak leaves in the fall as dried oak leaves can harbor oak leaf itch mites. Avoid using a blower to collect oak leaves, which may inadvertently spread or distribute the mites.

Doctors recommend the following for relief from itching and other symptoms. Some of these medications require a prescription:

- Cortisone cream
- Claritin (10 mg daily)
- Other antihistamines
- Calamine lotion

Figure 4. Tree Tanglefoot.

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Raymond A. Cloyd
Horticultural Entomology and Plant Protection Specialist