



Extension

# Pest e-alerts



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## **Drywood Termites: Occasional Hitch-Hikers into Oklahoma**

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### **Introduction**

During the past few months several pest management professionals in Oklahoma have encountered drywood termites infesting wood components of homes and other structures. These termites are not native to Oklahoma. However, occasionally they are transported into the state within infested wood and other materials such as shipping pallets, furniture, firewood, lumber, motorhomes, potted plants, cardboard boxes, landscape timbers, and just about any wood product. Because they do not require contact with soil, the normal visible mud tubes built by subterranean termites (native in Oklahoma) on buildings, wood, and concrete surfaces are not present as an indicator of a drywood termite infestation.

Most wood components in buildings and other structures contain enough moisture to meet the water needs of drywood termites. Therefore, these termites live inside the wood, slowly eating away and excavating the internal galleries while often leaving a thin intact surface wood veneer. So, their damage is usually not noticed until extensive interior destruction of wood has occurred. They feed on both softwood and hardwood building components, as well as any dead natural woody materials.

### **Biology and Behavior**

Due to their cryptic nature, drywood termites are usually not noticed until swarmers exit and disperse from a colony and are seen flying around a building room or exterior open space. The number of termites in a swarm is small, often less than 100 flyers. This is very different from subterranean termite swarms that usually number many thousands of flyers. Following swarming, usually during warm spring weather, a male and female pair together and find a suitable nesting site in dead trees, stumps, downed logs, non-preserved-treated wood building components and wooden decks, wood building siding, or other wood building components or cellulose materials. However, in warm coastal climates of the southern USA, swarms can occur

at any time during the year. After chewing into the wood a new reproductive pair excavates their living chamber hidden inside the wood where the female begins her egg-laying life. It takes a colony four or more years to reach enough numbers that new swarmers form and exit the colony through small holes chewed into the surface of their wooden home. These small holes (1/16- to 1/8-inch diameter) are plugged with frass and wood fibers after the termite flyers exit, and become almost invisible and nearly non-detectable at that time. Therefore, it is difficult to determine where the swarmers were located. **Figure 1** illustrates the geographic locations where indigenous drywood termites are normally found in the USA.

### USA Drywood Termite Natural Distribution Map



**Fig. 1.** Drywood termite natural distribution (red shading). [Courtesy USDA-Forest Service]

Galleries and chambers formed by drywood termites are not packed with mud or debris as is done by subterranean termites, as drywood termites are good housekeepers. They keep their galleries clean, and eject fecal pellets out of their nests through small holes chewed in the wood surface. Thus, one sign of a drywood infestation is a scattering or small pile of small fecal pellets building up on a window sill or on the floor along baseboards, thereby indicating the general location of the nest (**Figs. 2, 3, 10, 11, 12**). Drywood termites feed both across and along the grain of the wood, and sometimes store fecal pellets in waste chambers rather than eject all of these pellets from the colony workings (**Figs. 10, 11**).

When their swarming flight ends, a male and female pair up and look for a crack or split in a nearby wood source to enter and begin excavating their new colony workings. They discard their wings soon after landing as they have served their purpose to disperse the termites of the swarm. Therefore, if termites swarm inside a structure, their equal-sized discarded wings are often found on window sills, on the floor near a sliding glass patio door, or other area with a strong light source. Note that the wings of one drywood termite species (*Incisitermes minor*) are much darker in color compared with the almost clear and transparent subterranean termite wings that pest management professionals encounter during their building inspections. Bodies of *I. minor* swarmers are dark brown-to-black and rust two-tone in color (**Figs. 2, 3, 4, 7**).



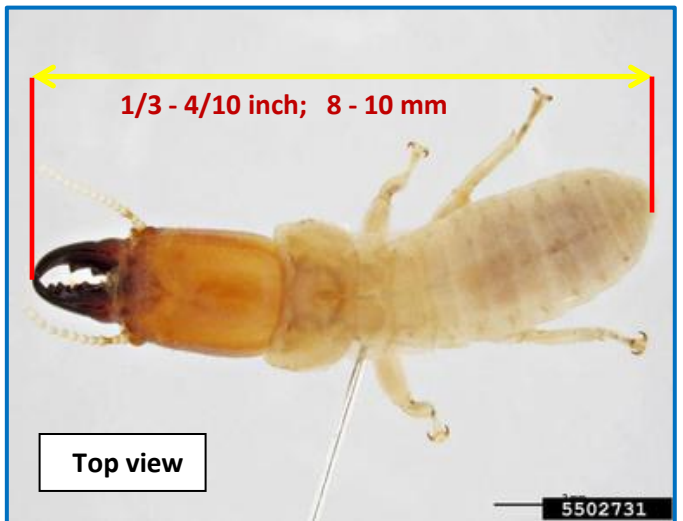
**Fig. 2.** Drywood termite swarmer after discarding wings [Mohamed El Damir; Bugwood.org] (*I. minor*)



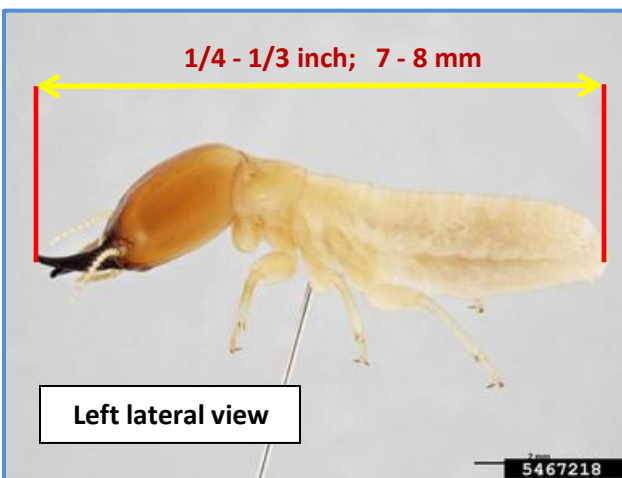
**Fig. 3.** Drywood termite swarmer with fecal pellets (frass); [Ansel Oommen; Bugwood.org] (*I. minor*)



**Fig. 4.** Drywood termite swarmer, *I. minor* [Ansel Oommen; Bugwood.org]



**Fig. 5.** Drywood termite soldier-Top view, *I. minor* [Pest and Diseases Image Library; Bugwood.org]



**Fig. 6.** *Incisitermes snyderi* soldier. Shorter length than *I. minor*. [Pest and Diseases Image Library; Bugwood.org]



**Fig. 7.** *I. snyderi* swarmer (alate) top view. Note light yellow-tan body and clear wings. Overall length including wings = 7/16-15/32-inch (11-12 mm). Antennae are not included in body length measurements. [Univ. Florida IFAS Extension]

## **Species Identification**

The two drywood termite species most likely to find their way into Oklahoma are *Incisitermes minor*, the Dark, Western Drywood Termite, and *Incisitermes snyderi*, the Light, Southeastern Drywood Termite. As their common names suggest, *I. minor* swarmers are dark in color with sooty-colored wings (Figs. 2, 3, 4, 8, 9), whereas *I. snyderi* swarmers have light yellow bodies with clear wings (Fig. 7). Soldier bodies of both these termites are pale-cream in color with orange-brown heads, but an *I. minor* soldier is longer in length than an *I. snyderi* soldier (Figs. 5, 6).

## **Looking for the Infestation – Inspections**

Homeowners usually first notice drywood termites when a swarm occurs, especially inside their homes. Swarmers individually emerge from small exit holes ("kick-out" holes) they chew in wood surfaces and fly away. They are attracted to light and often land on windowsills, near glass patio doors, or around lamps. They quickly discard their wings and search for a cryptic location to begin a new colony. Collecting these wings and sending them to OSU's insect diagnostic laboratory in Stillwater will result in positive identification of drywood termites as they are different from subterranean termite wings.

Accumulation of fecal pellets (frass) is a sure sign of an active infestation. Fecal pellets are small in size (1/32-inch; 0.8-mm long) with six fluted sides down their slightly elongated axis. Pellets are often blunt at one end and slightly pointed at the opposite end. Although drywood termite galleries do not contain mud, some of the fecal pellets are usually found within the dry, clean galleries (Figs. 10, 11, 12).

## **Detection Methods**

Visual inspection and location of "kick-out" holes (when possible) will help pin-point a drywood termite infestation. Additional electronic devices and tools are also useful in indicating possible infestation locations. These devices may include hand-held moisture meters, acoustic listening devices attached to the wall or wood surface, boroscope fiber optic viewers, Termatrac® microwave emitters, IR heat detection devices, laser thermometers, CO<sub>2</sub> (carbon dioxide) and CH<sub>3</sub> (methane) gas detectors, Walabot®*rf* technology, and X-ray scanners. Use of these devices can locate and validate an active infestation.

Wood surfaces, especially painted surfaces, may appear "blistered" where drywood termites have excavated galleries just below the surface. These surfaces may be spongy to the touch and are easily penetrated by a flat-head screwdriver or knife blade. Typical wood damage is shown in Figures 9, 10, and 12.

## **Prevention and Control**

Because drywood termites swarm in low numbers and outside swarms are often not noticed, they infest our structures without being observed. Some homebuilders construct termite-resistant structures using concrete and steel components, and minimizing any exterior wood. All exposed wood is sealed where needed and painted to create a non-hospitable surface with few cracks or crevices for the termites to inhabit. Wooden components that are commercially treated with a wood preservative that make the wood inedible are also resistant to termite invasion, both drywood and subterranean species. All potential entry points like attic or crawl space vents should be intact and caulked around their edges. Applying caulk around exterior window frames and door frames and around pipes protruding through exit holes in the exterior wall can help exclude termites and other pests. Weep holes in brick façade buildings should be screened over with metal window screen, or have commercial plastic plugs inserted. These commercial plugs have very small ventilation holes that termites cannot fit through, but still allow moisture to escape the interior wall voids. Damaged wood

should be replaced with preservative-treated, non-palatable wood that termites cannot eat. For active infestations, wood can be drilled and injected with a commercial pesticide where the drywood termite galleries are located. Several insecticides are labelled for this use and can be found on the internet. All pesticides must be used in strict accordance with the directions on their labels. However, it is always better to employ a licensed pest control company with pesticide applicators certified for structural pest management. They have the proper equipment, effective labelled pesticides and experience to solve a termite problem. The challenge is to locate all the possible drywood termite infestations that may be in several different places in the structure. Regular follow-up inspections after treatment are always prudent.

Insecticidal dusts and liquid insecticide foams can be injected into termite galleries through drill holes. Because drywood infestations in wood are generally not widespread, local spot treatments for each infested area can be done. Usually, an entire attic area or complete wooden beam or wooden component is not completely infested. The use of the detection devices mentioned above helps determine the extent of an infested area.

An effective but expensive method to eradicate all pests from a structure is gas-fumigation of the entire structure. The entire structure is enclosed within sturdy tarps sealed to keep a toxic gas inside and around the immediate perimeter of the structure for a set period. The gas diffuses throughout all areas of the structure including into the drywood termite infested wood, killing the termites and other pests in the structure. The structure being fumigated remains under constant surveillance during the entire procedure to ensure no people or animals become exposed to the fumes. Once the fumigation is complete and the gas is allowed to completely dissipate after removal of the enclosing tarps, there is no residual or long-term protection against a re-infestation by termites or other arthropod pests. Only highly trained pest control professional personnel that are licensed and certified to perform structural fumigation in Oklahoma can perform such a treatment.

As a reminder, it is always important to follow label "directions for use" regardless if a professional pesticide applicator or homeowner uses a pesticide product. Because pesticides are toxic by their nature, following the label and using the required personal protective equipment (PPE) is essential for reducing risk of pesticide exposure to the pesticide user and any nearby personnel or animals.



Fig. 8. Winged and de-winged Swarmer, *Incisitermes minor* [Ansel Oommen; Bugwood.org]



Fig. 9. Drywood termites feeding on tree branch. Note hollow, mud-free galleries in wood. *Incisitermes minor*

[Ansel Oommen; Bugwood.org]



**Fig. 10.** Drywood termite fecal pellets (frass) stored in a hollowed-out gallery in a wood board. Note that galleries are not packed with mud like found with subterranean termites.

[Whitney Cranshaw, Colorado State University; Bugwood.org]



**Fig. 11.** Fecal pellet small size and six fluted sides are a sure sign of drywood termites.

Ansel Oommen; Bugwood.org



**Fig. 12.** Drywood termite fecal pellets. Pellets are the approximate size of small sand particles, with six fluted sides. [Whitney Cranshaw, Colorado State University. Bugwood. org]. See **Figures 2 and 3** that show fecal pellets next to drywood termites.

### **Summary**

If you suspect that your home has drywood termites or have found definite signs of activity, it is necessary to take quick control action as these termites are persistent and will not go away. However, drywood termites work much more slowly than subterranean termites, but over several years they can cause significant damage to wood (**Figs. 9, 10, 12**). Contact a professional pest management company to schedule a thorough inspection, and discuss treatment options with the goal of eradicating drywood termites from your home and other wooden structures. Termite management requires specialized equipment and professional knowledge and experience to successfully defeat this persistent wood-destroying pest.

To access OSU Fact Sheets go to <http://osufacts.okstate.edu>. Click on "Insects and Diseases-Topical List", then click on "Integrated Pest Management-Insects" or "Home & Garden" and scroll down to EPP-7308, *Choosing a Pest Management Company to Protect Your Home Against Termites*, or EPP-7312, *Household Pest Control*. In addition, Pest e-Alert Vol. 16, No. 10, Termites: Spring Swarming Season in Oklahoma, provides additional information concerning subterranean termites. Also, many termite information sites are found on the internet.



## Oklahoma Cooperative Extension Service

The pesticide information presented in this publication was current with federal and state regulations at the time of printing. The user is responsible for determining that the intended use is consistent with the label of the product being used. Use pesticides safely. Read and follow label directions. The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Cooperative Extension Service is implied.

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