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Deck Repair

‘Mountain Deck Destroyers’: Fungus, Termites & Beetles

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(this article is optimized for viewing on laptops as well as normal desktop screens, and on both Apple and Windows computers, as well as for printing. You should be able to see the whole page without scrolling)

Quick! Can you name the three types of termite we have in the Santa Cruz Mountains? The three types of beetle? The three types of fungus? No? Then read on!

This article deals with the 3 deck destroyers we see here in the Santa Cruz Mountains and is followed by a list of sources of further information.

Every deck has termites, fungus or beetles. Don't panic! This article should allow you, with some more research on your own, to talk knowledgeably with your pest inspector, real estate agent, and the person buying your house. That is my aim with this short article on 'Deck Destroyers'. I hope you find this useful.

Since termites enter through wood that is rotting by fungal attack, let's start with fungus.

Fungus

The terms fungus, mold, rot and mildew are often used interchangeably. Effectively, the deck boards and joists rot because of fungal attack.

4 types
There are four types of rot. We will deal with each of these in turn, then talk about causes of rot, and preventative measures.

- **Black Mildew**
- **White Rot**
- **Brown Rot**
- **Green Mold**

The first to appear is black mildew, and usually the last is green mold. Let us deal with each of these in turn:

Black Mildew

If you see black patches or many black spots, you have mildew, a form of mold caused by damp. I often see it on new unstained decks, or on new decks that have been stained with a cheaper stain with little or no fungicide built-in. You can temporarily remove this with dilute bleach and some scrubbing on the top surface. On underside of boards, I would recommend a proprietary deck cleaning compound made for decks (which tends to be more glutinous and sticky, so it survives rains longer. Nasty stuff to apply over your head, however!

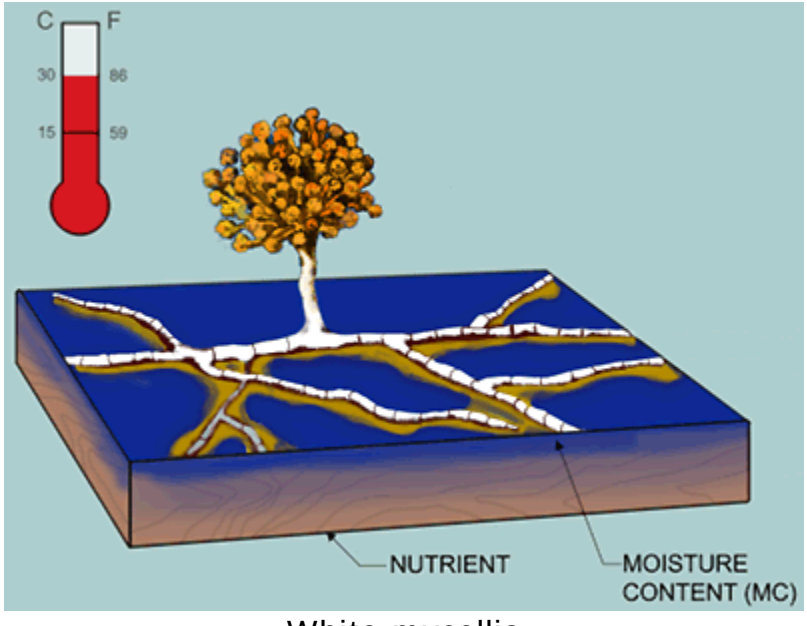
The picture below shows mildew spots on the left; on the right the boards after pressure-washing and fungicide.

White Rot

Look underneath a deck and you will often see white rot (rarely on the top surfaces because it is attacked by the UV in sunlight). The fungus grows through the wood in microscopic thread-like tubes that eventually form a white sheet on the surface called a 'mycellium' (plural: mycellia). As it grows, the fungus destroys the structural properties of the wood by secreting enzymes that turn wood cells into glucose, which the fungus uses as food'.[1] White rot makes the wood look bleached, with black zone lines bordering the bleached area. In the final stages of a deck's life the wood become very spongy. This is the most common form of rot here in the mountains. Most deck joists get spongy on their tops first, right under the boards; this is because of water standing between the boards and the joist. The decks are still useable until about the first ¾" is spongy; then it is time to replace the joists and/or the deck. You can usually check the state of the joists by pressing your finger against them, or gently using a screwdriver.

[1] Source: The Termite Report, Donald V Pearman.

Typical white rot on the underside of a deck looks like this as the mycellia spread:



White mycellia

Brown Rot

Brown rot, which is a lot less common in the mountains, is caused by fungi which secrete enzymes which destroy the carbohydrate structure of the wood. This is seen as dark wood that is cracked across the grain into cubic pieces. This can be quite shocking when the boards break up under the touch. Usually the ends of the deck boards show this first, as this is where the water and the rot enter the wood grain.

The picture below is of a cross-section of brown-rotted wood:

 [2]

[2] Heino Lepp

Green Mold

Green mold is essentially algae/lichen and is not a fungus as such. Green mold doesn't by itself cause structural damage but can show that conditions are ripe for other rot. In my experience, a deck with extensive green mold on it is usually in a bad way.

Causes of Rot

The cause of rot is moisture. Sources are ground contact of the deck supports, leaking gutters, over-watered flowerpots, poor ventilation underneath the deck, and deck boards too close together.

Preventative Measures against Rot

Prevention of rot is by keeping the area dry and making the environment hostile. Here are some tips:

- Ensure adequate ventilation
- Check for good drainage
- Use flashing where the wall meets the deck. This will reduce standing water and ingress into the house itself.

- Remove tree debris from between the deck boards. Some owners with boards too close together even use their rotary saws to open out the gap between the boards.
- Make sure the deck is re-stained regularly. Whenever it is gray, or before. The stain acts as a fungicide and a moisture barrier.
- Apply fungicide or dilute bleach regularly. Bad fungal attacks below the deck should be treated with a proprietary deck fungicide, at least.
- Clean out gutters before the rains so they don't pour all over your deck. Consider fitting "Guttergards."

If you are having a new deck built, insist the boards be 3/16" or ¼" apart. This makes it easy for tree debris to fall out and allows for swelling. ¼" may seem a lot, but a 2x6" board will often swell up 1/8" each side (=1/4") during the winter.

One alternative, which is messy and very toxic is a 30% copper napthenate solution. A well-known trade name is 'Copper Green'. Originally in green liquid form, it can with some effort now be found in clear form, which makes it less visible. Be careful: this is a very toxic, carcinogenic chemical which is going to drip on you while you are applying it. Respirators and full skin covering are a must:

Decks tend to be made of redwood because it is much more resistant than Douglas fir, for example. Redwood has high concentrations of naturally-occurring fungus-resistant chemicals, but is still vulnerable to rot, of course. Use of ironwood/ipe (a very hardwood) or a composite deck board like Trex are alternatives, though these are best used for new decks.

Termites

Termites strike terror in every home-owner in the mountains, as if they are voracious creatures with appetites of Piranhas. However, many an unnecessary deck replacement project has been started at vast expense because of a lack of awareness of termites. Usually it is the newcomers from Cupertino who have just bought a house and feel the need to hack out all sign of termites! This is rarely necessary or financially worthwhile.

3 types

There are three types of termites in our region:

- **Subterranean termites**
- **Drywood termites**
- **Dampwood termites**

Often after the first spring or fall rain, a swarm of winged termites will take to the air looking for a favorable site. Once arrived, they lose their wings, mate and begin boring into wood (usually the softer bits) to make a space for them to produce their young.

They tend to chomp away at different parts of the house, some are more partial to dampness than others, they leave different signs of presence, and need different techniques to spot them and eradicate them. Let’s look at each of them in turn.

Subterranean termites

Subterranean termites cause most of the damage done by termites in The US. Unlike other termites, they need to be out of the air and in damp surroundings and make their own travel tubes, or ‘shelter tubes’, out of their own excrement to keep themselves out of the drying air. These shelter tubes can be as high as a foot as they seek wood. They enter decks by fining areas of wood in contact with the ground.

Inspectors look for the distinctive shelter tubes, which are only made by subterranean termites.

Preventative measures against subterranean termites include:

- Correct all earth-wood contact, including wood posts embedded in concrete.
- Install a mechanical barrier between earth and wood.
- Chemical treatment of the wood substructure.
- Chemical treatment of the ground around substructure.

Drywood Termites

Dry wood termites, unlike their other termite brethren, do not need contact with soil or a constant moisture source to flourish. They exist in smaller colonies than subterranean termites which means they do not cause so much damage.

They tend to produce large chambers which cut across the grain of the wood, and connect these chambers with small tunnels.

Inspectors look for piles of fecal pellets which are pushed out of the wood, and the ‘kick-out holes’ from where they came. Sometimes these are filled with distinctive plugs. A hollow sound can be heard when you tap the wood.

Preventative measures include tent fumigation of the deck with a toxic gas, usually methyl bromide, or removal of damaged material.

Dampwood termites

Most Dampwood termites do not require contact with the ground, so long as there is continuous source of moisture.

Unlike Drywood termites, they tend not to kick out their fecal droppings but live among them.

They tend to work systematically through a deck or a building and can do great damage before they are detected. A good way to spot them is to look around for a continuing source of moisture, such as poor drainage from gutters, or over-watering of planters.

Preventative measures are to dry out the wood (which will make them leave).

Beetles

3 types
In general there are three types of beetles:

- **Powderpost Beetle,**
- **False PowderPost Beetle,**
- **Furniture Beetle.**

Beetles are much les of a worry than termites than fungus, often preferring hardwoods to redwood.

All these beetles chomp their way through wood making a series of ‘galleries’. Into these, as they go, they deposit their excrement, called ‘frass’ in fine powder form.

PowderPost beetles are only about 1/8” long and seldom seen. False PowderPost beetles are rarely found in the Santa Cruz Mountains, but are between 1/8” and 1” long. Furniture beetles are 1/3” long and reddish-brown.

You can spot these beetles by looking for small 1/16” exit holes, and gently hitting the wood with hammer and spotting the fine powdered frass come out.

In a deck situation it can be hard to just replace the wood because the beetles have often left their galleries by the time you spot them. For houses, tent fumigation with methyl bromide is used.

Summary

You can now see that moisture is the big problem you need to avoid. The damp allows fungus to attack the deck, softening it up for the termites.

Preventatively reduce the effect of dampness by:

- Re-staining the deck to
- Applying fungicide,
- Improving drainage: from gutters and planters.

If you can, make your deck free-standing, that is separated from the house, so that you are not providing a direct access path for termites and rot from your deck into your house.

And remember, every deck has rot and termites to some extent. Don’t panic. Just take some methodical measures to slow down and prevent their spread.

Further Information

- *'The Termite Report: A Guide for Homeowners & Home Buyers on Structural Pest Control'* by Donald V. Pearman is your best resource for information on both deck and building pests. I am indebted to it. You can buy it for just $20 on Amazon.com. I highly recommend it.

- More information on rot can be found at: www.wbdg.org/design/env_iaq.php

- A good article on beetles is: http://www.ent.orst.edu/urban/powderpost_beetles.html

- Of course, check out Google for more directed information. Now that you know the terminology and what to search terms to use!