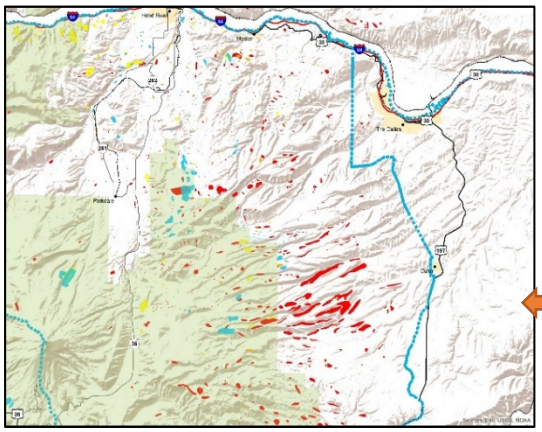
Oregon Department of Forestry
Fuels and Fire Behavior Safety Message

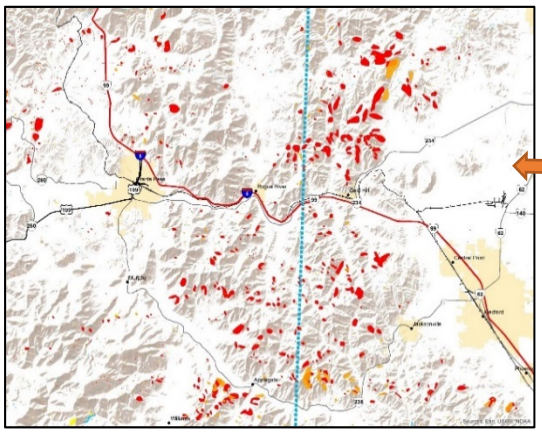
ODF Private Forests – Forest Health
ODF Fire Environment Working Group
July 2016

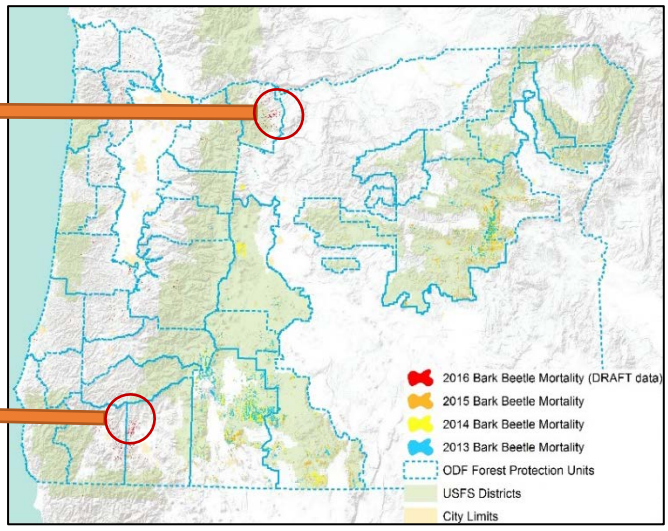
ODF Forest Health Monitoring Specialists have surveyed increased tree mortality caused by bark beetles and wood borers in some areas of Oregon, exacerbated by drought conditions over the past three years.

Surveyed areas showing heightened levels of mortality are to the **south of The Dalles** where north slopes of pine have been particularly hard hit **and the region between Medford, Grants Pass, and the Applegate Valley** where many Douglas-firs have been killed in the last year. Additional areas may become apparent as the annual survey progresses.

Over the past three years much of Oregon has experienced abnormal levels of water stress and higher than average temperatures. This has resulted in an increase in tree stress leading to weaker defensive reactions to attacks by native bark beetles and wood borers.







Additional damage has been caused by secondary agents including canker diseases and various small stem feeding insects. While tree mortality from these insects is not uncommon or abnormal, the number of trees dying at the current time is above average for the areas of concern.

There are three stages that a tree moves through before and after a bark beetle attack. First the tree is in the green stage, the tree is still alive and functioning as a normal tree moving water from the soil to the atmosphere. Once the tree is infested with beetles and has died it moves into the red phase where there are still needles on the tree but they do not receive any moisture from the soil. At this point they are one hour fuels suspended in the air. The third and final stage is the grey stage where the needles fall and the bole begins to decompose and eventually falls.

There is a lag period for insect activity and drought. It takes a few years of drought for the beetle population to build to a point and the trees to become stressed enough that the system falls out of balance. Much of Oregon has only reached this point in the last year or two. This is a cumulative effect that is being felt which does not reset each year with winter precipitation (which helps but is not enough to undo the damage done).

These stressful conditions can also decrease the foliar moisture content and create fuel conditions that are more likely to result in torching, active crown fire, and more rapid fire spread. There is a redistribution of fine fuels once trees reach the grey stage and models suggest that spread and intensity will decrease below green stage levels.

In light of the impact to forest fire fuels and potential fire behavior, **ODF's Fire Environment Working Group** has offered some **safety tips for Forest Managers and Firefighters**.

Tips for Forest Managers

- Monitor conditions, such as live to dead ratio and fuel moisture within areas with beetle infestation.
- Communicate the potential for increased fire behavior and the mitigation steps to local and incoming resources that may work within the infested area.
- Have pre-identified plans when possible i.e. an appropriate preplanned resource response to incidents that occur within these areas such as increased resources response or auto launch of aerial resources.
- Communicate any additional steps that are known to mitigate the increased risk.

Tips for Firefighters

- Expect quick transitions from surface fire to crown fire.
- Post additional lookouts when working within infested areas.
- Anticipate changes in fire behavior before they occur and communicate changes in behavior as they happen.
- Emphasize and have a well-planned escape route that is known. Plan for increased flame lengths therefore plan for an increased safety zone size.
- Be familiar with the area before incidents happen.

2016 Forest Health Aerial Survey Update

View the survey in an interactive map via smartphone or direct link. Originally a black bear damage survey, now includes all damage agents.

http://usfs.maps.arcgis.com/apps/MapJournal/index.html?appid=6364c013e5554075aebe798e65184e46