



*Pests Affecting Forest
Health in the Columbia
Gorge*

Todd Murray & Nick Aflitto (WSU Extension)

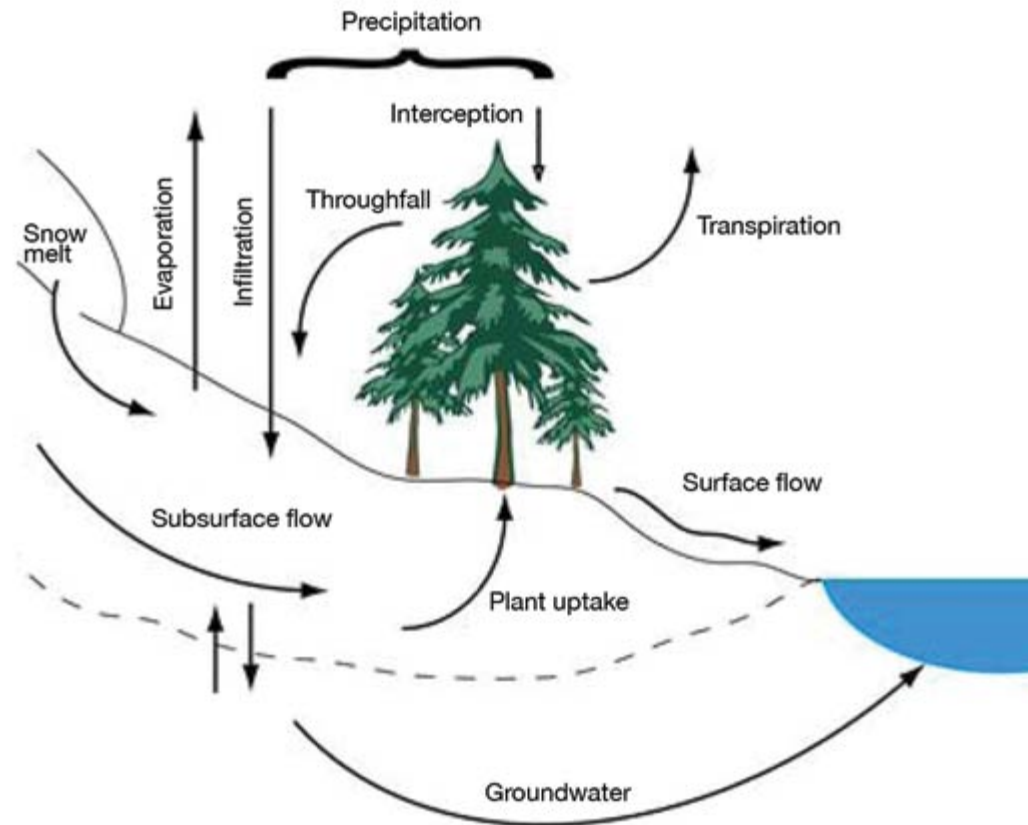
Glenn Kohler (WADNR)

Chet Behling (ODF)

Rob Flowers (USDA FS)

Beth Willhite (USDA FH)

Healthy Forests and Water Quality



What's up with the pine trees?



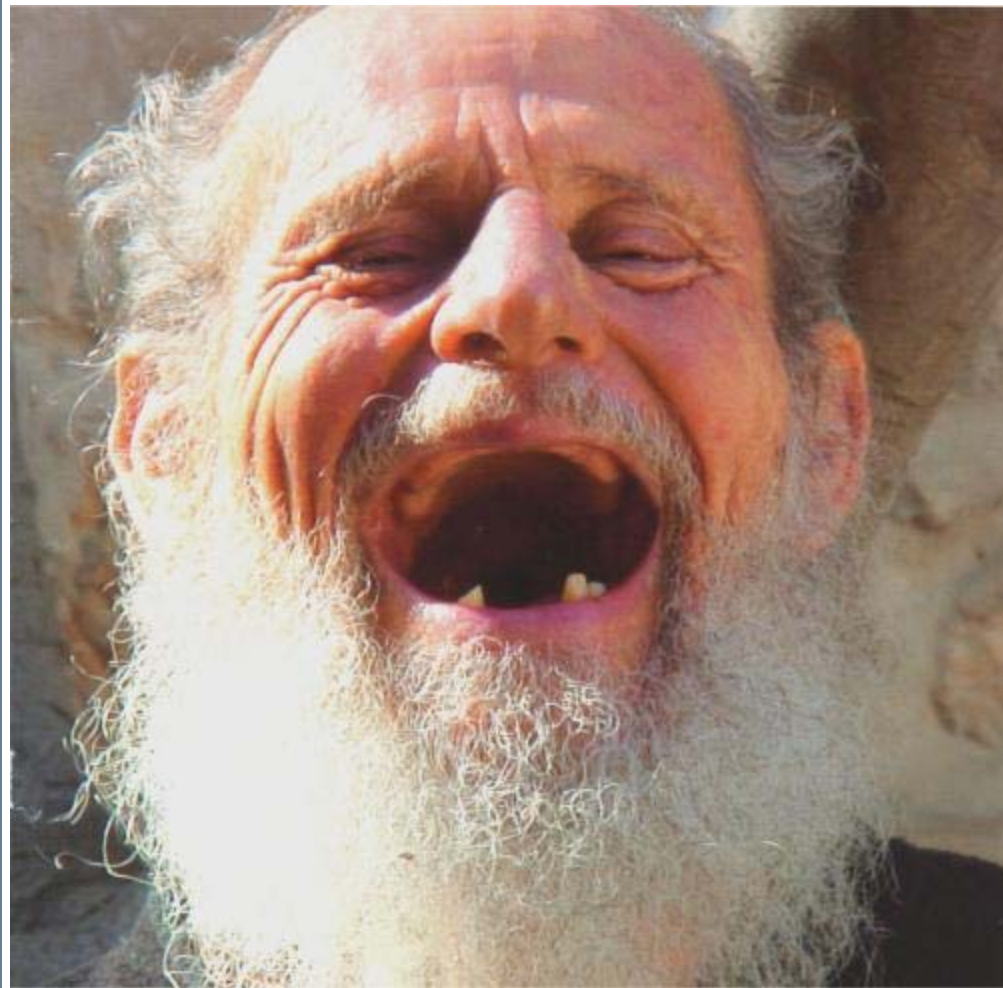
Underwood Landowner calls in 2009



Fires in the area – 2008 Bluff Fire



February 2010



“I’ve lived here all my life and I ain’t never seen anything kill mature pine trees before. This has to be like them bugs in Colorado! You gotta come out here and kill’em all! I pay taxes dammit!”*

*Skamania County resident dramatization

Underwood – Washington State - February 2010

Old Guy + Dead, but otherwise vigorously growing trees = Suspicious!



Underwood – Washington State - February 2010



California Fivespined Ips (*Ips paraconfusus*)



J. Labonte ODA

California Fivespined *Ips* (*Ips paraconfusus*)

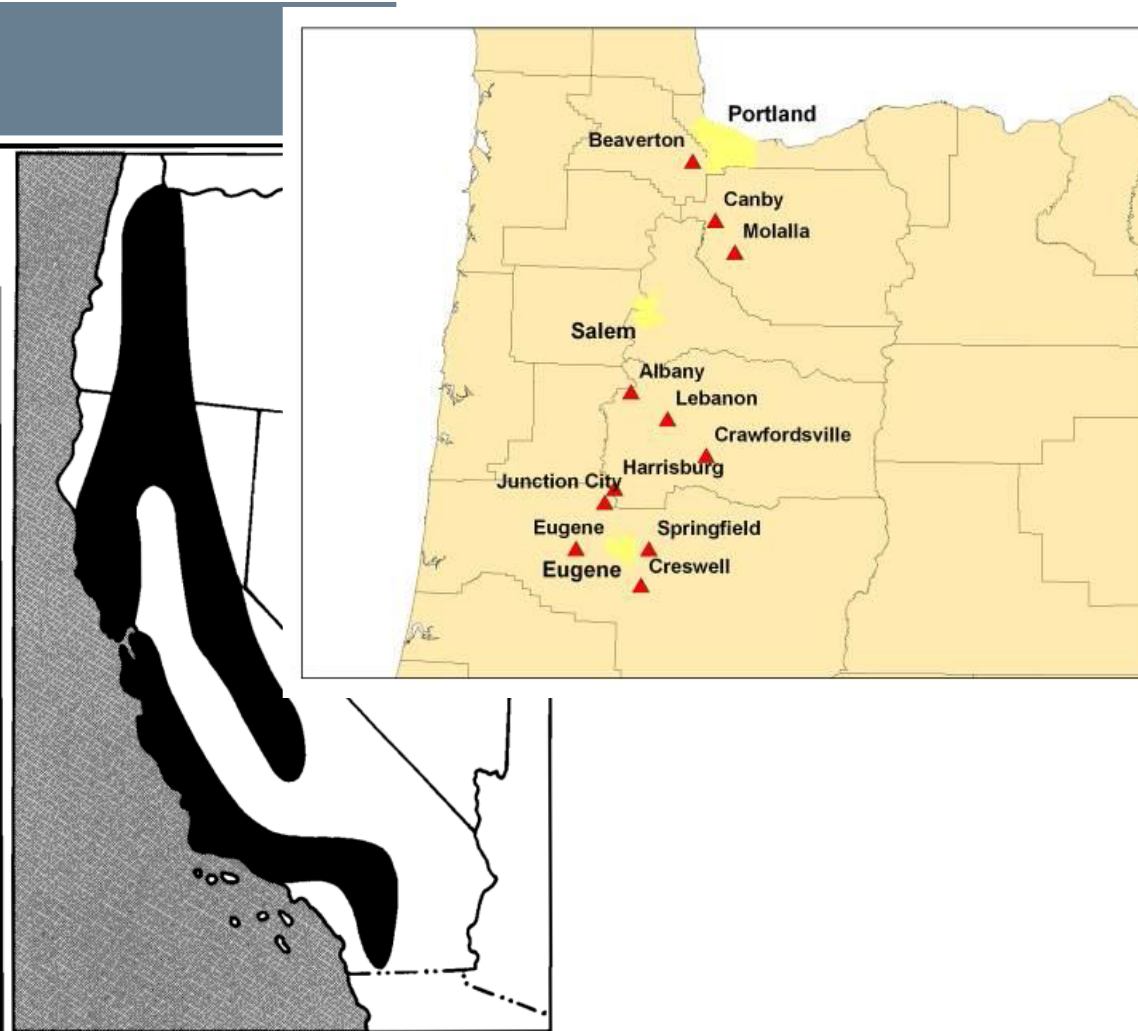
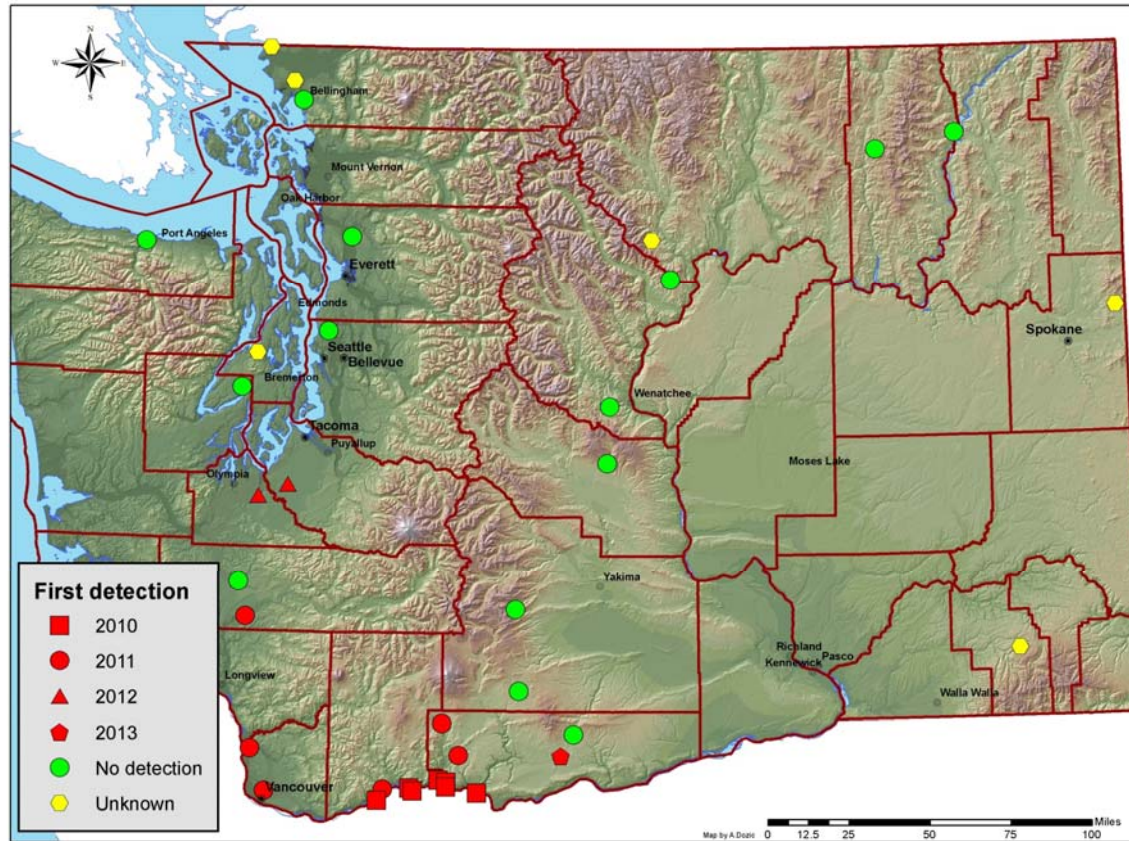


Figure 1—The range of the California fivespined ips.

- Native to California and W. Oregon
- Not known to occur East of the cascades or in WA

Current Distribution



Symptoms and Signs of damage



Y-Shaped Gallery

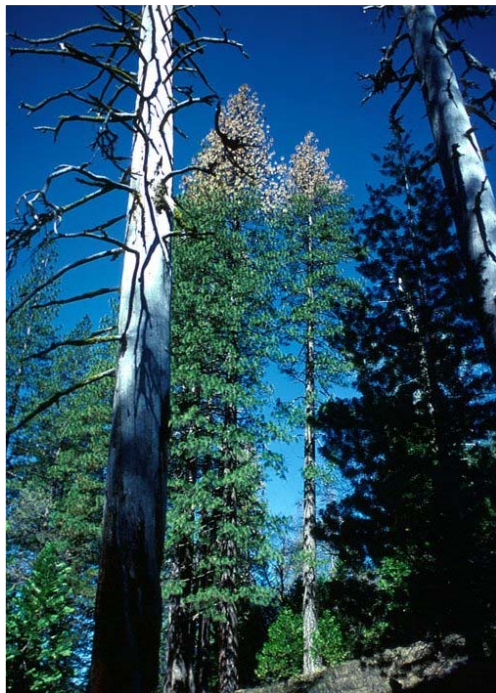


Pest Significance

- Non-economic pest prior to 1940's
- Logging practices of second growth pines influenced pest problems



California Fivespined *Ips* (*Ips paraconfusus*)

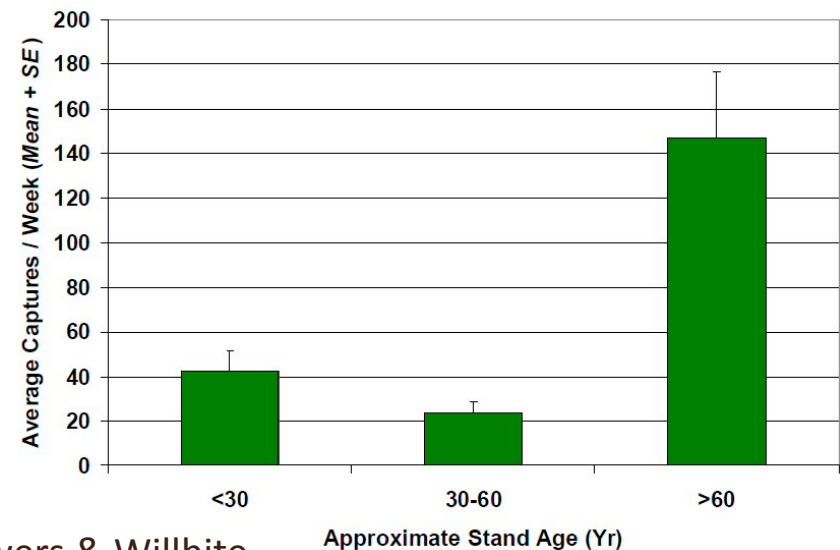


- Can infest multiple species of pines, it likes ponderosa.
- Outbreaks follow fire or storm damage
- Any event that provides fresh slash during adult flight
- Can kill young trees or top-kill older trees
- **Normally** outbreaks last for one year



Willamette Valley Pines

- Pest damage first reported in 1999
- Outbreaks continued annually at different locations
- Highest populations found in older age classes; mortality in new orchards



Flowers & Willhite

How bad will it get?

What it might look like



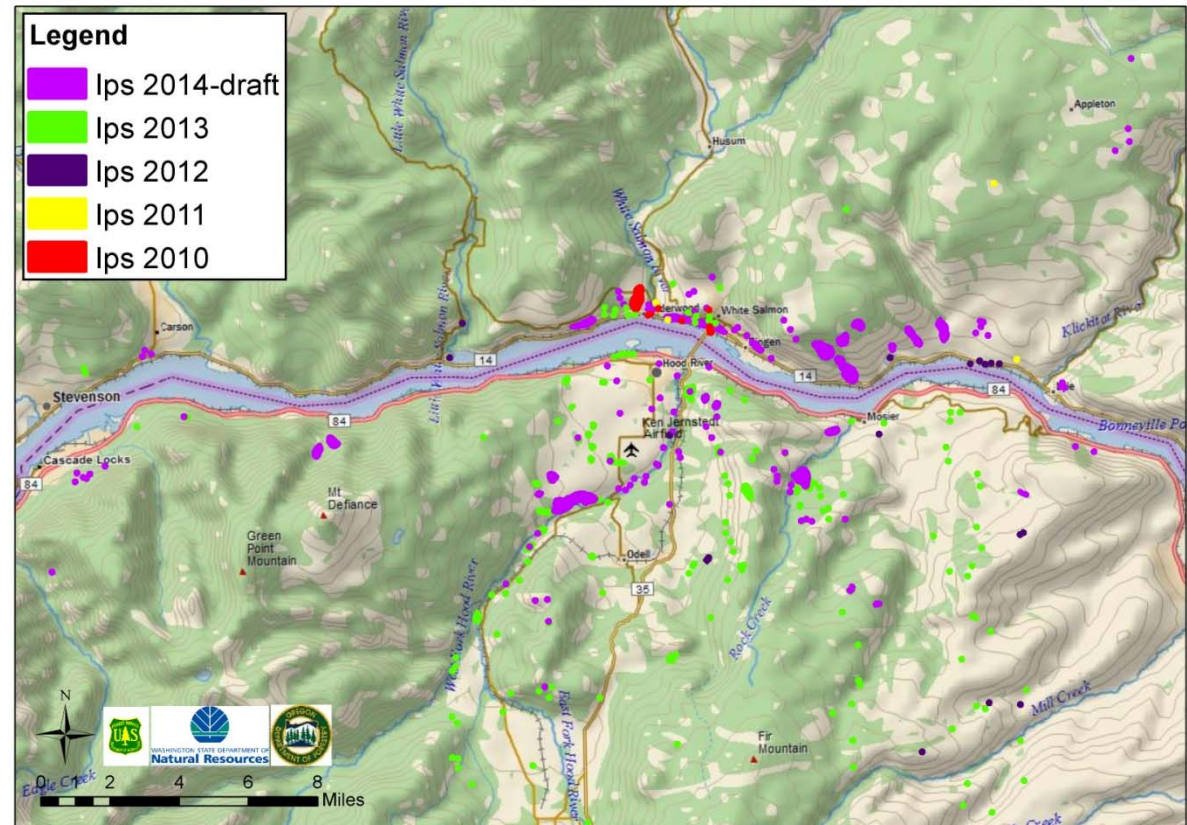
What it won't look like



Localized, small outbreaks 2010-2014



Areas With Mortality Caused by California Fivespined Ips
Mapped in Oregon and Washington Using Aerial Survey 2010 - 2014



Is this a big deal? Climate Change?

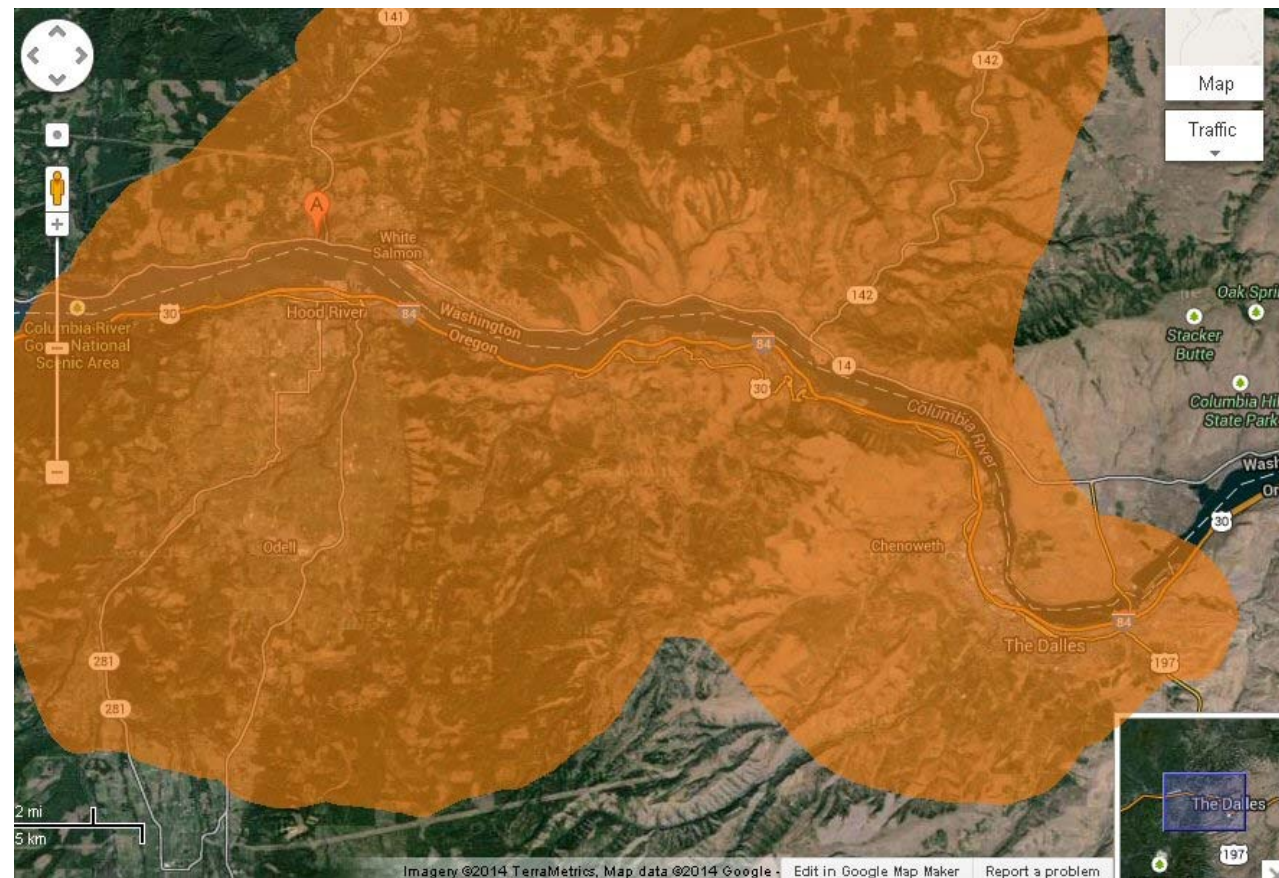
- Range expansion or over due detection?
 - Remember preferred habitat age classes?



Areas Affected

WA:
Underwood
White Salmon
BZ Corner
Lyle

OR:
Hood River
HR Valley
Mosier
The Dalles



<http://pubs.wsu.edu>

<http://oregon.gov/odf>



Pest Watch: California Fivespined Ips— A Pine Engraver Beetle New to Washington State

WASHINGTON STATE UNIVERSITY EXTENSION FACT SHEET • FS085E

WSU Extension *Pest Watch* fact sheets identify new agricultural pests in or near Washington State that pose environmental and economic threats. In the event of a severe pest outbreak, a *Pest Alert* will be issued with emergent pest management and control information.

Introduction

CFI damages pines and land managers and homeowners will need to adopt effective management practices when localized outbreaks occur. (Management strategies vary widely and depend on which pest is present.) Other pine bark beetle pests include pine engravers (*Ips pini*), mountain pine beetles (*Dendroctonus ponderosae*), western pine beetles (*Dendroctonus brevicornis*), and red turpentine beetles (*Dendroctonus valens*) (Shaw et al. 2009). The purpose of this fact sheet is to alert forest land managers and homeowners with pines trees that there is now an additional species of the pine bark beetle in Washington State.

Before 1945, CFI was considered a bark beetle of little pest significance. Since then, it has caused significant damage to pines in California and Oregon. In California, increased post-war logging in second-growth ponderosa pine created ample slash and other conditions that allowed beetle outbreaks for short periods of time, resulting in significant tree mortality and topkill (Schultz and Bedard 1987). Although in more recent times logging practices have been altered to avoid CFI outbreaks, widespread tree mortality can still be observed when tree stress is high, such as during times of drought, or following fires where large numbers of trees are injured. Since 1999, increased beetle activity and associated damage has been observed in young stands of the Willamette Valley race of ponderosa pine established during the late 1980s and early 1990s (Flowers and Kanaski 2007).

Distribution

A pine engraver beetle native to California and Oregon has recently been found in Washington State, where it has damaged and killed ponderosa pines. Until 2010, the most northern reported distribution of California fivespined Ips (CFI), *Ips paraconfusus*, was in the northern reaches of the Willamette Valley of Oregon. In 2010, CFI was recorded

for the first time in Washington State. As of 2012, CFI has been collected on the eastern slopes of the Cascade Mountain Range east to Lyle and north to Trout Lake, along the Columbia River Gorge, and in the western valleys as far west as Vancouver and north to Toledo (Figure 1). It is unclear if this is a range expansion or a previously unknown historical range. Regardless, this is the first tir outbreaks have been reported.

Identification and Life Cycle

Adult beetles are small, only about 3 millimeters long, a reddish brown to nearly black in color. They have bullet shaped bodies and clubbed antennae and have five pairs of structures (referred to as spines) arising from the rear of



Figure 1. Map showing distribution of the California fivespined Ips throughout the Pacific Northwest. The legend indicates the various locations where CFI adults were caught in pheromone traps during a specific year. (Aleksandar Dozic, WADNR)



California Fivespined Ips (*Ips paraconfusus*)

Hosts:

Ponderosa pine, sugar pine, western white pine, lodgepole pine, and knobcone x Monterey hybrid (KMX).

Importance:

The California fivespined ips (*Ips*) is the most important bark beetle threat to managed stands of ponderosa pine in western Oregon. In southwest Oregon, beetle populations build-up in thinning slash and emerge to attack residual trees. During drought years, *Ips* frequently attacks and kills the tops of mature trees or clumps of overstocked pole-size pine. As more acreage in the Willamette Valley is planted to ponderosa pine, this beetle is likely to become a significant pest.

Look For:

April – October

Ips prefer to infest green slash or wind breakage, and the first sign of beetle activity is orange-brown boring dust pouring out of bark crevices (Figure 1).



Figure 1: Spots of orange-brown boring dust on the bark of pine slash infested by Ips.

When bark is peeled off near the boring dust, a characteristic "Y" shaped gallery is usually apparent (Figure 2). The adult beetles are often found when the bark is removed from recently infested trees



Figure 2: Characteristic Y-shaped gallery of California Fivespined Ips.



(Figure 3). The beetles are reddish-brown and 3- to 5.5-mm in length and have five distinctive spines on the rear of the wing cover. Also found beneath the bark are actively feeding larvae approximately 3-mm in length. The "C" shaped larvae are legless white grubs with yellow heads. Mature larvae develop into the ivory colored pupae, approximately 5.5-mm in length. The immobile pupal stage lasts several weeks before transforming into the beetle.

July – August

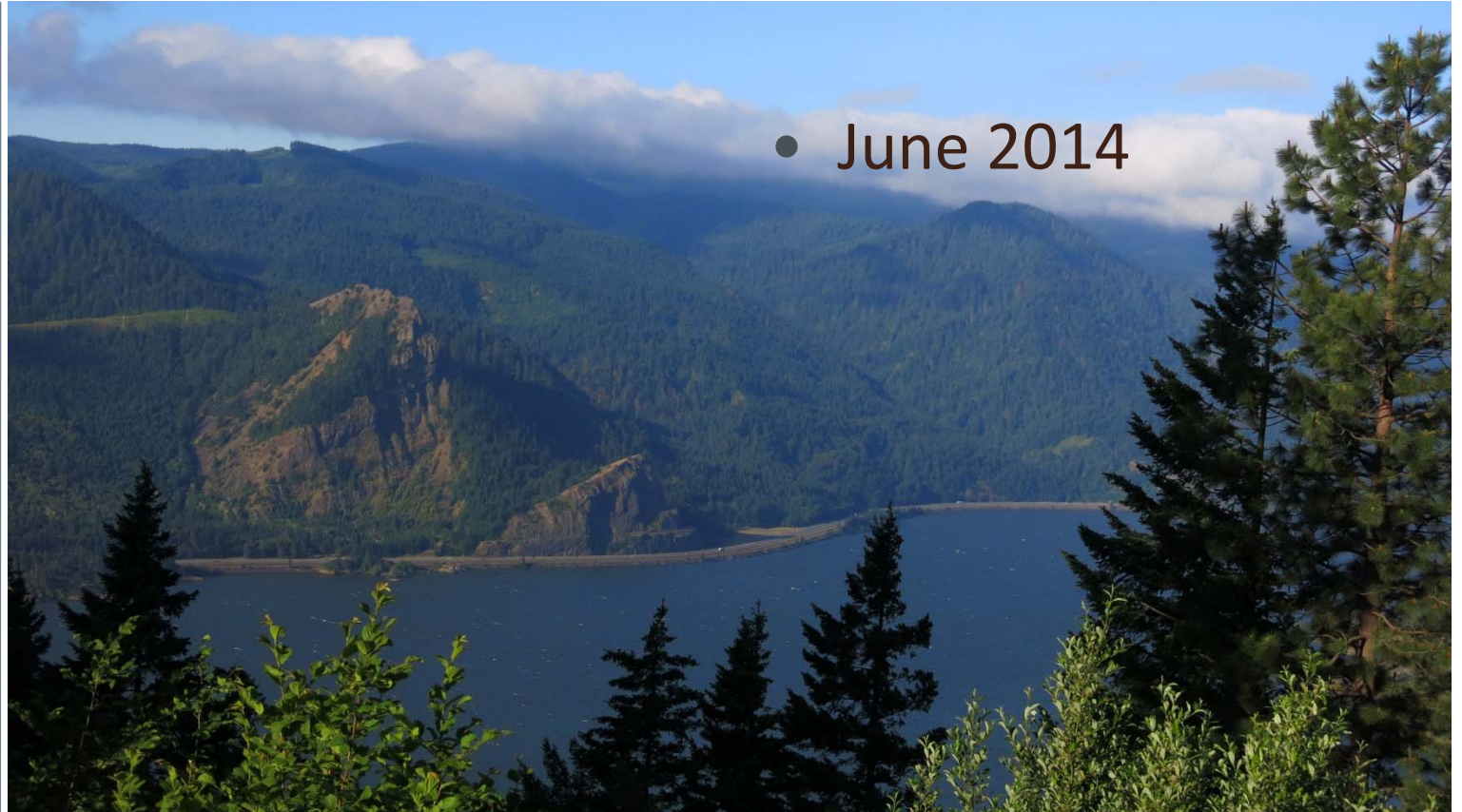
Trees attacked by Ips in the summer usually take a month or more to develop crown symptoms. The foliage of an infested tree fades from green to yellow, then to orange and finally to



Figure 3: Adult beetles are reddish-brown, 3- to 5-mm in length, and have 5 distinctive spines on the rear of the wing cover.

What's up with doug fir trees?

- June 2014



Douglas Fir Bark Beetle



- Douglas fir Beetle outbreaks in the fall of 2013 and spring of 2014.

Douglas Fir Bark Beetle



- Outbreaks occur after a blow down event, root rot activity or defoliator outbreak
- Reddening tops begin to show in summer, two years after the event
- Can last for multiple years during drought

What's up with the true fir trees?



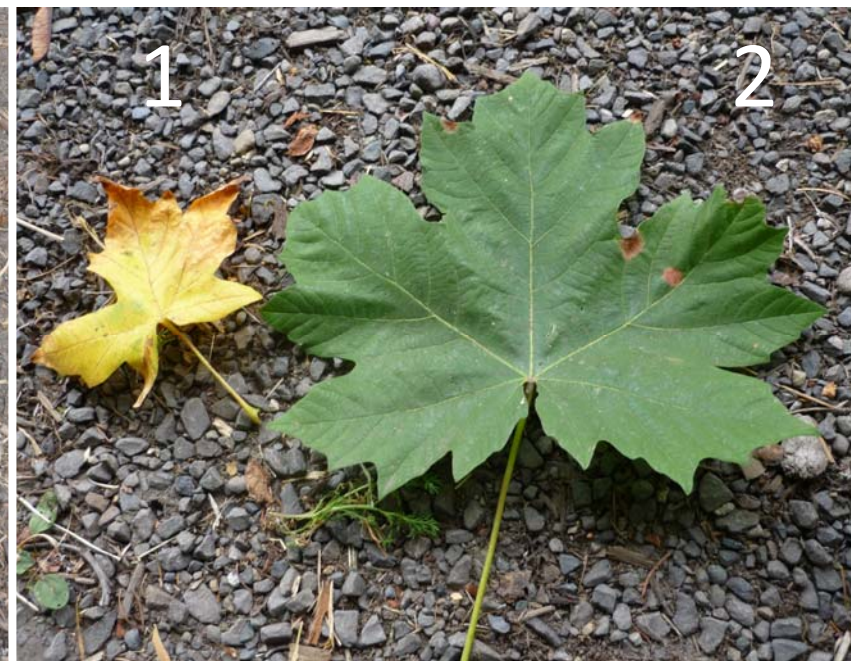
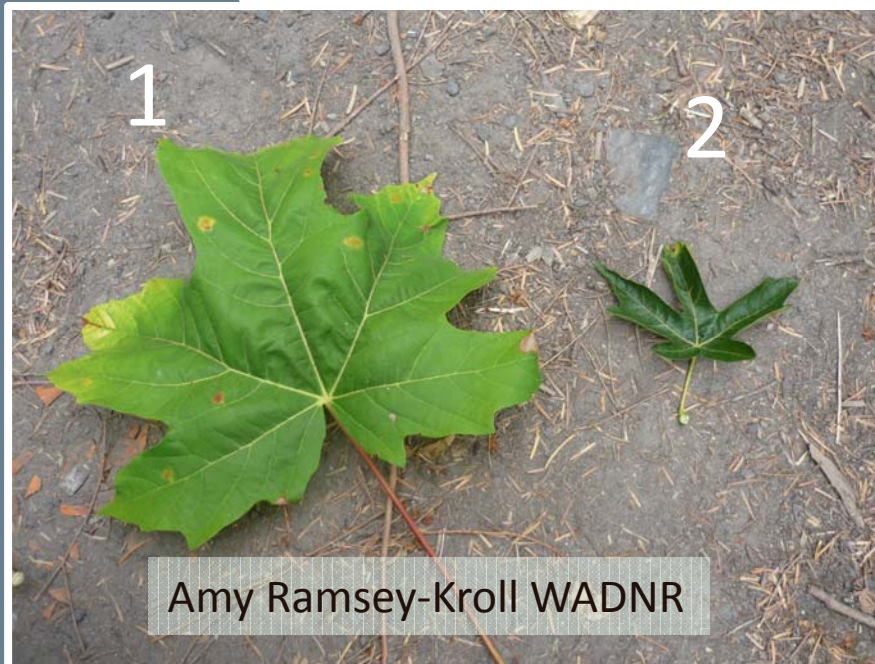
Fir Engraver Beetle



What's up with the maple trees?



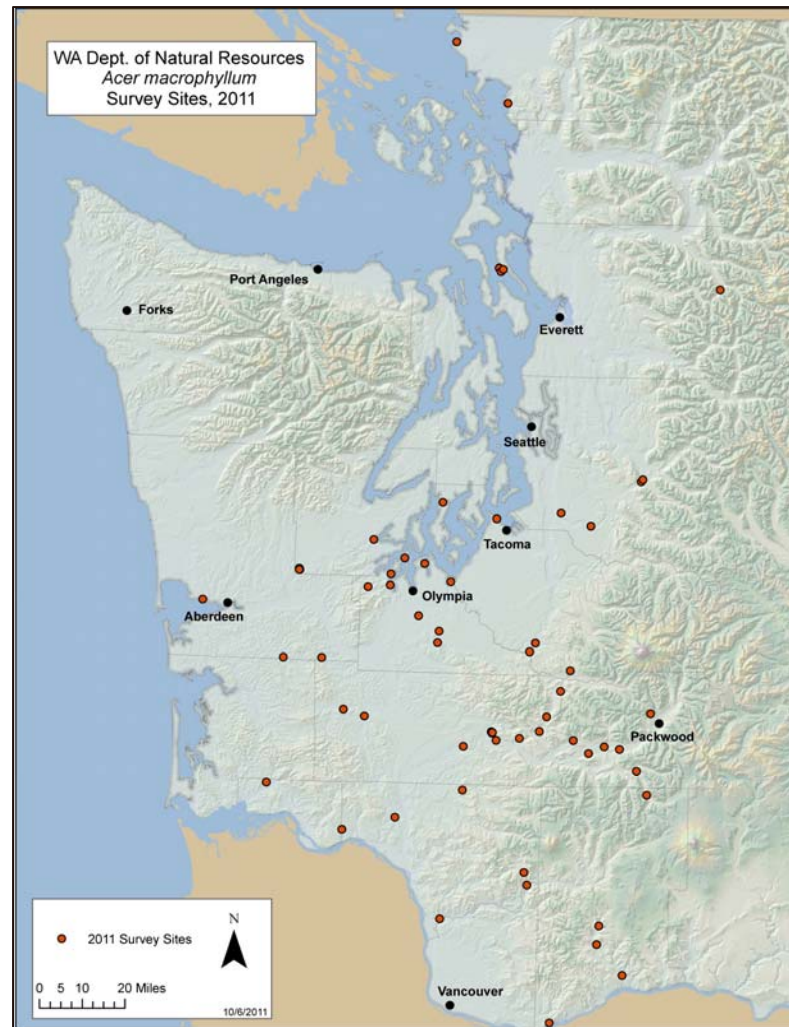
Healthy (1) vs. symptomatic (2) bigleaf maple leaves



Dieback in canopy is similar to Verticillium Wilt



Symptoms throughout the region



- All samples were negative for *Verticillium albo-atrum* and *V. dahliae*
- 15% symptomatic trees had signs of other root diseases
 - 11% *Armillaria* spp.
 - 3% *Ganoderma* spp
- Possible bacteria

What's up with all the red trees this spring?



- Fall drought followed by hard freeze in November

Take home message:

- Trees are under water stress
- Stress has lasted for over 6 years
- Under normal rainfall patterns, defense such as bark beetle resistance is replenished no sooner than three years after the end of drought

Path: HOME » NEWS

Douglas fir root rot could worsen, state DNR study says [Corrected]

By Joe Smillie
Peninsula Daily News

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Corrects to include proper unit of board feet.
Foresters are looking to hone their management of Douglas fir trees in the wake of a new state report that says a changing climate likely will worsen the spread of a root-devouring fungus.

A special panel commissioned by Washington Lands Commissioners Peter Goldmark to study the laminated root rot fungus published a study last month that suggested warming temperatures and more frequent droughts will make Douglas firs more susceptible.

The study was commissioned to see the potential future impacts of the fungus on the Douglas fir species that comprises most of the North Olympic Peninsula's timber harvest.

"It's definitely the dominant coniferous tree on at least the eastern half of the Olympic Peninsula — and in much of the western Peninsula, as well," said Norm Schaaf, vice president of Merrill & Ring, the Peninsula timber and land-management company.

The DNR panel found that the root rot lowers the state's annual timber harvest yields by 5 percent to 15 percent currently. That hit would increase as fungal infections of firs worsen, experts said.

"In the long term, having sites infected with root disease reduces productivity," said Karen Ripley, DNR forest health program manager.


"If Douglas fir trees aren't growing back, then it's going to take longer to have another crop for the loggers to help harvest."

The fungus rots the roots of Douglas firs, robbing the trees of nutrients and either killing them or leaving them weakened and vulnerable to pest attacks or wind damage.

The study calls Douglas firs a keystone species, valuable to the economy and ecology of the Northwest.

In 2012, Clallam and Jefferson counties produced 278,987,000 board

1 / 2



This is a Douglas fir that suffers from so-called root rot. —Department of Natural Resources photo