



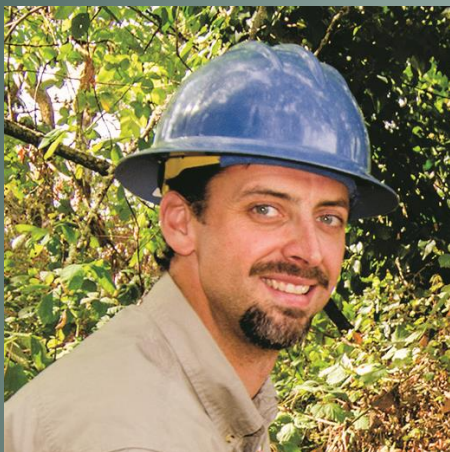
2017 Forest Health Report

Board of Forestry

September 5th, 2018



Forest Health introduction



Wyatt Williams
Invasive Species Specialist



Marganne Allen
Manager



Sarah Navarro
Forest Pathologist



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Forest Entomologist



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Survey & Monitoring



ODF Forest Health Unit

Mission

To maintain or improve the health and value of Oregon's non-federal forests

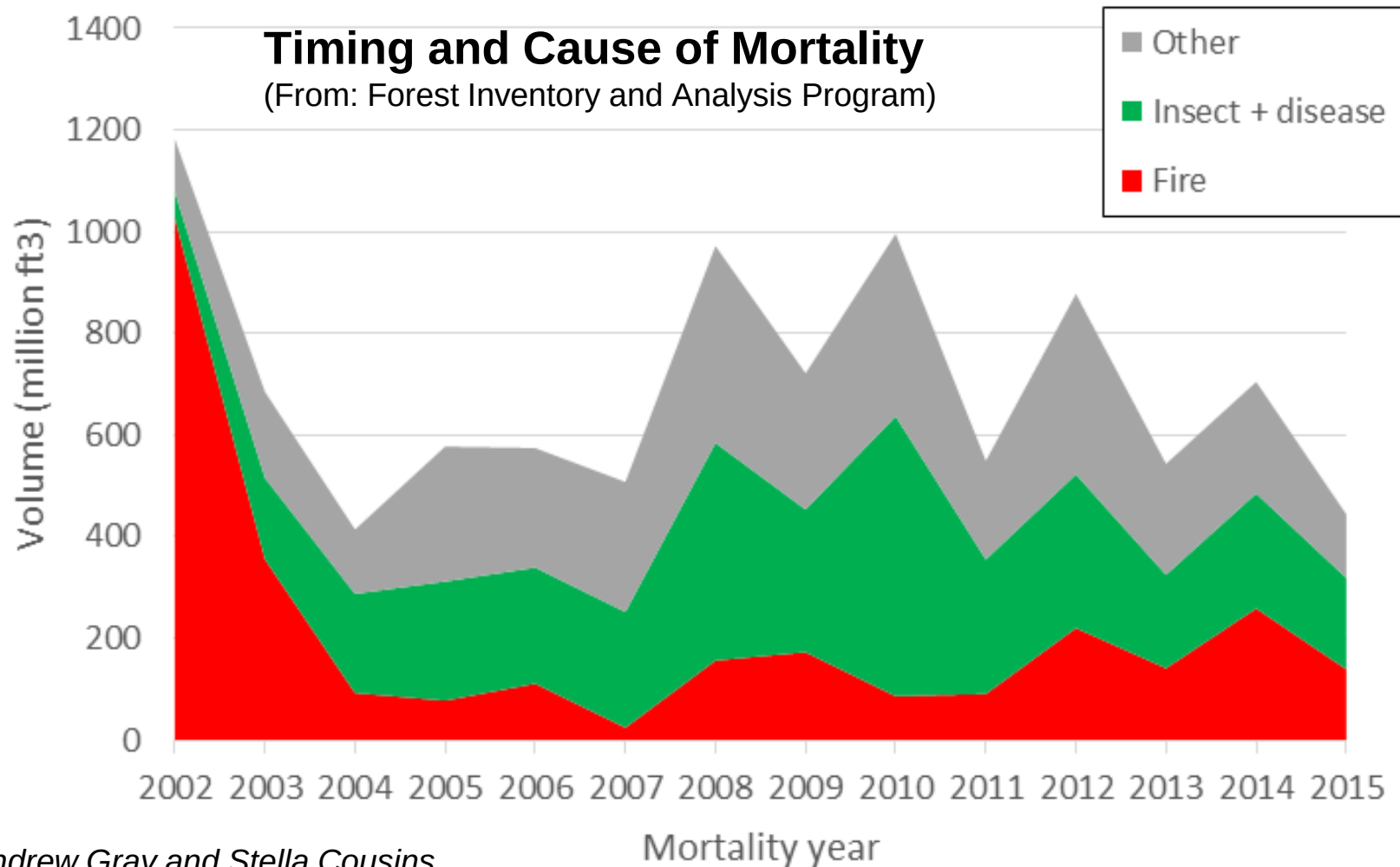
Goals

- Detect, monitor, evaluate forest health
- Provide information and consultation
- Implement control strategies

Authority: ORS 527.310 to 527.370



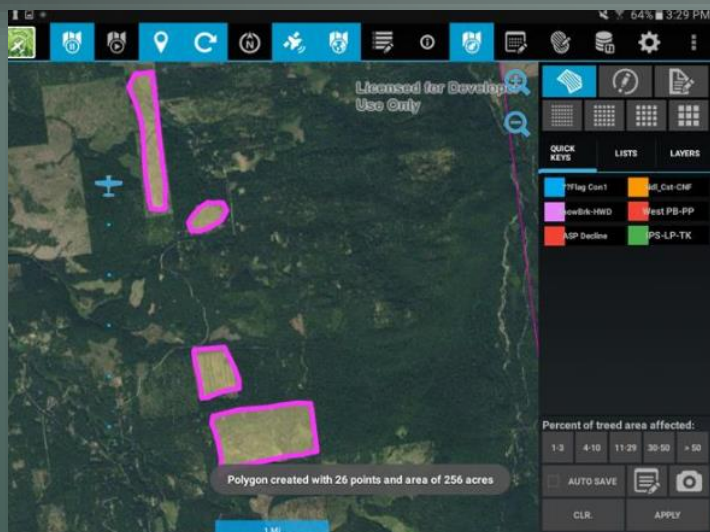
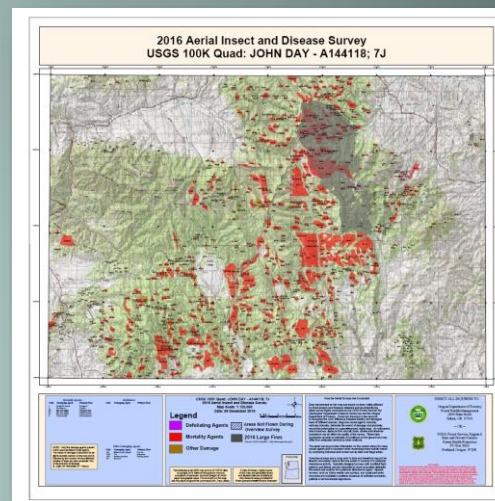
Forest Health in Oregon: State of the State 2018



Andrew Gray and Stella Cousins
USFS PNW Research Station & UC Berkeley



Aerial survey in Oregon



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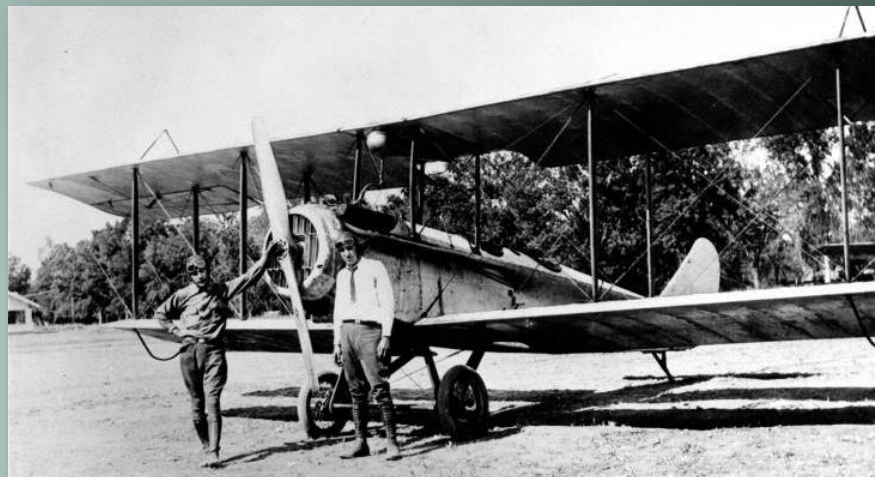
Aerial survey

- What is the Aerial Detection Survey (ADS)?
 - A systematic observation of insect and disease caused damage in Oregon's forests
 - Part of a nationwide survey program
- Why does ODF conduct the ADS?
 - It is in statute: ORS 527.315 (part of Integrated Pest Management) and ORS 527.335 (Investigations by State Forester concerning pests)
 - An economical method to assess forest health issues across Oregon each year



Aerial survey history

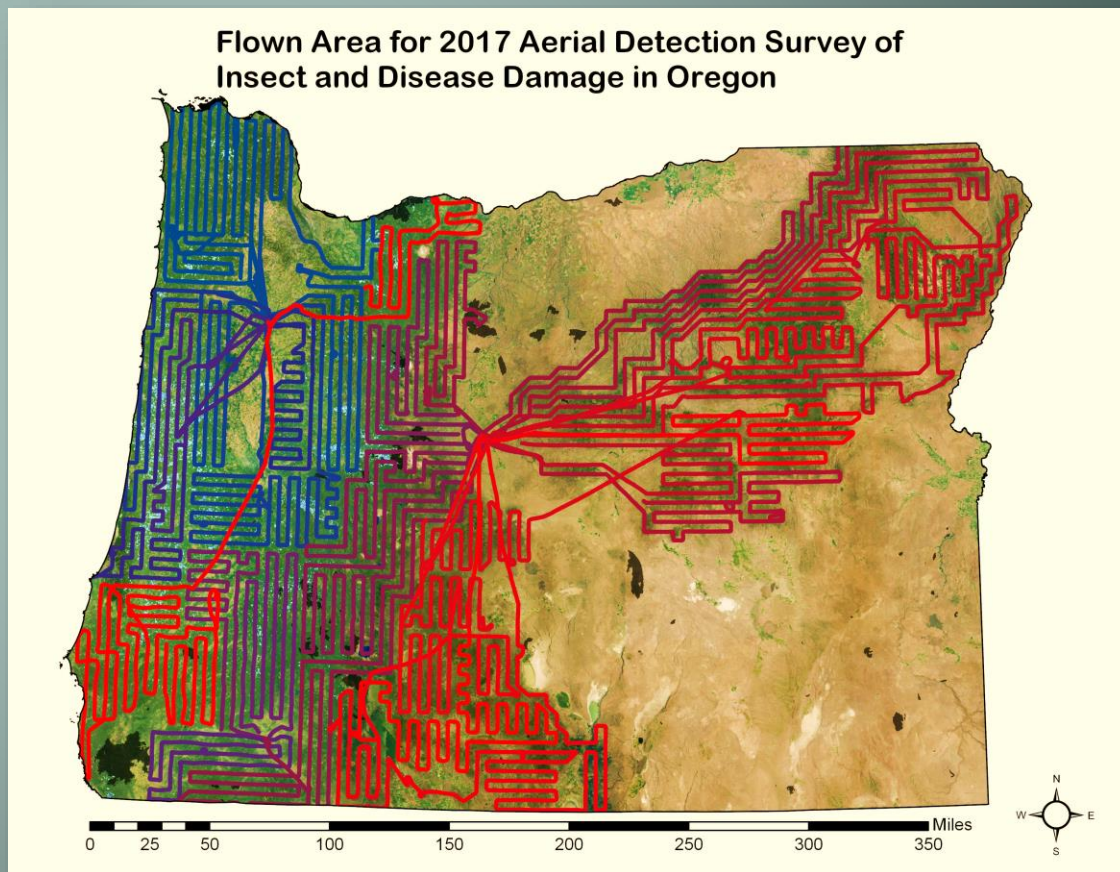
- First forest health survey:
Canada, 1920
- First survey in the U.S.:
Idaho, 1930
- First survey in the PNW:
Washington, 1931
- First survey in Oregon:
1944
- First ODF survey:
1948, annual since





Aerial survey in Oregon

- Cooperative effort between ODF and USDA FS personnel.
- Currently covers approximately 30 million acres of forested land (45% of total area).





Surveys conducted

- Swiss needlecast
- Young Conifer Mortality/NW Oregon Survey
- General overview of entire state
- Sudden Oak Death
- Special surveys:
 - Oak looper (foliar pest)
 - Gorse (invasive plant)
 - Ice or wind damage
 - Others as needed





How is this data collected?



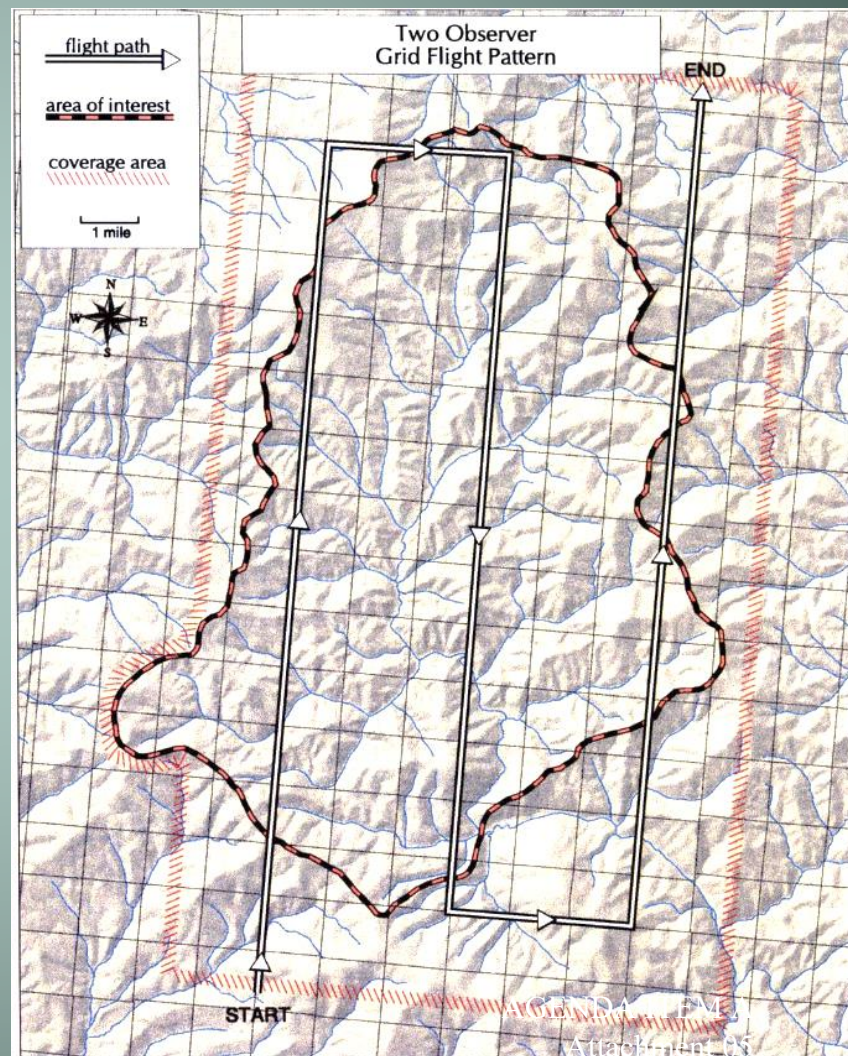
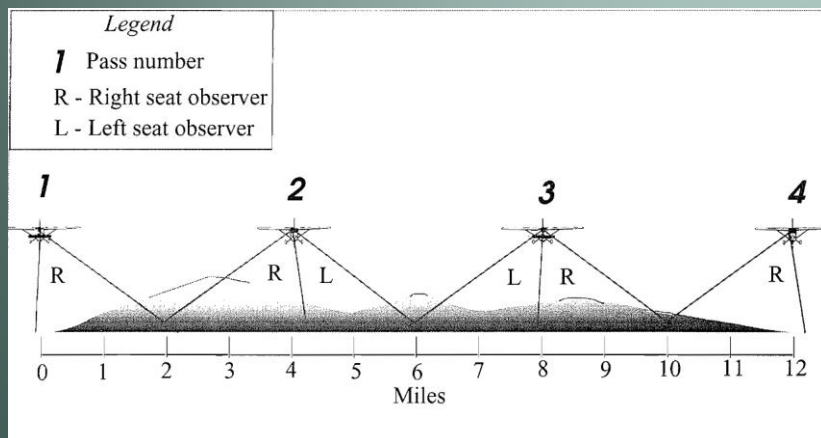


How is this data collected?

- An observer on each side scans for damage/mortality
- Single or multiple trees are identified and drawn on the tablet as a point or polygon
- Info recorded:
 - **Georeferenced location** of damage
 - **Extent** (single tree or larger area of trees?)
 - **Intensity** (e.g., mortality or % damaged)
 - **Host tree species**
 - **Damage agent** (insects, diseases, vertebrates, abiotic and fire damage, etc.)



How is this data collected?





How is this data collected?

- Young conifer mortality
- Douglas-fir
- 1 tree

• Bear - 1

- Swiss needlecast
- Douglas-fir
- Polygon of multiple acres

SNC -
High

SNC -
Moderate

SNC -
High

AGENDA ITEM A



How are unknowns addressed?

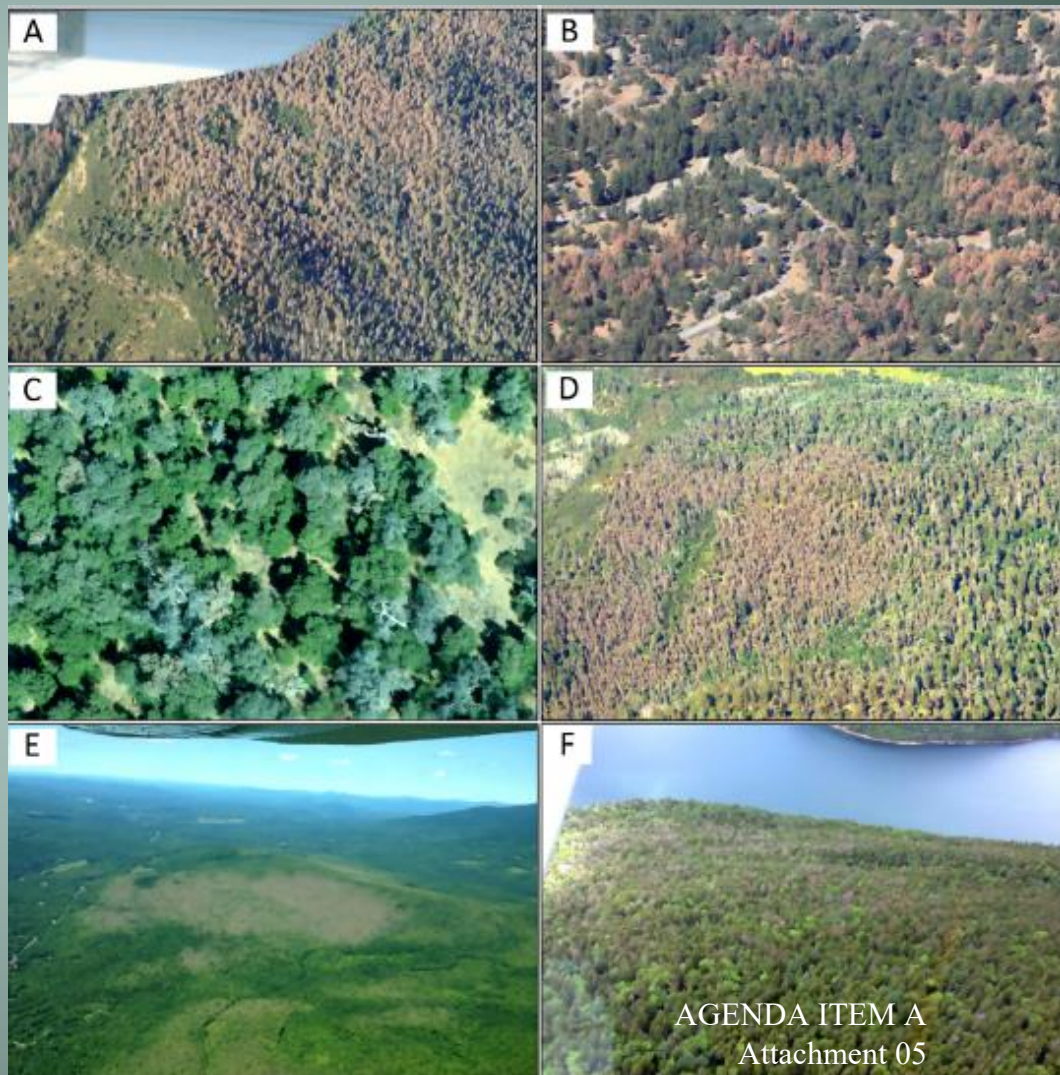
- Ground checks and adjustment to data
- Initiated outbreaks or precursors to an outbreak (e.g. storm damage) are verified and management guidance provided





Data QC

- Regular calibration & conformity sessions
- Discussion amongst technical specialists
- Research comparison of aerial vs. ground results





Current status of technology

Year 2 of using new software (DMSM) and hardware (Samsung tablets)

Pros:

- Less expensive, easy to use hardware
- More efficient software, can be used for other applications (ground surveys)
- Nationwide survey program now using the same system
- Automated synchronization with a central database

Cons:

- Accuracy at the cost of precision (survey metric)
- Concerns about changes in protocol, linkages between past/new data



Caveats to survey

- Delays with contracts and aircraft access
- Fire:
 - Temporary Flight Restrictions
 - Skipped areas
 - Visibility
 - Fire perimeter prone to future damage
 - Staff called to fire
- Poor visibility:
 - Weather
 - Light conditions
 - Topography
- Difficulty of data collection:
 - Speed vs. accuracy
 - Observer fatigue
 - Human error
 - Lack of trained staff

Greater than 70% accuracy of host, agent and location.
"Accuracy of aerial detection surveys for mapping insect and disease disturbances in the United States" (Coleman et al. 2018)



Data use and interpretation

- Available online (ODF FH page) and in Forest Health Highlights
- Data provides a snapshot in time
- Appropriate at the watershed scale, not stand level

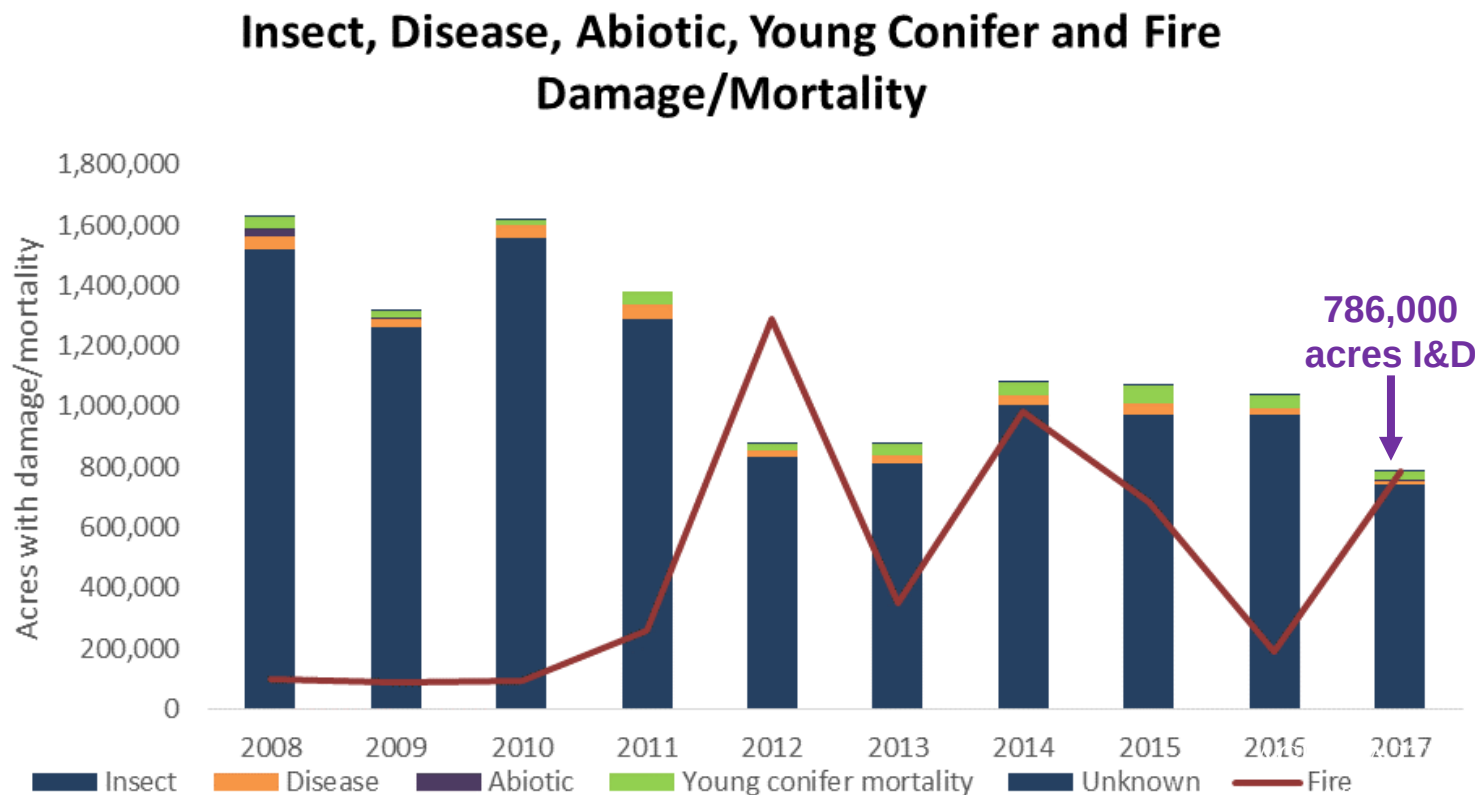
DISCLAIMER: “Geolocation, agent identification and damage quantity data are based on aerial surveyor estimations drawn from **visual observation** of damage areas and knowledge of local damage agents and forest health. This data is presented as informational and does not claim 100% accuracy.”



Current findings

*Acres with not *of* damage/mortality

*Many diseases (e.g., root disease) and some other agents not captured in aerial survey







Potential improvements/adjustments

- Assessment of the needs of the clients and data users
 - Nationwide survey underway
 - Conversations with users

...to be mindful of budget and staff utilization:

- Reduce area surveyed (alternate years, wider grid lines, subsampling)
- Increase number of trained staff that can survey (Training)
- More ground support to verify aerial observations (Training)
- Improved communication among various participants (ODF, USFS, protection and aircraft personnel)

The Oregon Bee Project



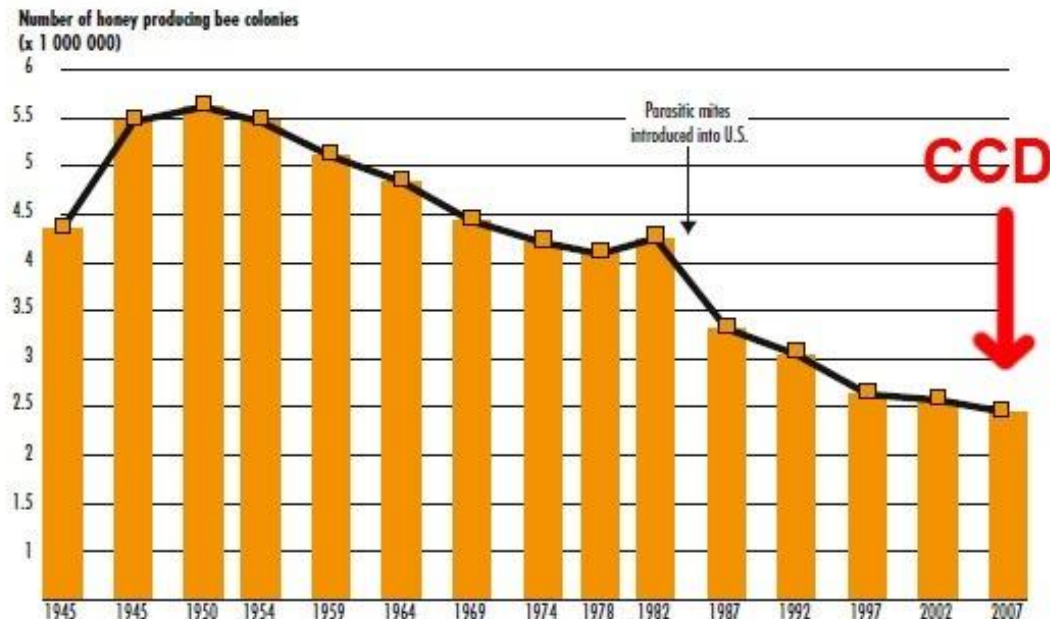
NEW!

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What prompted concern?

- Colony Collapse Disorder (CCD): starting in 2006, estimated 10 million beehives were lost
- Global decline of native pollinators and native bee kills...

Figure 4: US honey-producing colonies



Native bee kills (Wilsonville example)

- ~50,000 bumble bees killed
- Major public outrage
- Started larger movement to ban neonicotinoids



Why do we need bees?

- \$600 million in Oregon from crop pollination by natives alone
- Pollination ecosystem services for rural and urban plants



Federal initiatives



- 1) Baseline honeybee data, reduce winter losses
- 2) Increase eastern monarch populations
- 3) Enhance and restore pollinator habitat



- 1) Improved pollinator pesticide regulation and reporting
- 2) Call for state-led best management and action plans



State initiatives

2015 Oregon House Bills

3361: Best Management Practices

3362: Education & Public Pesticide Safety Plan





Oregon Bee Project





The Oregon Bee Project



Mission: Bringing together Oregonians around a science-based strategy for protecting and promoting wild and managed bees through education, pollinator-friendly practices, and research.

Objectives:

- Engage the public in understanding bee ecology and requirements
- Collect baseline bee population data (researchers and citizen scientists)
- Research bee health (toxicology, diseases, ecology)
- BMP training on bee-friendly pesticide application
- Showcase and incentivize bee-friendly practices

OBP Progress

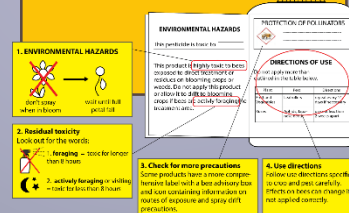
SHOWCASE



ENGAGEMENT



PESTICIDE TRAINING



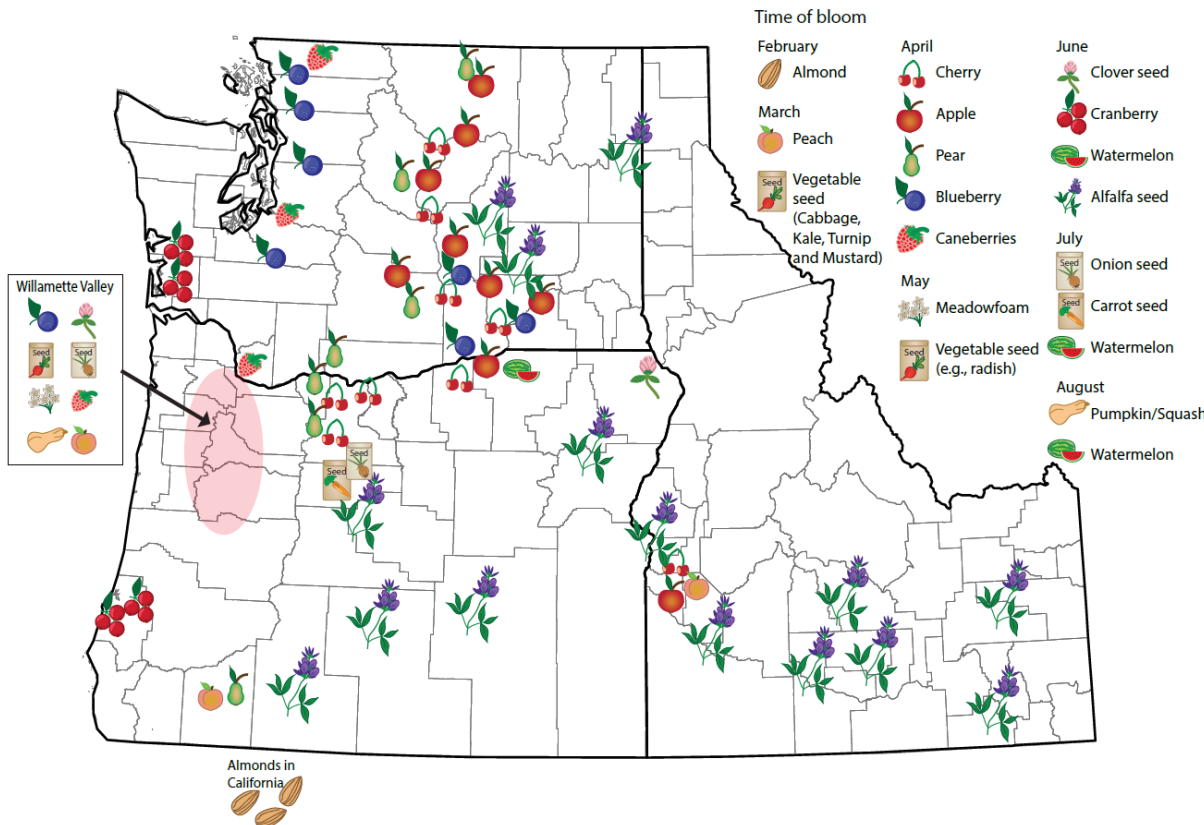
DIAGNOSTICS AND RESEARCH



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OREGON is a great place for bees:

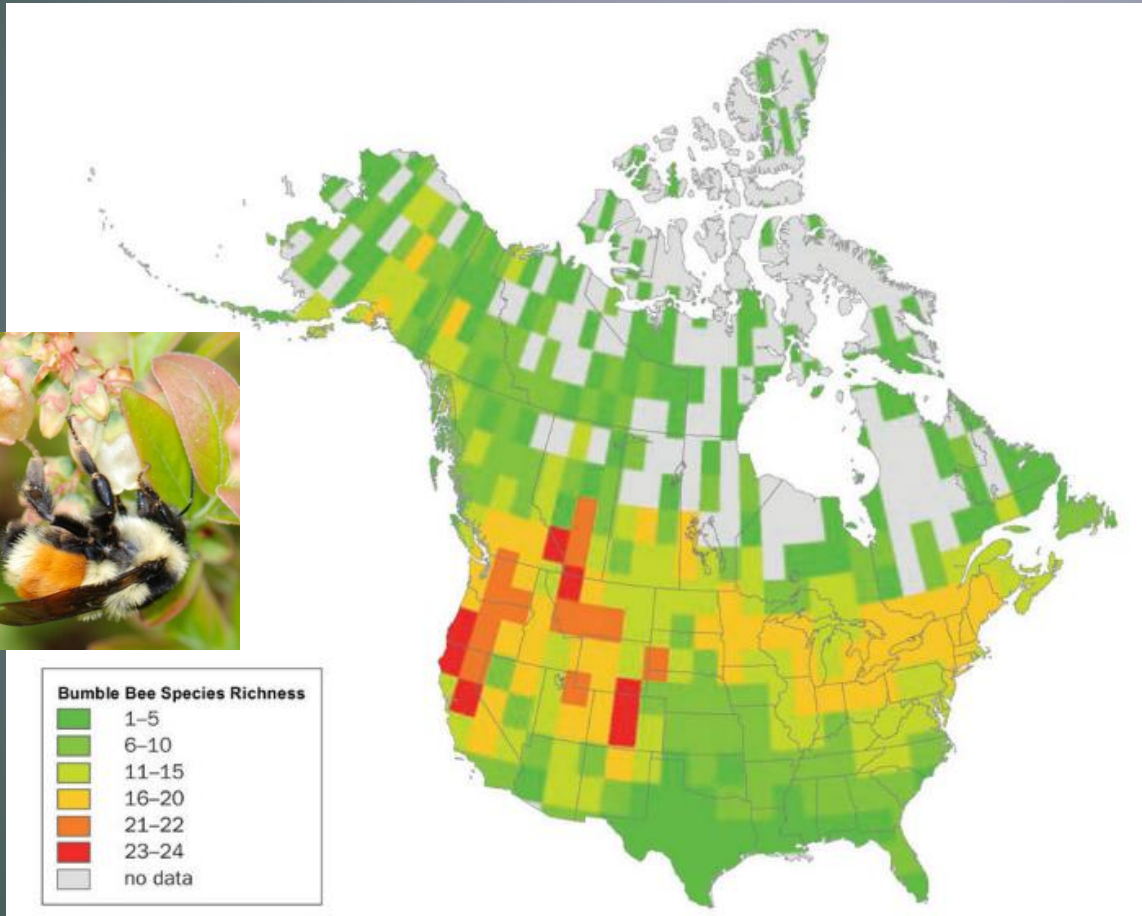
Specialty crops



OREGON is a great place for bees:

Specialty crops

Grass seed
McMinnville, OR



OREGON is a great place for bees: Native pollinators



***ALKALI BEES:* WORLD'S ONLY MANAGED GROUND NESTING BEE**

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Pollinators in forests?

Forests provide (overlooked) habitat for native bees

- 1) Forage plants (Oregon grape, salal, rhododendron)
- 2) Bare soil for ground nests and hibernation
- 3) Woody debris and stumps for nests and material



Pollinators in forests?



Hampton Associates pollinator habitat plots and native bee population monitoring in actively managed stands



Promote forest bees

1. Diverse forage (colors, shapes, bloom times, etc.)
2. Forage in contiguous patches or strips
3. Allow forage to grow along edges of stands and roadsides
4. Apply pesticides when bees are less active (cold days, evenings, offseason)
5. Avoid pesticide drift or leakage into water sources (puddles, irrigation ditches, etc.)
6. Do not sanitize sites (leave some stumps, downed trees, CWD, pithy stems)
7. Remove aggressive or invasive plants that outcompete native forage

<https://www.oregonbeeproject.org/>



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OREGON BEE PROJECT

Official Collaborative
Resource Website

**OREGON'S GARDENS, AGRICULTURAL LANDS, NATURAL AREAS AND
FORESTS HELP SUPPORT AND MAINTAIN ABOUT 500 SPECIES OF
BEES.**

**THE STATE OF OREGON IS MAINTAINING THESE POLLINATOR
SPECIES VITAL TO THE FOOD SUPPLY AND THE NATURAL
ENVIRONMENT AROUND US.**



Questions?

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More information and data provided by ODF Forest Health:

<http://tinyurl.com/odf-foresthealth>

