# Forest Health Unit Update

This report summarizes work completed by ODF Private Forests Forest Health Unit personnel since the last Board of Forestry (Board) update in November 2017.

Forest Health staff provide specialized expertise to ODF District Offices, the State Forests and Protection Divisions, leadership, and other state, local, and federal agencies and Tribes. Forest Health staff also provide training and subject matter expertise to Stewardship Foresters and OSU forestry extension agents and work closely with our partners to provide technical assistance, information and training to forest landowners and forest managers. Forest Health Unit staff also work toward the advancement of forest health related science.

**Survey, trends and treatments: Insects and disease**

**Background**

The annual cooperative statewide aerial survey of Oregon forestlands for insect and disease damage began in 1947. The 2017 statewide cooperative aerial survey was the 71st year of collecting these data. Oregon's survey covers over 35 million acres across all ownership categories, and is one of the best long-term data sets on forest health conditions. The Oregon Department of Forestry (ODF) is also recognized nationally for developing and testing digital sketch mapping and aircraft technologies that improve information delivery and the safety of aviation personnel. Annual aerial surveys are accomplished through collaboration with the U.S. Department of Agriculture (USDA) Forest Service Pacific Northwest Region, with additional funding and support provided by the U.S. Department of the Interior (USDI) Bureau of Land Management (BLM), private industrial forest landowners, and cooperatives such as the Oregon State University (OSU) Swiss Needle Cast Cooperative.

A Cooperative Agreement signed in 1965 between the State Forester, the Board of Forestry, and the USDA Forest Service formalized the collaborative relationship by instructing personnel to carry out systematic surveillance and reporting of insect and disease conditions on forestlands. In addition, Oregon's Forest Integrated Pest Management Laws (ORS 527.310 to 527.370) requires that the State Forester conduct surveys to determine the presence, extent, trend, and impact of native and invasive pests, as well as overall forest health.

While aerial surveys anchor Oregon Department of Forestry efforts to collect information on forest health conditions in Oregon's forests, they are not able to detect the occurrence of many agents including most root diseases and dwarf mistletoes, which can significantly and adversely affect forest health. These agents are assessed by ground surveys, which are completed annually in priority areas, or as part of special ground survey projects.

In 2001, Oregon's aerial survey program detected sudden oak death (SOD) in Curry County. SOD is lethal to tanoak, and poses a tremendous threat to tanoak ecosystems in Oregon. The disease also threatens commerce in the nursery and forest industries. A multi-agency group (ODF, the Oregon Department of Agriculture (ODA), USDA Forest Service, BLM, and OSU) is slowing the spread of the disease through ODA quarantine regulations and a program of early detection and eradication treatments.

Annual aerial and ground surveys fulfill ORS 527.335 and support the following:

- Oregon Department of Forestry Key Performance Measures (KPM) #629-13: Damage To Oregon Forests From Insects, Diseases, And Other Agents;
- Private landowner reporting requirements for forest certification systems;
- Distribution of annual forest damage maps and data summaries to ODF Districts and other cooperators (public agencies, private forest landowners, the general public);
- Synthesis into the annual publication "Forest Health Highlights in Oregon" produced for professional foresters, other natural resource specialists, land managers, field technicians, educators and the general public (Attachment 2); and
- Incorporation into the USDA Forest Service National Insect & Disease Risk Map (NIDRM) project and forest health conditions report to the U.S. Congress.

**2017 Annual Statewide Aerial Survey**
The 2017 statewide aerial survey detected over 590,000 acres with tree mortality and other damage, which is below the 10-year average of approximately 795,000 acres. The majority of tree mortality detected during aerial surveys over the last decade has been due to insect outbreaks, namely bark beetles. In 2017, over 544,500 acres with tree damage and mortality was attributed to insect damage although predisposing stressors such as drought were common (Attachment 2).
2017 insect damage totals (approximate acres):

**Bark beetles:** 479,000
**Wood borers:** 17,400
**Defoliators:** 1,300
**Sap-sucking insects:** 46,700

Many forest insects are secondary pests, attracted to already stressed trees, which are in turn less resilient to withstand attack. In recent years, drought has been the primary contributor to tree stress, leading to subsequent insect attack and tree mortality. Other primary stressors include various foliar, stem and root diseases and abiotic factors. For a summary, see the *DRAFT Forest Health Highlights in Oregon –2017* (Attachment 2).

Pine-infesting bark beetle species such as *Ips* beetles (pine engraver, California 5-spined), and mountain and western pine beetles caused the vast majority of tree mortality, although fir engravers also caused substantial mortality in true fir. Mortality from flatheaded fir borer (a woodboring beetle) decreased to around a third of that in 2016 but continued to attack lower elevation Douglas-fir suffering from drought, poor site conditions, fire damage, etc. Much of this mortality is a result of drought-stressed Douglas-fir growing on harsh sites more suited to pine and white oak. Despite higher levels of precipitation in 2016, 2017 was another dry year in most areas of Oregon and we can expect continuing impacts of prolonged drought stress on host trees. Thinning and slash management are the primary management guidelines to help mitigate drought and beetle stress.

**Swiss Needle Cast Aerial Survey**
The swiss needle cast (SNC) survey, a native foliage disease, is now flown biannually. These survey results are additive to those of the statewide aerial survey. The last survey in 2016 (supported by the OSU Swiss Needle Cast Cooperative) covered 4.2 million acres and detected approximately 550,000 acres impacted by Swiss needle cast, a slight decrease from the previous two years. Growth loss due to SNC in Oregon is estimated at more than 190 million board feet per year. In addition to growth impacts, SNC alters wood properties and affects stand development.

**Sudden Oak Death**
Sudden oak death (*Phytophthora ramorum* or SOD) continued to intensify and spread in Curry County. In 2017, 36 new infestations were detected at or beyond the GIA (generally infested area), with four (4) new infestations within the GIA on BLM land. The GIA is an area within the sudden oak death quarantine where eradication treatments of infested sites are no longer required under ODA rules. All new infestations were well within the new quarantine boundary, which was expanded in 2015 to 515 square miles. Using a 300 ft treatment buffer, the 2017 NA1 lineage (North American 1) infestations totaled approximately 566 acres, with 113 acres private and 123 acres federal lands. Again with a 300 foot buffer, approximately 330 acres of non-federal lands were infested with the more aggressive EU1 lineage (European 1) of P. ramorum.

In 2017 ODF had confirmed another 147 EU1 positive trees. ODF has prioritized all EU1 infestations within the SOD quarantine for treatment, reducing the likelihood that any NA1 lineage sites will be treated in the near future.

The Chetco Bar Fire added an additional wrinkle to the SOD story. Twenty-seven (27) infestations detected from 2014 to 2017 in various treatment states were burned by the fire at varying fire intensities. The USFS, ODF, and OSU are currently collaborating on monitoring to assess if and how wildfire effects SOD outcomes. In addition, the fire will affect aerial survey efforts in the area as tanoak mortality may be fire related and not caused by SOD.

Most funding for the SOD slow the spread program continues to be provided by the USDA Forest Service's Forest Health Protection program, BLM, and State of Oregon. In the 2018 Legislative Session, the Joint Committee on Ways and Means subcommittee established a reservation within the general purpose Emergency Fund of $1.0 million for the purpose of eradication efforts focused on the EU1 lineage of *Phytophthora ramorum*. The Department may request allocation of the reservation from the Emergency Board if all other sources of funding supporting SOD eradication efforts have been expended and the agency evidences that additional funding will result in a demonstrative reduction in the incidence or spread of the pathogen in Oregon.

The department continues to collaborate with and support the SOD Task Force convened by U.S. Senator Jeff Merkley and State Representative David Brock Smith.

**<u>Special Projects</u>**

**Emerald ash borer**
Emerald ash borer (EAB), *Agrilus planipennis*, is an exotic woodborer first detected in Michigan in 2002. The insect has killed hundreds of millions of North American ash trees (*Fraxinus* spp.). ODF conducted

official statewide surveys for the insect from 2013-2015 and 2018. ODF and Oregon State University Extension co-created the *Oregon Forest Pest Detector* program (funding provided by USDA-U.S. Forest Service). This program has trained over 500 foresters, arborists, park workers and other tree professionals on the signs and symptoms of EAB. Although EAB has yet to be found in Oregon, it continues to spread throughout the country and is now found in 30 states. EAB is the nation's costliest invasive forest pest with over $1.7 billion in damages. Predicted environmental damages from EAB in Oregon include increased stream temperatures, stream sediment, and altered riparian plant communities. Predicted economic damages from EAB in Oregon include tens of millions of dollars in urban tree removals and depreciated property values. In 2018, the state of Oregon (led by ODF and ODA) completed an *Emerald Ash Borer Readiness and Response Plan* which outlines roles and responsibilities of various local, state, and federal agencies as well as provides information to the public and private landowners. The EAB plan is found at a dedicated website administered by the Oregon Invasive Species Council, www.OregonEAB.info.

**The Oregon Bee Project**

In 2017 the Oregon Department of Forestry joined the Oregon Department of Agriculture and Oregon State University as a steering committee member of the Oregon Bee Project (OBP). This program began following a 2015 federal initiative for states to conserve and enhance pollinator health and habitat. Since its inception this program has:

- Compiled a stakeholder group of over 25 agencies, businesses and special-interest groups
- Developed a statewide strategic plan for pollinator health
- Created a website, blog, podcast and countless publications to educate general and technical audiences
- Trained over 3,000 pesticide applicators on pesticide safety for pollinators
- Trained 150 citizen scientists to collect baseline pollinator data for the Oregon Bee Atlas
- Inducted six farms into OBP Flagship programs and worked with specialty crop farmers to develop pollinator best management practices and serve as leaders for other growers

With the help of Oregon State University researchers, Oregon Department of Forestry has additionally begun to develop science-based, pollinator-friendly management guidance for forestland owners while still meeting their timber production objectives. Little is known about native pollinators on forestlands but recent research by Oregon State University has shown increases in pollinator population and diversity in actively managed forests. Oregon Department of Forestry is working on publishing this information in reference literature and wildlife guidance documents to reach both general and technical audiences.

**Staffing and Other Forest Health Unit Work**

Staffing in the Salem Forest Health Unit had no turnover during this period and is at full capacity, with a full time Entomologist, Pathologist, Invasive Species Specialist, and Aerial Survey Specialist. The unit's capacity is expanded by personnel at ODFs Brookings field office (Western Lane District), who have the lead role in the implementation of the SOD monitoring and treatment program (NRS 2, NRS 1). A new NRS 1 was hired in late 2017.

Currently unfilled capacity include two seasonal Forest Health technicians and one student worker position. These are federally funded and used to fulfill key work needs when such funds are available.

Unit personnel also:

- Represented the Department in a number of capacities including but not limited to: Oregon Invasive Species Council, national Forest Health Monitoring meeting, invited aerial survey expertise to BC Ministry of Forests, Western Forest Insect and Disease Work Conferences.
- Provided support to Committee for Family Forestlands, the three Regional Forest Practices Committees, and legislative requests.
- Participated in training, preparation, and incident assignments to support the agency mission for fire protection.