Plant Protection & Conservation Programs

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Cover photos (clockwise from top): Garden yellow loosestrife invasive weed, Endangered native plant rough popcornflower, European chafer invasive species, Horticulturist Debbie Driesner looks for plant pests, Root and stem-boring beetle *Oberea erythrocephala* on leafy spurge, Barbed goategrass invasive weed along Rough and Ready Creek, Oregon Christmas trees, Chris Hedstrom with a visitor at the IPPM Program booth during the Oregon State Fair.
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**Director’s View**

We thought that 2016 was a busy year. Well, it turned out that we broke some records again in 2017. We knew that we were tackling the largest Japanese Beetle (JB) infestation in our Department’s history, but we were definitely taken by surprise by the number of Japanese beetles caught in the summer of 2017. By the end of the season, over 22,000 Japanese beetles were found in our NW Portland eradication area traps. This huge number confirmed that the JB population had to be active for at least 3 to 4 years before we detected it in 2016. Nevertheless, the first year of this long-term JB eradication project was a great success in large part thanks to the strong grass-root and partner support for the project. Endless hours and efforts were spent by our IPPM staff, and our partners and collaborators, to make this first year of the JB eradication project hugely impactful. Despite the large number of JB caught, the good news is that over 90% of all JB were caught in our original treatment area. Although, we have to double the treatment size next year, due to some catches outside the original treatment area, we should see a significant reduction in the JB population in 2018 as a direct result of this year’s treatment.

More good news: despite a tough 2017-19 legislative session, and potentially deep budget cuts, our Programs Area came out well funded. The proposed cut of our Noxious Weed biocontrol position was averted due to strong stakeholder support for this program. In December, we were able to hire Joel Price to fill in the position as the new biocontrol specialist for the Noxious Weed Program. Joel came from the biocontrol program in Palisade, CO working for the Colorado Department of Agriculture.

The Program Option Package (POP) we requested for our Weed Program in order to support their regional efforts, and to become more independent from the crucial federal funding, was, unfortunately, not included in the final budget. However, our Weed Grant Program received an additional $500,000 destined for County Weed Districts from OWEB.

Unfortunately, the last legislative budget session was not fruitful for our Oregon Invasive Species Council either. Our proposed POP for continuous funding of the Council activities and the OISC Coordinator was not approved. The permanent Council members are working on short-term solutions to bridge the budget shortfall for the 2017-19 biennium, including reducing the numbers of Council meetings and activities, and sponsoring part of the OISC costs out of the permanent members’ budgets.

Although our Plant Programs Area is an important link for many other programs within our Agency, our Plant programs have to compete with other programs when it comes to funding constraints. Here are just a few examples how our programs facilitate the goals of other Agency programs: the efforts of our IPPM and Noxious Weed programs to confirm pest-free status of our production areas, ultimately make it possible that our Commodity Inspection and Market Access programs can successfully promote trade for our Ag industry. The work of our Noxious Weed Program directly and indirectly benefits our Water Quality Program in its efforts to protect important watersheds and restore fragile riparian areas from invasion of noxious weeds. These examples underline the importance and value of the work we all do in our Department. We have to remember this when entering in budget negotiations every session. I know that this is likely a small consolation when facing budget reductions for our programs again next time, but we can be very proud of the contribution we achieve for Oregon and also our Agency.

Some other important news from this past year:

- Beth Myers from our Noxious Weed Program was selected as the Ambassador of Public Service for the Oregon Department of Agriculture by our former Director, Katy Coba. Beth was invited to a reception with the Governor.
- The Japanese beetle eradication team was recognized by our New Director, Alexis Taylor, for the great work and efforts invested in the eradication project.
- Kerri Schwarz received a special award as the employee of the year for her outstanding performance and longstanding excellence in her work with our IPPM Program.
• Retirements: this year, Scott Rose and Karl Puls, long-term nursery inspectors in the Portland area retired. With their retirement we will also lose a lot of institutional knowledge in the Nursery Program and we will miss them. We thank them for their many years of excellent service and wish them all the best as they enter a new stage of life.

• Our plant staff meeting was a great success. We moved our meeting from our traditional January slot to a late summer date to be able to include our seasonal survey technicians and recognize their valuable contributions to our programs.

• PGE indicated that it will end the *Arundo donax* pilot project as an alternative fuel option for its coal-firing power plant in Boardman. The project started several years ago, planting several dozens of acres of *Arundo donax* in irrigated plots in Morrow County. Our Noxious Weed Program conducted a weed risk assessment and established clear rules to closely regulate production of *Arundo donax* in eastern Oregon. The rule requires PGE to completely eradicate *Arundo donax* from the fields, which will be monitored by our Noxious Weed Program and the County Weed District over the next three years.

• We broke ground on an innovative approach to eradicate the invasive light brown apple moth (LBAM) in Polk County, which would be the first in the country. We aerially applied a mating disruption pheromone and the biological control agent, *Bacillus thuringiensis* var. *kurstaki*. This was the first aerial application of the pheromone SPLAT of its kind in Oregon. As of print date, our LBAM lead and Lepidoptera specialist Richard Worth has not found any LBAM in any of our delimitation traps.

• This year, Mexico was a popular travel spot for our Programs Area, in particular the Nursery and IPPM Programs. In September, a delegation traveled to Monterrey, Mexico, to participate in a training workshop for the Mexican border inspectors. The training focused on the inspection of Oregon Christmas trees when entering Mexico. Gary McAninch, Jim LaBonte, and I gave presentations to assist in the identification of Christmas tree pests. As part of the visit, we were able to negotiate changes in the Mexican Christmas tree quarantine. In October, I participated in an international NAPPO (North American Plant Protection Organizations) meeting in Merida, Mexico. During this meeting, I was able to confirm a deal with Mexican regulators to exchange the mandatory pesticide application requirements for Christmas trees with a more generic integrated pest management program paragraph. We have been working on this since 2010. The two Mexico trips were overshadowed by two terrible earthquakes that we missed by only a couple of days.

• With a new Administration in DC also came some new rules and changes that have impacts on our work. Our Noxious Weed Program receives funding for its work on federal land from the US Forest Service and BLM (Bureau of Land Management). Changes in the approval system within the Interior Secretary is jeopardizing funding of our work with the BLM. We have not given up hope that we will receive funding in the end, but we have to also prepare for contingency plans if not.

• Another good example of the strong collaborative nature of our programs is the Oregon Bee Project. Our bee specialist, Sarah Kincaid, worked very hard to bring a diverse audience to the table and design a comprehensive strategic plan to protect bees in Oregon. This accomplishment would have not be possible without the assistance of many colleagues from our Plant Programs Area and other ODA programs, and Andony Melathopoulos, the OSU Extension bee specialist.

• The potential change of the new boundaries of the Siskiyou National Monument by the new US Administration prompted a review of any potential adverse impacts on T&E plant species in the area. Bob Meinke from our Native Plant Conservation Program prepared a short affidavit for the Oregon Department of Justice about three native plant species potentially affected by the proposed changes in preparation of legal actions by Oregon.

• And then there were the Mormon crickets. Some of Arlington's residents experienced a terrifying spring with the "ugliest bug ever" crawling all over people's gardens and homes in this usually very quiet small eastern town. Our eastern Oregon entomologist Paul Blom worked with concerned...
residents to find solutions to the Mormon cricket invasion. (By the way, the Mormon cricket, in my opinion, is a very beautiful and very interesting insect.)

These are just a few highlights of all the accomplishments our programs have achieved in the last year. There is a lot more that I could report on, but I don’t want to steal the thunder of the reports of our individual programs that follow in this great 2017 Annual Report.

Thank you for all the great and hard work you do for Oregon and our Department. I am truly honored to work with and for such fine experts. I am looking forward to another exciting year in 2018.
Plant Protection and Conservation Programs Staff

**Plant Protection & Conservation Programs Director**
  Dr. Helmuth Rogg

**Office Support**
  Cara McFetridge, Office Manager

**Program Assistants/Administrative Specialists**
  James Chin, Nursery/Christmas Tree  
  Started in March 2017
  Ashley Wagner, Noxious Weed & IPPM

**Insect Pest Prevention and Management Program**

**Program Manager**
  Clint Burfitt

**Entomologists**
  Todd Adams
  Dr. Barry Bai
  Dr. Paul Blom
  Dan Clark
  Chris Hedstrom
  Dr. Diana Kearns
  Sarah Kincaid
  Jim LaBonte
  Pat Mitchell
  Kerri Schwarz
  Josh Vlach
  Richard Worth

**Imaging Specialist**
  Joshua Dunlap  
  Started in July 2017

**PCR Specialist**
  Tom Valente

**Volunteers**
  Rick Westcott, retired taxonomist

**Native Plant Conservation Program**

**Program Leader**
  Dr. Bob Meinke

**Conservation Biologist**
  Jordan Brown, Field Botanist/Crew Leader

**Noxious Weed Control Program**

**Program Manager**
  Tim Butler

**Biological Control Entomologist**
  Joel Price  
  Started in December 2017

**Projects Coordinator**
  Tom Forney

**Integrated Weed Management Coordinators**
  Mike Crumrine
  Glenn Miller
  Sarah (“Beth”) Myers-Shenai
  Carri Pirosko
  Mark Porter
  Bonnie Rasmussen

**Grant Program & Special Project Coordinator**
  Tristen Berg

**Nursery and Christmas Tree Program**

**Program Manager**
  Gary McAninch

**Horticulturists**
  Christy Brown
  Debbie Driesner
  Sharon Ferrier  
  Started in July 2017
  Sherree Lewis
  Melissa Lujan
  Karl Puls  
  Retired in June 2017
  Lisa Rehms
  Eric Reusche
  Scott Rose  
  Retired in June 2017
  Susan Schouten

**Assistant Horticulturist Inspectors**
  Annie Debauw  
  Started in December 2017
  Erin Wickliffe  
  Started in August 2017
Nursery and Christmas Tree Program

Goals and Objectives

The Nursery and Christmas Tree Program assists the Nursery and Christmas tree industries in the production, marketing, and protection from pests and diseases of Oregon nursery stock and Christmas trees. We accomplish this by:

- Assisting nurseries in providing nursery stock that is free of dangerous pests and diseases.
- Providing current pest and disease management information to the Christmas tree and nursery industries.
- Providing inspection and certification of nursery stock and Christmas trees grown and shipped from Oregon.
- Preventing the spread of injurious pests, plant diseases, and noxious weeds within the state of Oregon on nursery stock.
- Inspecting incoming shipments of plant material for compliance with US and Oregon quarantines.
- Providing current information to all licensed Christmas tree growers and nurseries relative to importation requirements of other states and countries.

Highlights

- Program staff performed inspection and export certification services for Oregon's $90 million Christmas tree and $917 million nursery industries.
- Nursery Program horticulturists issued 5,636 (up from 5,263 issued in 2016) state and federal phytosanitary certificates. All certificates were issued using the USDA's electronic Phytosanitary Certificate Issuance and Tracking (PCIT) system.
- Oregon nursery stock and Christmas trees were exported to 59 foreign countries.
- Two Oregon nurseries participated in the United States Nursery Certification Program (USNCP).
- Program personnel continue to certify lumber, logs, and wood chip shipments to China and other Asian rim countries.
- The Nursery Research Assessment Fund collected and made available approximately $187,000 for nursery-related research grants.
- Nursery and Christmas Tree Program personnel staffed a booth at the Farwest Show, Oregon's largest nursery trade show.
- One hundred twenty-seven Christmas tree and nursery stock growers participated in this year’s European Pine Shoot Moth (EPSM) trapping program. EPSM traps were placed at 214 separate growing grounds.
- In order to meet the requirements of the federal Phytophthora ramorum order, 933 inspections were conducted in Oregon nurseries.
- Eight nurseries, with a recent history of P. ramorum infestations, were required to go through an enhanced federal certification process. Six nurseries that do not ship nursery stock out of state were required to go through a state certification process.
- Five Oregon nurseries were confirmed positive for P. ramorum.
- Twenty-six nurseries participated in Oregon’s Plant Cleanliness Program for boxwood blight.
- Two Oregon Nurseries are participating in the National Plant Board’s Systems Approach to Nursery Certification (SANC) Program.
- The Nursery Information Management System (NIMS) saw extensive use in documenting the staff’s daily activities and as a tool for managing the P. ramorum certification program.

Susan Schouten & Sharon Ferrier.
Retirements

The Nursery & Christmas Tree Program saw the retirement of two long serving staff members in 2017, Horticulturist Karl Puls (23 years) and Horticulturist Scott Rose (17 years). Both brought experience, knowledge, and enthusiasm to the job. We wish our friends and colleagues much happiness and success in their retirements.

Sustainability

The large turnover in staffing, due to recent retirements over the past four years, provided the Nursery and Christmas Tree Program the rare opportunity to review and make changes to its staffing structure. The Nursery Program, ODA Nursery Research & Regulatory Advisory Committee, and the Oregon Association of Nurseries worked together to develop a program staffing structure that was financially sustainable while still meeting the inspection and certification needs of the nursery and Christmas tree industries. The new structure allows us to strategically use our Horticulturists (NRS-3) to concentrate on higher value duties such as developing pest risk plans for nurseries, coordinating and leading audits, interpreting regulations, issuing certifications, and developing and managing compliance agreements. It lessens personnel costs by switching some routine inspections from the Horticulturists to the newly created Assistant Inspector positions (NRS-1). This structure also sets the program up for the transition from the inspection and certification of nursery stock at the loading dock to certifications using a Systems Approach to Nursery Certification (SANC). The ODA's Nursery Research and Regulatory Committee signed off on the new sustainable structure in December of 2016. As part of our new sustainable staffing structure, we hired two Assistant Inspectors, Erin Wickliffe and Annie DeBauw. In addition, we hired two new horticulturists, Sharon Ferrier to replace Bev Clark and Christy Brown to replace Karl Puls and we hired James Chin to replace Sue Nash as the Program's Administrative Specialist.

General Information

The Nursery industry continues to be one of the largest agricultural commodity groups in Oregon. ODA's Nursery Inspection Program is funded almost entirely from nursery license and certification fees. Three different nursery license types are issued depending on the nature of the nursery business.

A dealer’s license is required for businesses that buy and re-sell nursery stock. Garden centers, retail stores, florists, and landscapers are required to have dealer licenses. Dealer license fees are based on the purchase price (wholesale cost) of nursery stock. Cut flowers are exempt from the licensing program.

Two types of nursery grower licenses are available through the Nursery Program: a license specific for growers of greenhouse grown herbaceous plants and a license for all other nursery crops as well as collectors of native plants. Nursery grower license fees are based on the wholesale value of nursery stock sold.
During the 2017 calendar year, the Nursery Program issued 1,808 dealer licenses ($183 million reported purchases); 288 licenses to greenhouse growers of herbaceous plants ($94 million reported sales); and 837 licenses to nursery stock growers and collectors of native plants ($639 million reported sales). The total value of nursery stock purchases and sales reported to the Nursery Program in 2017 was $917 million. In 2017, the Nursery Program conducted 4,626 inspections at licensed nurseries. Inspections are divided into three general categories: routine inspections (1,054), required inspections (3,501), and systems inspections (71).

The Nursery and Christmas Tree Program field staff issued 3,228 federal phytosanitary certificates for consignment of nursery stock to foreign countries. In addition, 494 federal phytosanitary certificates were issued by nursery inspection staff for shipments of lumber, logs, and wood chips.

Nursery Research Assessment Fund
The Nursery Program received ten nursery research proposals for the 2017 grant year. Proposals were competing for approximately $221,000, which was collected through nursery research assessment fees. The Nursery Research and Advisory Committee, in cooperation with the Oregon Association of Nurseries Research Committee, selected nine research projects for funding. Several research projects that were not funded, or only partially funded by Nursery Program grant dollars, were recommended to receive funding from independent private sources.

Plant Importation Notification Rule
In 2004, ODA adopted Oregon Administrative Rule 603-054-0027 also known as the plant importation notification rule. The rule requires recipients of imported nursery stock to provide the Nursery Program notification of the arriving shipment within two business days by email, phone, or fax. This allows inspectors the opportunity to inspect shipments of high-risk nursery stock shortly after arrival. The notification must include the species, source, copies of certifications for the plant material, and the shippers contact information.

Upon notification of the incoming plant material, the Nursery Program will contact any nursery where an inspection is needed and ask the nursery to set aside the plant material in question. Inspections are performed for one or more of the following reasons: proper certification is missing, plant material is...
prohibited or restricted, or the material is high risk and should receive an inspection to ensure the safety of the nursery industry.

Once inspected, plant material may be sampled and submitted to the ODA plant pathology lab for further analysis. Plant material may also be: released upon visual inspection, accepted but only with treatment, or rejected resulting in either a return of the material to the shipper or destruction. A total of 61 in-coming plant shipments were determined to be high-risk and were inspected by Nursery Program horticulturists.

**Phytophthora ramorum** Sudden Oak Death Program 2017

Oregon nurseries found positive with *Phytophthora ramorum*, a federally regulated pathogen, are required to follow APHIS-PPQ regulations when shipping host plants interstate. If a nursery decides to ship in-state only, they must follow ODA regulations for movement of *P. ramorum* hosts. A nursery must comply with these regulations until they are disease free for 3 years (minimum of 6 sampling inspections). Other nurseries that are not in the regulated program are inspected by their nursery inspector at least once a year to monitor for signs and symptoms of *P. ramorum*. The one exception is Curry County where host nurseries are inspected monthly due to *P. ramorum* in the native landscape.

On average, 197 samples are collected from each interstate (out of state) shipping nursery. Nurseries that ship in-state only are sampled a minimum of 40 samples. These numbers are the minimum number the ODA needs to collect, however we may collect more from each location if the inspectors deem it necessary. Samples of water, potting media, used container debris, or the cull area may also be collected during the inspection. If any samples are found positive the nursery must take additional steps for disease mitigation, and their release date resets. Sampling occurs twice a year.

Oregon currently has 14 nurseries involved in the *P. ramorum* program. In the spring, we had 10 interstate shippers and 4 in-state shippers. Four of the interstate and 1 state nursery were found positive. In addition, 3 of those nurseries (2 interstate, 1 state) had *P. ramorum* soil positives. These locations received steam sterilization treatment from the ODA in August.

Things changed up for the fall season as 2 nurseries decided to leave the interstate program and move over to the state program. These nurseries are no longer allowed to ship or sell host material to customers outside of Oregon. They will remain under ODA supervision until they complete all requirements. The season ended with all 6 in-state shippers testing negative and only 1 interstate nursery testing positive. There were no soil positives detected during the delimitation.
Mitigating Soil Positives

There are few options for nurseries when it comes to mitigating soil positives. This can pose a challenge as solarization is difficult, fumigants may not be available to use at the location, and purchasing a steam sterilizer machine can be too expensive. The ODA Plant Health Lab purchased a Sioux Steam-Flo® machine to assist nurseries with sanitizing the soil to keep the pathogen from spreading. We offer the use of the machine and our service when there are no other options for the nursery.

Boxwood Blight

Boxwood blight (also called “box blight” in Europe), caused by the fungal pathogen Cylindrocladium pseudonaviculatum (syn. C. buxicola), was reported for the first time in the US at two North Carolina production nurseries in October 2011. Following this initial discovery, the disease was found in nurseries and landscapes in many eastern states, at least one Canadian province, and seven production nurseries in Oregon. In 2017, plants infected with boxwood blight were found at several Oregon nurseries that were not previously known to be infected. Positive nurseries, in cooperation with Nursery Program officials, developed and implemented procedures aimed at aggressively removing the pathogen from their operations and stopping the spread of this disease into landscapes and other nurseries.

In cooperation with the National Plant Board and the Nursery Industry, the Nursery Program initiated the Nursery Cleanliness Program for boxwood blight in 2012. This is a voluntary program of inspections and best management procedures designed to help nurseries provide clean boxwood nursery stock to their customers. There are currently 26 Oregon nurseries in the program. Nurseries participating in the program must meet several requirements.

Examples of these requirements include:

- Enter into a compliance agreement with the Nursery Program.
- Purchase boxwood plants from nurseries participating in an approved cleanliness program.
- Scout regularly for the disease.
- Remove and destroy leaf debris from boxwood plant growing areas monthly.
- Take action to eradicate boxwood blight, should it be found at the nursery.
- Maintain shipping records for a minimum of 12 months.
- Allow Nursery Program inspectors access to inspect boxwood plants for presence of the disease.
- Participate with the Nursery Program in audits to ensure compliance with program requirements.

Nurseries wishing to participate in this voluntary program can get more information by contacting the Nursery Program.
Systems Approach to Nursery Certification (SANC) 2017

The SANC is a volunteer program developed by the National Plant Board (NPB). The goal is to create harmonization by enhancing the nursery certification process. The practices of the entire nursery system are examined and then monitored using an audit based system. Best Management Practices (BMPs) are created to mitigate any potential pathways and then checked with audits conducted by both the nursery and the Nursery Program staff. This is a scalable program intended to include growers of all sizes. Oregon currently has 2 nurseries involved in SANC. Oregon Pride Nurseries Inc., located in McMinnville, has completed all requirements and is shipping under SANC certification. Walla Walla Nursery, located on the Oregon/Washington border, has completed their requirements for the Washington location and are in the process of certifying on the Oregon side. These nurseries must still comply with all state and federal quarantine requirements and existing certification programs.

Gary McAninch and Melissa Lujan both serve on subcommittees for the SANC. Gary is involved with Training and Melissa with the Inspectors and Steering committees. There are meetings held to work on documents and exchange ideas between groups. A workshop held each year in Florida gives committees a chance to evaluate progress to ensure a successful future. In addition, Melissa attended a steering committee in North Carolina in June. Program activities were reviewed and each committee created a SWOT analysis. Action items were then created based on these discussions. The meeting ended with discussion on how to move forward once the pilot phase is over.

Nursery Information Management System (NIMS)

During the past year, the program’s NIMS development group made great strides in making mobile NIMS more usable in the field. Mobile NIMS is a FileMaker Go application for use with the iPhone. With this application, staff can access information from the field such as: real-time license status, licensee contact information, customized reports such as licensee lists by type and overdue inspections, and date of last contact and activity. Staff can also add activities in the field as desired.

Recent developments include:

- Adding an electronic inspection report for use on mobile digital devices such as iPhone/iPad. In addition, adding the capability of e-mailing the report directly to the grower.
- Larger format for the larger iPhone 6 screen.
- More sort options, such as by city/zip.
- Capability of adding and accessing inspector notes.
- Quicker connection and sync speeds.

Christmas Tree Program

In 2017, the Christmas Tree Program issued 399 Christmas tree grower licenses. License fees were used to fund 1.5 FTE (field staff) and two 0.14 FTE (Program Manager and Program Assistant). The Christmas Tree Program provides inspection services to assist growers in the production of high quality Christmas trees. Because 90 percent of Oregon’s Christmas trees are sold out of state, the main activity of the program is to certify trees destined for domestic and foreign markets.
In 2017, Christmas tree growers harvested approximately 4.7 million trees from about 29,396-planted acres. Figure 8 shows the number of phytosanitary certificates issued over the past four years for Christmas trees going to foreign destinations and Hawaii.

**Christmas Tree Shipping**

**Mexico**

During the 2017 Christmas tree shipping season, Nursery Program Horticulturists issued 1,356 Federal Phytosanitary Certificates for containers of 659,244 Christmas trees going to Mexico. A total of 19 containers were denied entry in Mexico due to the presence of quarantine pests, a rejection rate of approximately 1.5 percent. The most rejections were due to the presence of *Cylindrocopturus furnissi* (11), followed by *Sciopithes obscurus* (3), *Polistes dominula* (2), *Pyralidae* sp. (1), *Contarinia constricta* (1), and *Otiorrhynchus rugosostriatus* (1).

In September, a delegation from the ODA’s Nursery and IPPM, and Market Access Programs traveled to Monterrey, Mexico, to participate in a training workshop for the Mexican border inspectors. The training focused on the inspection of Oregon Christmas trees when entering Mexico. Gary McAninch, Jim LaBonte, and Helmuth Rogg gave presentations to assist in the identification of Christmas tree pests. As part of the visit, we were able to negotiate changes in the Mexican Christmas tree quarantine and to renew relationships with our regulatory colleagues in Mexico.

**Hawaii**

Oregon Christmas tree shipments to Hawaii went exceptionally well during the 2017 shipping season. Enhanced phytosanitary measures adopted by the shippers and Nursery Program inspection staff have paid off. Unwanted pests were still found in only five (3.1%) of 160 containers inspected by the Hawaii Department of Agriculture (HDOA). Four of the rejections were due to the presence of slugs and one due to the presence of a yellow jacket. Trees infested with regulated pests were treated by HDOA to remove the unwanted hitchhikers. All expenses related to the pest mitigation measures conducted by HDOA were born by the importer.

**Other Foreign Shipments**

Christmas Tree Program inspectors issued certificates to the following countries with no phytosanitary issues noted: Canada (36), Hong Kong (32), Singapore (28), Japan (18), The Philippines (4), China (3), United Arab Emirates (2), Palau (2), Viet Nam (1).

**Domestic Shipments**

No major issues noted for domestic Christmas tree shipments in 2017.
Western Horticultural Inspection Society (WHIS) Annual Meeting 2017

The Horticultural Inspection Society (HIS) is an organization of State Inspectors with chapters located in each region of the United States. Meetings are held annually per chapter where current pests, program updates, and regulatory issues are discussed. Group tours in the hosting state showcase local agriculture. The Western chapter has 13 states (AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, WY) with a different state hosting the meeting each year. This meeting is a great opportunity to network and provide unique training opportunities. The 2017 annual WHIS meeting was held in Richland, Washington, October 10-13.

The first day began with a tour of the Zen-Noh Hay Co. in Pasco, WA. The facility produces pressed raw hay and cubed hay used for livestock forage. Most of their product is exported to customers in Japan and the rest sold domestically.

Next on the tour was a visit to Walla Walla Nursery. The nursery is involved in the Systems Approach for Nursery Certification (SANC) pilot project for both their Washington and Oregon locations. The SANC is a voluntary program intended to help nurseries look at the entire growing process to prevent any problems or pests entering the nursery industry. We broke up into different groups and did a mock audit in different growing areas with the nursery staff. This was a good opportunity for inspectors to ask questions about procedures and also a great practice for the nursery staff. Since the program has been implemented management reports that there has been an increase in morale and ownership among staff.

The next day, we toured the WA State University Clean Plant Center NW. We learned about the clean virus program for grapes, fruit trees, and hops. Clean mother plants can be purchased by growers ensuring a clean source for their crops.

After the facility tour, we presented our individual state reports for the Western region. These reports include nursery information, Phytosanitary statistics, trapping data, new insect and disease finds, program and personnel changes, and top ten lists.

The group then toured a nursery that has an area infected with grapevine leafroll virus. The virus spreads plant to plant from mealybug infestations. Fruit production still occurs, but the longer the vine has the virus the grapes are less viable for wine production. Due to the relationship the nursery has with the Clean Plant Center NW, they were able to act on the infestation and begin mitigation before it got out of control.

Next, we toured a Cannabis growing operation located in another area of the nursery. The growing area was under strict security, with tarped fencing, and we all had to sign a visitor log and wear visitor stickers. The small staff discussed challenges with the group that they have faced in order to get their product out for sale since it is a new road to venture down. The area was very clean and nicely maintained, which helps keep disease and insect problems down.

The evening ended with wine tasting and dinner at the Walter Clore Wine and Culinary Center. We tasted a variety of Washington wines with a lesson on the wine growing regions in Washington state. Dinner was provided with ingredients complimenting the Pacific Northwest. After dinner, the WHIS Business Meeting was held with the Treasurer’s report read then old and new business discussed with the group. The last order of the business meeting is the officer elections, and deciding the location of the next meeting. The Vice President position traditionally goes to the next hosting state. The 2018 WHIS meeting will be held in Tucson, Arizona, October 10-12. Oregon is on the horizon to host in the next few years. This will be a great opportunity to show off our state’s agriculture.
Insect Pest Prevention and Management Program

Introduction

The Insect Pest Prevention and Management (IPPM) Program helps to protect Oregon’s natural and agricultural resources from the negative ecological and economic impacts of invasive exotic insect species. IPPM consists of professional and dedicated entomologists who apply the following approaches to address insect-related invasive species challenges: early detection and rapid response activities, diagnostic services and high resolution imagery, and biological control research and implementation. In addition, IPPM is now engaged in a more recent project that focuses on pollinator (bee) health.

Historically, many invasive species have caused economic damage that has resulted in long-term increases in pesticide use in urban and agricultural environments. Pesticide use, in turn, can reduce water quality and have negative impacts on native or beneficial insect species. Invasive species can also harm trade by preventing Oregon’s agricultural products from being accepted by exterior state and foreign markets. On average, IPPM documents seven new invasive insect species each year in Oregon. In 2017, IPPM implemented three major eradication projects designed to protect nursery, floriculture, fruit orchard, and berry production. Because of the funding structure of IPPM and legislative mandated fiscal reductions, this program continues to suffer budget cuts which have inadvertently led to the largest Japanese beetle population ever detected in Oregon. While the relevance of IPPM’s mission continues to increase, the ongoing resource instability has created more challenges. To address this reality, IPPM is developing new partnerships that will lead to opportunities to meet the challenges created by emerging invasive species. One example of this is the Cedar Mill Japanese beetle eradication project. This eradication project is representative of the IPPM Program values of inclusivity and transparency. It has brought together a diverse group of supporters and collaborators from the community, industry, and local and national governments. This broad coalition of involvement has resulted in the implementation of a community based effort that is striving to prevent the establishment of a destructive invasive species.

A last example of a more recent collaborative program with many partners is the Oregon Bee Project, which is creating a community of Oregonians to address issues around pollinator health. The goals of the project include educating people in ways to safeguard bees as well as to highlight the industries and people working towards pollinator protection.

Clinton Burfitt
IPPM Program Manager

IPPM permanent and seasonal staff attended the all Plant Protection and Conservation Program Areas meeting in September 2017.
2017 Program Highlights

**Japanese beetle:** An unprecedented 23,454 JBs were caught in 2017 in the Cedar Mill area near Portland. Ten JBs were caught at a new site in the small town of Oakland and one JB was caught in the Green area near Winston, both sites in Douglas county. JBs were also caught at PDX (11) and Swan Island (five). Eradication efforts will continue in the Cedar Mill area and begin in Oakland in 2018.

**Gypsy moth:** There were 11 new GM catches in 2017: Multnomah county (three moths at three sites), Benton county (four moths at one site and one moth at another site), Lane county (two moths at one site), and Josephine county (one moth). Delimitation trapping is planned for all 2016 and 2017 catch sites.

**Light brown apple moth:** For the first time aerial applications of organic Mating Disruption (MD) and Btk products were used to eradicate an incipient population of LBAM in Polk county. Delimitation traps (180) were also placed in the area and 774 detection traps were deployed throughout western Oregon. No moths were caught in 2017.

**Bee project:** A draft of the Oregon Bee Strategic Plan was completed in 2017. Numerous workshops and outreach events were held in over 20 different locations around the state.

**Mormon cricket:** An outbreak of Mormon cricket populations across the West and in Arlington, Oregon created news headlines in 2017 as residents scrambled to protect their gardens and farm crops and keep the pests out of their homes. IPPM staff participated in a town hall meeting in Arlington in June and other field meetings in August.

**Cannabis:** IPPM staff continue to help cannabis growers with pest issues. A new significant detection in 2017 was the cannabis or hemp aphid (*Phorodon cannabis*), which can cause major problems for growers.

**Outreach:** IPPM staff held numerous outreach and educational events in 2017, including working at a booth at the Oregon state fair, speaking in classrooms around the state, and leading workshops to teach identification skills for bees and exotic wood boring beetles.

**Exotic wood borer:** IPPM collaborated with the Oregon Department of Forestry and Washington Department of Natural Resources in an exotic wood borer survey at 12 sites along the Columbia River. Staff identified 46,825 specimens collected from 96 Lindgren funnel traps. Two species of concern were detected.
Section 3—Insect Pest Prevention and Management Program

Asian and European Gypsy Moth Program

Barry B. Bai and Chris S. Hedstrom

The Insect Pest Prevention and Management (IPPM) Program at the Oregon Department of Agriculture (ODA) routinely conducts extensive survey programs for the Gypsy moth (GM, *Lymantria dispar*) and its Asian strain (AGM). Both strains can be detected with the same trap and lure.

IPPM placed 3,970 GM and 11,165 AGM traps (15,135 traps) throughout Oregon in 2017. Thirty-one out of 36 counties were trapped. In addition, United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Plant Protection and Quarantine (PPQ) Portland staff placed 81 AGM traps in high risk areas around the Port of Portland environs. Eleven Gypsy moths were trapped statewide from four counties: Multnomah County (Portland, three moths), Benton County (Corvallis, four moths; 12 miles southwest of Philomath, one moth), Lane County (Eugene, two moths), and Josephine County (southeast of Cave Junction, one moth). All 11 moths were trapped at new sites. We did not catch any moths from any old sites including Grants Pass where we trapped GM four years in a row (2013, two GMs; 2014, four GMs; 2015, seven GMs; 2016, four GMs). Delimitation traps will be placed in 2018 at all sites where Gypsy moths were caught in 2017 and 2016.

No Gypsy moths were caught in the Portland eradication area where 8,674 acres were aerially sprayed with the biological pesticide *Bacillus thuringiensis* var. *kurstaki* (i.e., Foray 48B) in the spring of 2016. Delimitation traps were placed throughout the eradication area in 2017. AGM populations in Asia and the Russian Far East continue to pose a threat to the US and Oregon. International trade and commerce activities increase the likelihood of new introductions. Major ports and waterways at risk from ships carrying AGM egg masses were trapped, including about 90 miles of the Columbia River (from Astoria to Portland), the Port of Portland, and the Port of Coos Bay in Coos County.

No eradication treatments are planned for 2018 anywhere in Oregon. However, the AGM eradication site in Portland will be trapped for one more season (2018) before a complete eradication can be declared.

Japanese Beetle Program

Barry B. Bai and Chris S. Hedstrom

Oregon continues to experience invasions of the Japanese beetle (*Popillia japonica*) from infested states in the eastern US. In order to protect Oregon’s nurseries, fruit production areas, the grass seed industry, and other natural resources, the IPPM program continues to implement an intensive JB detection program that complies with the national JB harmonization plan. In addition, ODA enforces a strict exterior JB quarantine rule to prevent new introductions from infested states via nursery stocks.

In 2017, an unprecedented 23,454 JBs were caught in the Cedar Mill area near Portland. For 27 years from 1988 to 2015, IPPM trapped a total of 403 JBs and conducted seven successful JB eradication programs at different locations around Oregon. However, in 2016, IPPM caught 369 beetles in Cedar Mill. This large, expanded infestation has become a priority project for IPPM and eradication efforts are now ongoing.

A symposium, “The Western Expansion of Japanese Beetle (*Popillia japonica* Newman): Encounters with Regulatory Entomology,” was organized by Clint Burfitt (ODA IPPM Manager) and Jason Leathers (California Department of Food and Agriculture) for the Annual Entomological Society of America meeting, held in Denver, Colorado in November. Presented papers included information about the history of JB in the US, eradication successes, and management options for the Japanese beetle.

Ellen Zeleznik in Corvallis forested area at a new Gypsy moth site.

Number of Japanese beetles caught in 2017 in the Cedar Mill vicinity near Portland.

<table>
<thead>
<tr>
<th>Trap Total</th>
<th>Count</th>
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<tr>
<td>1-5</td>
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<tr>
<td>5-25</td>
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<td>25-100</td>
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</tr>
<tr>
<td>100-500</td>
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<td>500+</td>
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2017 Oregon Japanese Beetle Trap Catches

Cedar Mill Area (23,454 total beetles caught)
Section 3—Insect Pest Prevention and Management Program

Trapping
In 2017, IPPM placed 7,268 JB traps in 31 of 36 Oregon counties. Of these, 3,162 delimitation traps were placed in the Portland metro area. The remaining 4,079 traps were placed at high-risk sites in cities, towns, and rural areas throughout the state. In addition to the JBs caught in the Cedar Mill area, there were a number of other detections. IPPM trapped JBs in four other areas: Multnomah County (Portland International Airport, 11 beetles; Swan Island, five beetles), Douglas County (Oakland, ten beetles; Green, one beetle). An additional 27 traps were placed in Oakland after the first detection in August. The beetle catches from these four areas are most likely unrelated to the Cedar Mill infestation. Delimitation trapping is planned for all positive JB sites in 2018.

Eradication
In 2017, IPPM conducted JB eradication projects at two sites: Cedar Mill (approximately 1,000 acres, 2,459 properties) and Portland International Airport (PDX, approximately 406 acres). Soil treatments with Acelepryn G were applied in April and May to control the larval stage of JB. All turf received one application of Acelepryn G and the granules were irrigated into the ground by either watering systems or rain water. Extensive outreach efforts and collaboration with partner organizations, including written notices, public and interagency meetings, helped to make the treatment possible. The Cedar Mill residential neighborhood will be the focus over the next four years for a continuing effort to eradicate the Japanese beetle. PDX and the neighboring Air National Guard base were also treated for JB in 2017.

Airplane Inspection
IPPM did not inspect any cargo planes at PDX in 2017. USDA-APHIS again had a reduced JB airport monitoring program because of severe federal budget cuts. When JB populations at airports in eastern states reach levels that pose a risk of live beetles entering aircrafts, JB exclusion methods or chemical treatments of airplanes are required. In 2017, USDA-APHIS regulated seven airports in six states: Omaha (Nebraska), Des Moines and Cedar Rapids (Iowa), Dover (Delaware), Indianapolis (Indiana), Kansas City (Missouri), and Bentonville (Arkansas). A biweekly national conference call was set up by USDA-APHIS to share JB information among all stakeholders.

European Chafer Program

James R. LaBonte

The European chafer (Amphimallon majale) is native to Europe. It was first detected in the United States in 1940 and has since been found in thirteen eastern states, British Columbia, and Ontario. In 2015, it was found in Seattle, WA, and it is now well established in the SeaTac (Seattle’s international airport) area. The larvae feed on roots, causing damage similar to that of Japanese beetle (JB) grubs. They attack a wide variety of plants, but are best known for severely damaging lawn and pasture grasses, including sod. They also attack cereal and legume crops. Unlike JB, adult European chafers cause little damage to foliage. Based on behavior elsewhere, this pest could be a significant threat to residential lawns and the production of grass seed and turf, wheat and other cereals, and forage crops in Oregon.
In 2015, IPPM trapped European chafer for the first time in Oregon. Twenty adults were found in four JB traps at the Portland International Airport (PDX). These traps were part of the regular JB PDX detection and delimitation trapping. In 2016, 184 beetles were trapped in 24 traps in the same general area. In 2017, 585 beetles were trapped in 27 traps, also in essentially the same locale. One trap had 480 European chafers in it!

Three successive years of increasing numbers of beetles and positive traps are proof of an established, expanding population of European chafer. However, we have not trapped this pest outside a small area of PDX, so we hope eradication is still possible.

Site access problems and application timing were probably why the initial eradication efforts in 2016 were unsuccessful. In 2017, the granular pesticide, Acelpryn G (the same product used in the west Portland JB eradication project), was applied in April. This earlier application time is a better match for the life history of European chafer. As with JB, this product doesn’t kill adults, but only developing larvae, so the effectiveness of our efforts won’t be known until traps are examined in 2018.

Grasshopper and Mormon Cricket Program

Paul E. Blom

The 2017 Oregon grasshopper (GH) and Mormon cricket (MC) survey season, conducted by IPPM in cooperation with the USDA-APHIS-PPQ, found that most Oregon grasshopper populations continue to increase.

Spot checks for MC in the Arlington area began during April and the formal survey for MC and GH began May 15. Surveys for both MC and GH were completed September 15. Nymphal surveys take place early in the season and are used to locate potential outbreak areas for the current year. Adult surveys (this year July 10 - September 15) are used by IPPM and APHIS to make predictions for the following season, estimating economic levels as 8 or more GHs per square yard. In 2017, a total of 1,657 sites were visited. Of the total stops, 769 were during the period for nymphal GH surveys and 888 during the adult period. Approximately 3.3 million acres across 17 counties in eastern Oregon were estimated to contain economically infested areas. Eleven (11) of these counties had greater than 100,000 economically infested acres.


<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Counties</th>
<th>Acres of Econ. Infest.</th>
<th>Samples w/Econ. GH / yd²*</th>
<th>Mean GH / yd²*</th>
<th>Number of GH Surveyors</th>
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Percentage of surveyed area estimated to be at an economic density.

Because survey resources have been reduced since 2011, one way to compare population densities and trends among years is to calculate percentages of economically infested acreages. Such a comparison shows resurgence in the eastern Oregon grasshopper population densities from 2013 through 2017.

Although the resurgence is not evident across all of eastern Oregon, this year, more regions are showing density increases. Several of these regions will be mentioned below. Areas of high density are consistent with the historical pattern.
Areas of Special Mention

Harney County - Malheur National Wildlife Refuge and Vicinity

Since 2014, we have noted population increases at various locations in the Burns region. This has involved several species of grasshopper. The scale of the outbreak in 2016 initiated plans for treating around 25,000 acres of federal lands in 2017. Subsequently, a few thousand acres on both US Fish and Wildlife Service (USFWS) and Bureau of Land Management (BLM) lands were treated by USDA-APHIS-PPQ (July 7) because of a primarily wet winter and a spring filling of Malheur Lake. Some treatments of property by private landowners were also conducted, but an estimate of the acreage is unknown.

It is possible that the populations were not sufficiently reduced by the wet conditions or treatment. We will be watching this area closely in early 2018.

Harney County - Eastside of Steens Mountain

Increasing population densities during 2017 along the east side of Steens Mountain led the BLM to request APHIS-PPQ help with suppression of grasshoppers in some of their management holdings. In June (21-24) 2017, APHIS conducted a suppression across multiple blocks totaling ≈18,000 acres. Given the checkerboard nature of the APHIS-BLM suppression, the amount of concurrent treatment on privately held lands will influence the program’s overall effectiveness. Program effectiveness will again be evaluated during the 2018 survey.

Central Wallowa County

Along a central East-West transect of Wallowa County we found high densities of grasshopper populations. Landowners in the Imnaha area consulted with IPPM on options for addressing the situation. At last report there was little success with efforts around Imnaha and it is likely this area will be challenged again in 2018.
NW Baker - SE Union Counties Corridor

Several landowners in this area expressed the desire for 2017 suppression based on high grasshopper densities found during 2016. Our survey again found elevated population densities during 2017. The amount of intervention that occurred in this region is unknown to IPPM, but if landowners and managers feel the need to coordinate a collaborative suppression in 2018 they should contact their local extension agent.

Northern Gilliam County - Mormon Crickets

Mormon crickets were the issue for northern Gilliam County. IPPM has been noting the buildup of these flightless katydids for a few years now. Until 2017, they had not challenged Arlington residents and local producers were able to keep them out of crops. However, this year the ‘crickets’ reached numbers that overwhelmed fields and marching bands of MC moved through the City of Arlington. Local landowners and homeowners are coordinating plans with OSU extension and IPPM to mount a defense for the expected outbreak in 2018. Hatch is anticipated for late March-early April. Through the efforts of April Aamodt, a local resident, the Arlington plight even made an Animal Planet episode!

Tribal lands

The grasshopper survey intersected tribal holdings at a few locations (approximately 155,167 acres), primarily along the Columbia River, and within the Umatilla and Warm Springs Reservations. Economic threshold densities occurred on 81,023 acres; 33,002 acres had population levels below the economic threshold, and 41,143 acres had no grasshoppers.

Apple Maggot Program

Paul E. Blom

Although they continue to persist, captures of apple maggot, *Rhagoletis pomonella* (Walsh), in eastern Oregon have dropped to very low levels since the start of our Pendleton eradication program in 2006.

Klamath Marsh (National Wildlife Refuge, KMNWR)

Even though the grasshopper population on the Refuge is still at tolerable levels, and it is not likely that the FWS will request a suppression program in the foreseeable future, it is worth mentioning that the densities continue their slow buildup. Private landowners should watch their holdings, especially in early June for any signs of significant hatch. Land managers are also welcome to contact IPPM for assistance in assessing population densities.

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Although they continue to persist, captures of apple maggot, *Rhagoletis pomonella* (Walsh), in eastern Oregon have dropped to very low levels since the start of our Pendleton eradication program in 2006.

Even though the grasshopper population on the Refuge is still at tolerable levels, and it is not likely that the FWS will request a suppression program in the foreseeable future, it is worth mentioning that the densities continue their slow buildup. Private landowners should watch their holdings, especially in early June for any signs of significant hatch. Land managers are also welcome to contact IPPM for assistance in assessing population densities.
2015 detections were again trap delimited and in 2016 three additional moths were detected. All six of the detections in Oregon have been within an approximately one square mile, agricultural area of Polk County and centered on nursery and orchard properties (the core). Oregon is the only state in the continental US, besides California, where LBAM has been found. Details regarding specific aspects of the program are highlighted below. Important changes to the program in 2017 included using new four-component (4C) lures for trapping, expanding the eradication boundary, and aerially applying MD (mating disruption pheromone) and Btk (Bacillus thuringiensis var. kurstaki), an organic biopesticide. In addition, ultraviolet (UV) light traps were set up for females within the MD area.

LBAM Treatment

With clear evidence that an incipient LBAM population was present, IPPM first attempted eradication in 2016 by using species specific mating disruption (SPLAT LBAM HD Organic) in the core area sites, covering about 37 acres. This emulsion formula of the standard 2C LBAM lure was applied by hand to tree trunks in the orchard and on wooden stakes in pots in the nursery using a caulking gun. There were two applications, one in May and one in July. The three moths collected in 2016 indicated that this effort was unsuccessful. Evaluation of the tools and protocols suggest that the MD coverage was not evenly applied and possibly was not broad enough to be effective. Discussion with USDA APHIS scientists and product developers led to a much revised campaign based on experiences from field work in New Zealand and California.

Aerial applications of MD pheromone and Btk were used for the first time in 2017 against LBAM with the goal of eradicating the incipient population. The ODA contracted with Al’s Flying Service (AFS) in Michigan to apply the MD and Btk products to 510 acres, encompassing the 2016 treatment area and positive trap catch sites (see map). The MD pheromone product (SPLAT LBAM HD Organic) targeted the adult flight period and was aerially applied June 21 and August 23, with approximately 8 weeks between sprays. The Btk (Foray 48B, organic formulation) was aerially applied July 6, 12, and 19 and targeted small, young larvae that may be present (based on estimated first flight of adults). Each spray was about a week apart, due to the short field life of the product.
LBAM Delimitation

In 2017, IPPM placed 179 delimitation traps around the 2016 catch sites within a grid of four square miles (see map). All pheromone lures used in 2017, provided by the USDA ARS Otis laboratory in Buzzards Bay, MA, were recently changed from a 2C to a 4C lure blend, as recent studies showed them to be even more attractive to the male LBAM. These traps have offered the possibility of detecting male moths even within the MD area. Additionally, eight internet-linked camera traps (Plurasense) with lures were used near the core area to monitor the moth flight phenology. A camera trap was notably instrumental in finding one of the moths caught in 2016. This was also the first year we used UV light traps within the treatment block that have the ability to detect female moths, unlike the pheromone traps that attract only males. Delimitation pheromone trap samples have been processed and no new moths were found. UV trap samples are still being processed. Based on the negative trap catch data, IPPM currently has no plans for eradication activities in 2018, but does plan to continue intensive trapping efforts.

LBAM Trapping

Because of the 2016 catches, IPPM implemented a broad detection survey covering the western portion of the state in 2017 and 783 traps were deployed. Traps were set from May through September, with checks and lures changed approximately monthly. The statewide trap samples have been checked and no new moths were found.

Grape Commodity Pest Survey

Grape and wine production continues to increase in Oregon and wine grape production now ranks 9th among agricultural commodities in the state (2016). Grapes are grown on 23,000 acres (2016) and the production value is $143 million. Trapping surveys for grape pests in 2017 were conducted in 28 vineyards in 14 counties throughout Oregon. Target species included the grape tortrix (GT, Argyrotaenia ljunghiana) (56 traps), the grape shoot moth (GSM, Sparganothid sulleriana) (56 traps), the European grape berry moth (EGBM, Eupoecilia ambiguella) (58 traps), the grape berry moth (GBM, Paralobesia viteana) (56 traps), and the European grape vine moth (EGVM, Lobesia botrana) (108 traps). Additionally, Copitarsia moths (Noctuidae), were surveyed in some vineyards by UV light traps (25 traps). To date, no targets have been found.

Orchard Fruit Pest Survey

Orchard fruits such as cherries, pears, apples, and plums are important to Oregon’s agriculture. These four commodities accounted for a total production value of $289.4 million in 2016. Trapping surveys for orchard fruit pests in 2017 were conducted in 50 fruit orchards in 13 counties throughout Oregon. Target species included the summer fruit tortrix (SFT, Adoxophyes orana) (50 traps), the plum fruit moth (PFM, Cydia funebrana) (50 traps), the cherry bark tortrix (CBT, Enamonia formosana) (50 traps), the peach fruit moth (PCHM, Carposina nipponensis) (50 traps), Chilean leafrollers (CLR, Proeulia spp., i.e. Proeulia apospata, P. auraria, P. chrysopterus, and P. triquetra) (50 traps), and the cherry blossom moth (CBM, Argyresthia pruniella) (50 traps). No target species have been detected to date.

Solanaceous Crop Pest Survey

Solanaceous crops include potatoes, which ranked 7th among agricultural commodities in Oregon in 2016 ($181.3 million), tomatoes, and peppers. This survey provides critical information on the status of important quarantine pests and will help to maintain export markets for Oregon’s solanaceous crops. The survey primarily included potato fields in eastern Oregon and pepper and tomato farms in western Oregon. The cotton cutworm (CCW, Spodoptera litura), old world bollworm (OWB, Helicoverpa armigera), tomato leaf miner (TLM, Tuta absoluta), and Guatemalan potato tuber moth (GPTM, Teca solanivora) are known pests of solanaceous crops and are of federal and international quarantine significance. A pest survey was conducted for these target species in 2017: cotton cutworm (44 traps), old world bollworm (44 traps), tomato leaf miner (44 traps), and Guatemalan potato tuber moth (44 traps). Twenty-two fields in total were surveyed in these counties: Baker (5), Hood River (1), Josephine (1), Klamath (3), Lane (1), Malheur (2), Marion (2), Morrow (3), Multnomah (1), Umatilla (3), and Wasco (1). No target species have been detected to date.

Pine/Oak Survey

Oregon has native oak and pine species that are unique to the state and Pacific Northwest. These species are all critical habitat trees for wildlife and are often used in urban landscapes. Pines are also a significant timber species with 400 million board feet of timber harvested in Eastern Oregon, primarily from conifer species. In addition, Oregon’s nursery industry is the #1 agricultural commodity in the state, generating $909.4 million in 2016 (2017 Oregon Agripedia). The Columbia River Water Way and the Willamette Valley are at high risk for the introduction of pine and oak pest species.

We surveyed 13 sites for seven significant pine/oak target pests. These included: the false codling moth (FCM, Thaumatotibia leucotreta) (13 traps), honeydew moth (HM, Cryptoblabes gnidella) (12 traps), masson pine moth (MPM, Dendrolimus punctatus) (12 traps), Siberian moth (SM, Dendrolimus sibericus) and pine tree lappet (PTL, Dendrolimus pini) (13 combination traps), pine processory moth (PPM, Thaumetopoea
pityocampa) (9 traps), and oak processionary moth (OPM, *Thaumetopoea processionea*) (9 traps). Sites were located in Jackson (2), Josephine (2), Marion (1), Polk (3), Multnomah (3), and Washington (2) counties. No target species have been detected to date.

It should be noted that there could also be additional impacts to human health from the *Thaumetopoea* spp., as the caterpillars have stinging hairs. In fact, the oak processionary moth has recently invaded London, England where its medical concerns have been quickly recognized. Early detection and, if needed, rapid response to an invasive species that attacks these essential tree species is critical to protecting Oregon’s natural environment, nursery and timber industries, and citizens.

**Nut Commodity Survey**

In 2016, hazelnuts ranked 11th in production value ($118 million) in Oregon. Oregon is the #1 producer of hazelnuts in the US and #2 in the world (Turkey is the #1 producer), with niche markets for other varieties of nuts, including chestnuts. Twelve high-risk commercial nut orchards (one walnut, two chestnut, and nine hazelnut) were surveyed in 2017. The survey targeted five moth pests of regulatory significance and vacuum samples were collected. No pests of regulatory significance have been documented to date and the survey will be completed in June 2018.

**Blueberry TASC (Technical Assistance for Specialty Crops) Project**

*Sarah A. Kincaid*

Blueberries are exported from Oregon to South Korea each year and there are mandated guidelines for this market that have been developed by APHIS, the ODA, and South Korean plant health officials. Blueberry farmers who export their fresh fruit must monitor for pests that are of concern to South Korea. These quarantine pest species include: *Acrobasis vaccinii* (cranberry fruitworm), *Archips argyrospilla* (fruit-tree leafroller), *Conotrachelus nenuphar* (plum curculio), *Epiphyas postvittana* (light brown apple moth), *Hemiberlesia rapax* (greedy scale), *Boisea trivitatta* (eastern box elder bug), *Rhagoletis mendax* (blueberry maggot), and *Rhagoletis tabellaria* (white-banded fruitfly).

In 2016 and 2017, field technicians monitored farms for quarantine pests in blueberry fields by using traps and visual inspections. Selected fields from Salem to Hood River (seven in 2016 and eight in 2017) were trapped and inspected from April to October. All suspicious target pests were collected and submitted to the IPPM program entomologists for identification. No target pests were identified in either 2016 or 2017.

**IPPM staff also developed monitoring protocols and an identification aid (“Export blueberries: Pests of Concern for the Fresh Market in South Korea”) in 2017 to help blueberry farmers in their pest management program. The pictorial guide to pests includes life cycle information, key identification characteristics, and recommended survey methods. The guide is available in English and Korean. In addition, IPPM set up a training session on pests of regulatory significance to South Korea at an Oregon Blueberry Commission meeting. IPPM entomologists were present to discuss pests of concern, display insect specimens, discuss the new ODA guide, and answer questions.**

**Cannabis Support**

*Joshua J. Vlach*

IPPM staff have been assisting with cannabis pest issues since 2015. Due to funding restrictions, Oregon State University is unable to provide extension services for cannabis growers. ODA has agreed to provide some of these services. IPPM staff has not charged for these services up to this point.

Hemp russet mite, *Aculops cannabica*, surfaced as an extremely destructive pest almost immediately upon legalization of recreational cannabis. The number of contacts with cannabis growers has steadily increased...
from 28 in 2016 to 74 in 2017. In addition to the hemp russet mite, the rice root aphid, immature thrips, spider mites, acarid mites, broad mites, and soft scales were identified in 2016. The most common arthropods causing problems were spider mites, hemp russet mites, and rice root aphids in both 2016 and 2017. Many problems not associated with arthropod pests appeared to be root rot caused by improper watering and nutrient inputs and possibly the presence of novel root rot pathogens. There continues to be difficulties in diagnosing problems.

In 2017, the cyclamen mite, the Pacific or McDaniel’s spider mite (one instance), the two-spotted spider mite, the soft scale Coccus hesperidium, and the cannabis aphid Phorodon cannabis (the first detection in Oregon) were added to the list of known pests. The cannabis aphid seems poised to be the next major problem. Throughout this time period, growers have been mistaking globular trichomes for mite eggs (to the point of treating the plants). Growers have been very fearful of broad mite infestations, resulting in quite a few submissions that proved to be negative. A couple of these samples had Histiostoma (Histiostomatidae) mites on and around the plants.

These mites are presumably associated with decaying organic matter. In 2017, grower concerns were more heavily weighted towards pest management questions. Unfortunately, because the legality of this crop is relatively new in Oregon, there is little information available on pest issues.

Exotic Wood Boring Insects Program

Regional Identification Center for Exotic Ambrosia and Bark Beetles and Other Wood Boring Insects

James R. LaBonte

The current taxonomic infrastructure of the US cannot support the identification needs of many exotic insect surveys. This is particularly true of wood boring insect surveys because of the frequency of new exotic wood borer introductions and the numerous target species. IPPM is now nationally, and to some extent, internationally recognized for expertise in the identification of wood boring insects. Consequently, one component of the agreement with the Regional Identification Center, funded via the Farm Bill, is for IPPM taxonomists to provide wood borer identification services to other states and agencies in the USDA-APHIS Western Region. The following table summarizes the specimens submitted for identification during 2017:

<table>
<thead>
<tr>
<th>State</th>
<th>Number of Species</th>
<th>Number of Specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaska</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Colorado</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Idaho</td>
<td>20</td>
<td>31</td>
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<tr>
<td>Oklahoma</td>
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<td>34</td>
</tr>
<tr>
<td>Oregon</td>
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<td>255</td>
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<tr>
<td>South Dakota</td>
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<td>1</td>
</tr>
<tr>
<td>Utah</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Virginia</td>
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<td>1</td>
</tr>
<tr>
<td>Washington</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>Wyoming</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>145</strong></td>
<td><strong>378</strong></td>
</tr>
</tbody>
</table>

A bark beetle from Idaho samples, Ips hunteri, is a new state record. A wood boring weevil, Hylobius pales is a new state record for Oklahoma. Although informally recorded from Oklahoma, the presence of another wood boring weevil, Pachylobius picivorus, in that state has been substantiated. IPPM identifications of two ambrosia beetles, Xyleborus impressus and Xyleborus intrusus, represent new state records for Oklahoma.
A key to the genera of North American scolytines (ambrosia and bark beetles), supported with images from IPPM’s state of the art imaging system and designed by IPPM taxonomists, was provided to eastern scolytine experts for use in an identification workshop held at Cornell University. By all accounts, the key worked well and participants appreciated the image-based design.

IPPM’s image-based key to the species of an important genus of seed-attacking bark beetle, *Coccotrypes*, was provided to a Georgia taxonomist, at his request. Images of several species of scolytines acquired with IPPM’s imaging system were provided to assist identification of specimens from surveys in Georgia and Virginia. A high quality IPPM image of spruce beetle, *Dendroctonus rufipennis*, was provided to Montana for possible use on a new forest pest damage spotter plane. Advice was provided to Arizona, Colorado, and US Forest Service identifiers with regard to the best microscopes and lights for ambrosia and bark beetle identification. IPPM taxonomists corrected the national NAPIS database with regard to erroneous new state records for Idaho for two native species of Cerambycidae. IPPM responded to an Ohio APHIS-PPQ query about the presence of two species of drywood termites in Oregon.

Granulate Ambrosia Beetle and Other Wood Boring Insects in The Dalles

*Joshua J. Vlach*

Surveillance for exotic wood boring insects has been ongoing at and in the vicinity of the railroad tie creosoting plant in The Dalles since 1997. The site was recognized as high risk for the introduction of pests because it imports raw ties from other regions of the United States and sometimes Canada. Several regional exotic wood boring insects have been detected there. The most significant detection to date was the granulate ambrosia beetle, *Xylosandrus crassiusculus*, a threat to Oregon’s orchard and nursery industries as well as to forest health and regeneration. This pest was detected in large numbers in 2004, but was ultimately eradicated by IPPM in 2006. Since then, IPPM has conducted surveillance trapping throughout the year with Lindgren funnel traps baited with four ultra-high release ethanol lures. The traps are placed on the plant premises and in the surrounding area. As a result of the 2004 detections, a compliance agreement with the tie plant was signed. The agreement places restrictions on when ties from high-risk sites in the East can be brought in and requires prompt creosoting of those ties.

In May of 2015, two *X. crassiusculus* were trapped at the plant. Consequently, additional traps were placed. In April and May of 2016, an additional 36 *X. crassiusculus* were trapped. Three specimens of another exotic ambrosia beetle, *Euwallacea validus*, were also found. This is the first record of this species in Oregon and western North America. As a result, traps were increased in and around the plant to 102.

IPPM held another one of its popular bark beetle identification workshops from February 27 – March 3, 2017. The Oregon Department of Forestry generously provided the use of a very nice room at their Salem campus. This was a welcome change from past “taxonomic mosh pits” in the more cramped quarters at ODA’s Hawthorne facility. As with previous workshops, Dan Clark, Tom Valente, and Josh Vlach invested a great deal of time and effort in workshop preparations and instructional support. Cara McFetridge, our Plant Conservation and Protection Programs office manager, provided vital logistical support, including attendee lodging arrangements and workshop catering. The core of the course was a new, image-based key to the genera of North American bark and ambrosia beetles and the ever-updated screening aid to the common and target species thereof. In addition, IPPM screening aids for Buprestidae and Cerambycidae and new, image-based keys to the North American genera of Buprestidae and the North American species of Siricidae were also provided to participants.

Nineteen people attended the workshop. Participants were from twelve states, including Alaska and Hawaii, representing the US Forest Service, public universities, state departments of agriculture, forestry, and natural resources, and private institutions. Based on evaluations from participants, the workshop was held in high regard and a great deal of useful taxonomic skills and information were acquired. This response is consistent with all similar workshops held by IPPM.
Based on the terms of the compliance agreement, further imports of ties from the East were stopped. Un-creosoted ties at the plant were treated by a private contractor with a pesticide similar to that used in the eradications of 2005 and 2006. Potential host trees and shrubs were also slated to be treated, but the spray did not proceed due to concerns over standing water and bees. By the end of December 2016, 144,561 specimens of wood boring beetles were identified, with no *X. crassiusculus* or *E. validus* found after May.

On May 15, 2017, four *Euwallacea validus* were collected in 3 traps. Due in part to these additional finds, the tie plant and their tie supplier offered to assist us in visiting the facility in Missouri that exports ties to Oregon. The visit included associated regional sawmills and some logging sites in order to better understand the process and possibly suggest changes that might reduce the chances of pest woodborers being introduced into Oregon. Tom Valente and Josh Vlach visited Missouri in June (25–29). A report was generated; important notes from the trip include:

1. The origin of ties should not be indicated as southeastern in origin. Ties also come from Illinois, Indiana, and Missouri in addition to the greater southeast. Therefore, we should refer to them as coming from the East.
2. Oak ties include hickory.
3. Tree species are identified at the NATT Missouri plant by looking at the freshly cut ends of ties as they pass on a conveyor.
4. There are hundreds of small sawmills potentially supplying ties. Some of these facilities are very small and might contribute as little as half a truckload to a tie order.
5. Ties are dried to 40-45% moisture content in the drying yard in Missouri. This is amply moist for many ambrosia beetles.
6. Ambrosia beetle damage was not easy to find, but it was widespread at the facility.
7. Large numbers of *Cnestus mutilatus*, the camphor shoot borer, were caught in funnel traps not far from the facility.

The tie plant and ODA finalized a new cooperative agreement that allows pre-dried ties to be imported into The Dalles year-round as long as they can be treated within 72 hours. The option of importing raw ties in refrigerated cars during the winter months was eliminated. By the end of 2017, there were 61,663 specimens identified to species from 101 traps. No additional *X. crassiusculus* or *E. validus* were found.

**Oregon Department of Forestry Invasive Wood Borer Survey**

*Joshua J. Vlach*

During 2016 and 2017, IPPM sorted and identified samples from a collaborative Lindgren funnel trap survey with the Oregon Department of Forestry (ODF) and Washington Department of Natural Resources. Twelve sites were set up in the vicinity of the Columbia River from Clifton, OR to Dallesport, WA. Each site had 8 Lindgren funnel traps. Each trap was baited with a different lure: alpha pinene and ethanol, ethanol, *Monochamus* lure, oak pinhole lure, pine shoot beetle lure, a control (no lure), and a green Lindgren funnel trap with green leaf volatiles. Samples were collected at 3 week intervals. During 2017, 46,825 specimens were identified representing 161 species. The number of species collected by family were: Siricidae (4), Xiphydriidae (1), Buprestidae (25), Cerambycidae (73), and Curculionidae: Scolytinae (58). Two species of concern were collected. *Chrysobothris rugosiceps* Melsheimer, an eastern oak and chestnut feeding species, was collected in Longview, WA near a commercial log yard. The previous westernmost record for this species was from South Dakota. The ambrosia beetle, *Cyclorhipidion pelliculosum* (Eichhoff), was collected in Rooster Rock State Park, OR. This is the first record of this species in the West. The previous westernmost records were from Arkansas and Missouri. It is not considered a pest, but it does attack various hardwood species.

**Early Detection and Rapid Response (EDRR) for Exotic Bark and Ambrosia Beetles**

*Joshua J. Vlach*

IPPM has been part of the EDRR (Early Detection and Rapid Response for Exotic Bark and Ambrosia Beetles) Program since its inception in 2001. IPPM’s role has included protocol development (both written and video), Oregon surveys, and taxonomic support to other western states. This program is conducted in coordination with the US Forest Service in order...
Section 3—Insect Pest Prevention and Management Program

New Records and Non-Survey Identifications

James R. LaBonte

IPPM staff responded to over 617 submissions of insects and other invertebrates or contacts via telephone, e-mail, and in-person visits to the IPPM lab. Most of these interactions were not associated with specific IPPM programs or surveys. Instead, these were from the general public, businesses, other ODA programs, county or state (mostly Oregon) agencies, federal agencies, academic institutions, other entomological museums, a wide array of professional colleagues, and even other countries. The most distant contact was with regard to bark beetles in Kosovo.

IPPM lab staff conducted numerous tours of the lab and museum, mostly for school classes. Staff also made many public and professional presentations and provided information or interviews for media such as newspapers or journals, radio, and television.

As part of his continuing volunteer contributions, IPPM’s retired taxonomist, Rick Westcott, identified 1,410 insect specimens from various private, state, and federal sources (including IPPM surveys), predominantly flatheaded or metallic wood boring beetles in the family Buprestidae. In addition, Rick identified 149 tephritid flies from the IPPM apple maggot detection program in Umatilla County, the great majority from Pendleton. A total of 122 were apple maggot flies (31 from one sample during late summer) and the remainder were snowberry maggot flies. In addition, he donated several beetle specimens to the ODA museum collection. Thank you, Rick, for your continued service!

Three exotic species new to Oregon, the western US, or western North America were detected and identified by IPPM taxonomists in 2017. This makes a total of 103 since 2007, most of which were initially identified, confirmed, or detected by IPPM. Of the newly detected exotic species, one, the cannabis or hemp aphid (Phorodon cannabis) is a known significant pest. The other two, a rust mite (Aculus gleditsiae) on honey locust, and an ambrosia beetle (Cyclorhipidion pelliculosum) are not known to cause substantial damage. These detections exemplify the unceasing onslaught of exotic species.

Biocontrol Program

Chris S. Hedstrom

Ash Whitefly Biological Control

The ash whitefly (AWF, Siphoninus phillyreae) (Hemiptera: Aleurodidae), was first identified in Oregon by IPPM staff in 2014. Specimens were collected from Oak Grove in Lane County. This insect poses a threat to Oregon’s nursery industry as it has an extensive host range including many ornamental plants, and it would affect the export of nursery plants out of the state. It is considered a pest of citrus in many areas of the US.

The Oregon Department of Agriculture continued its biological control program against the ash whitefly in 2017. Surveys in 2017 detected greatly reduced populations compared to those of 2016. In areas with high populations in 2016, such as Kelly Point Park in Portland, NE 82nd and Holgate Blvd in Portland, or Mill Creek in NE Salem, ash whitefly was either not detected in 2017 or it was first detected much later in the season compared to previous years (May 2016 compared to September 2017). The biological control agents Clitostethus arcuatus (Coleoptera: Coccinellidae) and Encarsia inaron (Hymenoptera: Aphelinidae) were detected in Portland and Salem, OR. Populations of the whitefly were observed to be higher in south Corvallis, OR in 2017 than in previous years, but no populations were detected in the north part of town where they had been numerous in previous years. The population fluctuations between years are suspected to be due to environmental or abiotic factors, such as extended periods of freezing temperatures during the winter. The effects of the biological control agents were questionable because the dramatic population reductions occurred in nearly all areas where whiteflies were detected, including those where few parasitoids were detected or released. Parasitism was detected in Portland and Salem in the form of exit holes from whitefly puparia. No evidence of parasitism was detected in Corvallis. No parasitoid releases were made in 2017 due to the lack of sufficient numbers of wasps to rear or relocate. Monitoring of the populations and distribution of the agents when they are available will continue in 2018.
Managed and Native Pollinators Program
Sarah A. Kincaid

**Apiary Registration**

In 2017, 188 beekeepers registered 65,534 hives and generated a total of $32,940.00. These funds were transferred to OSU where they will be used to conduct research focused predominantly on honey bees in accordance with House Bill 3362 in the 2015 regular session of the Oregon Legislature.

**APHIS National Honey Bee Survey**

For the fourth consecutive year, the IPPM Program participated in the National Honey Bee Survey. This survey takes an epidemiological approach to document honey bee diseases, pests, and pathogens on a state by state basis throughout the US. Additionally, the survey monitors for the presence of invasive species that may pose a threat to honey bee health. These include *Tropilaelaps clareae*, *Apis cerana*, and slow paralysis virus. The survey also includes a colony level pesticide analysis to assess both the variety and quantity of pesticides present in honey bee hives. In Oregon, sampling of commercial and amateur beekeepers took place June and was conducted in close coordination with OSU. In total, 22 apiaries were sampled from 11 counties. The survey yielded no new disease records for the state and none of the invasive honey bee pests of concern were detected.

**The Oregon Bee Project**

In response to House Bill 3362 (2015) and public interest, Oregon State University (OSU), ODA, and the Oregon Department of Forestry (ODF) have been developing a pollinator health strategic plan for the state. The plan, entitled “The Oregon Bee Project,” will bring multiple state agencies together to address issues around pollinator health. The goals of the plan are to protect and promote pollinators, reduce pesticide exposure, showcase pollinator work in Oregon, and highlight the role that Oregonians can play in protecting pollinator species.

**Priorities of the Draft Oregon Bee Project Strategic Plan**

1) **Initiatives to Showcase Bee-Friendly Practices in Oregon**

The plan seeks to recognize industries, farmers, and homeowners who are actively finding ways to protect and promote pollinator species. As part of this initiative, IPPM received funding from the Specialty Crop Block Grant Program to develop a “bee-friendly” pilot certification and educate the public about specialty crops and their contributions to pollinator health. In 2017, this program was named the Flagship Farm Program and IPPM worked with six farmers to test the certification process. All together, participating farms maintained ≈ 48 acres of natural pollinator habitat and ≈ 53 acres of crops that provided forage to bees.

2) **New Ways to Engage the Public**

The plan prioritizes developing new educational and outreach materials that increase awareness of bee diversity, provide information on creating bee habitats, and offer guidance on wise pesticide use. All materials will be available on the new website oregonbeeproject.org. In 2017, program partners also participated in numerous outreach events at over 20 different locations around the state, reaching an audience of approximately 9,000.

3) **New Guidelines for Pesticide Applicators**

The plan creates new training opportunities for pesticides applicators with a focus on pollinator protection.

4) **A Statewide Survey of Native Bees**

The plan outlines the Oregon Bee Project, a volunteer-supported survey of bees around the state that will be used to develop a state bee atlas. In collaboration with OSU extension personnel, IPPM staff will train volunteers in collecting methods and curating techniques for bee specimens. Volunteers will also learn basic identification skills. IPPM staff will be responsible for identifying specimens and adding data to a publicly accessible database. Training workshops were held in Grants Pass, Klamath Falls, Portland, and Bend in 2017.
5) Honey Bee Diagnostics and Continued Support for Bee Research

The Honey Bee Health Lab at OSU will continue to provide diagnostic services for beekeepers, including parasite and pathogen levels, nutritional assessments, and pesticides analyses. Support for ongoing bee research in multiple areas will continue.

6) Metrics to Measure Success

The bee project team will develop metrics to measure the progress and success of the project over time such as: adoption of practices, utilization of materials/resources, state-wide honey bee losses, and reported bee incidents.

Christmas Trees and Mexico

Helmut W. Rogg

On September 11–17, Gary McAninch, Jim LaBonte, Gary Neuschwander (from ODA’s Market Access Program), and Helmuth Rogg traveled to Monterrey, Mexico, to participate in a training workshop for the Mexican border inspectors. The workshop was organized by SEMARNAT (the Mexican Forest Service) and PROFEPA (the Mexican border agency) to train border inspectors in the inspection of Oregon Christmas trees entering Mexico. As part of the workshop, we presented general information of the Oregon Christmas tree industry, the integrated pest management program, and the best management practices our Christmas tree growers implement in the field and during harvest and processing. In addition, Jim LaBonte trained the Mexican inspectors in the identification of important Christmas tree pests and other insects associated with Christmas trees. Our contributions were well received by the border inspectors.

In bilateral talks between representatives of ODA, USDA APHIS and our Mexican counterparts from SEMARNAT and PROFEPA, we discussed issues with last year’s Christmas tree shipping season and the current status of the NOM-013, the Mexican quarantine rules for the import of Christmas trees. Mexico is currently reviewing the NOM-013. We also discussed last year’s change in enforcing matching numbers of phytosanitary certificates and invoices. Last year, Mexico insisted that the numbers of certified trees issued on our phytosanitary certificates exactly match the number of trees on the import invoices. This caused a significant additional workload for our inspectors to correct phytosanitary certificates to the exact numbers of trees. We agreed to discuss the number issues with our Christmas tree industry and emphasized that the numbers have to be as close as possible, as Mexico will enforce the numbers again this year. Our talks were productive and resulted in recommendations to adapt some of the restrictions of the NOM-013, in particular, the current requirement to use specific pesticides before harvesting Christmas trees. Mexico was open to accept recommendations to replace the pesticide requirements with a more generic paragraph of integrated pest management. Here are the recommendations we submitted:

Christmas tree pest control should be based on a site specific integrated pest management (IPM) plan that includes all methods that are approved and appropriate to mitigate the pest presence in Christmas trees. IPM methods applied may include cultural, technological, biological, genetic, and chemical measures based on pest monitoring in the field. Examples for appropriate measures include use of specialized traps for specific pests, appropriate weed management, use of biological control agents, and also use of approved pesticides, if appropriate.

Best management practices (BMP) may be applied to exclude contaminant pests at critical points during the harvest and processing period. This may include reducing the time trees are on ground, adequately shaking trees, separating export from field trees, continuously removing shaking debris, and excluding contaminant pests, such as yellow jackets, root weevils, etc. The IPM and BMP plans may be coordinated and documented with the Extension Services and included in a compliance agreement with the National Plant Protection Organization.

We also met with representatives of Christmas tree importers in Monterrey and also in Mexico City to discuss import related concerns.
In Mexico City, our SEMARNAT partners took us to a local “Christmas tree” plantation. The owners “lease” a potted pine tree to local businesses for a few weeks and then invite the business owners to plant “their” pine tree in the plantation forest as part of a reforestation project.

IPPM Imaging

Joshua B. Dunlap

IPPM hired a new imaging specialist in 2017 after the departure of Thomas Shahan. Joshua Dunlap came here from Nogales, AZ where he worked as a biological technician with USDA-APHIS-PPQ.

Continuing the ODA’s commitment to public outreach and education, the IPPM imaging team created a plethora of photographic and other illustrated materials over the 2017 calendar year. Exemplars of such recent IPPM products include a guide covering blueberry pests of regulatory import. These were handed out during an IPPM conference with Oregon blueberry farmers and exporters. IPPM also created a series of photographic posters illustrating Oregon invertebrates of note. These posters are available free of charge to schools and other institutions and include “Beetles of Oregon”, “Land Slugs and Snails of Oregon”, “Stink Bugs of Oregon”, and “Bees of Oregon”. Progress continues apace on a number of other projects including a photographic identification key to genera of the economically important Scolytinae (bark beetles), as well as guides covering pest grasshoppers and common spiders of Oregon, respectively. Also ongoing is field photography documenting and supporting current eradication efforts focusing on the Japanese beetle. In addition to producing images for the ODA, the IPPM imaging team has collaborated with other organizations such as Oregon State University and the Xerces Society to create high quality images for areas of mutual concern such as pollinator protection. IPPM imaging products are available to the public at www.ODAGuides.us

IPPM Education and Outreach Events

Diana N. Kearns

Over the past seven years, the IPPM and Noxious Weed Control Programs have shared a space at the Oregon State Fair to provide outreach and education on invasive species.

In 2017, IPPM provided an interactive game for children, displays of live and pinned insects and other invertebrates, informative brochures and flyers, and other complimentary souvenirs. Staff spent five days at the fair, taking various shifts between 10 am to 6 pm each day from August 28-September 1.

Chris Hedstrom watching fairgoer play the Japanese beetle toss game.

Tom Valente talking to young fairgoers about insects.

In 2017, IPPM provided an interactive game for children, displays of live and pinned insects and other invertebrates, informative brochures and flyers, and other complimentary souvenirs. Staff spent five days at the fair, taking various shifts between 10 am to 6 pm each day from August 28-September 1.

Josh Vlach at the International Master Gardeners Conference and Trade Show in Portland.
Participation in the state fair is important because it reaches more people in one week than any other event of the year. More people learn about insects and invasive species at the fair than at any other venue where IPPM staff participate.

IPPM staff also participated in numerous other outreach events throughout the year, a few shown in these photos.

![Sarah Kineaid at the Santiam Christian & Oregon State University Science and Engineering Night at Santiam Christian School, Adair Village.](image1)

![Chris Hedstrom giving an evening talk, Introduction to Parasitoids, at the Summer of science backyard talk series presented by Bitch Media in Portland.](image2)

**Presentations 2017**

Blom, PE. NGMB Meeting, Sec-Treas, AV. February 2017.


Blom, PE. Present on EOR IPPM trapping and GH/MC program at the Farm Fair in Hermiston, OR. December 2017.


LaBonte, JR. The onslaught of terrestrial exotic invertebrates in Oregon. Marion County Master Gardener Class, Salem, OR. January 2017.


LaBonte, JR. Beetles of the Bioregion. Course at Siskiyou Field Institute, Selma, OR. March 2017.


LaBonte, JR. My experiences in entomology (to several classes). Cedar Tree Christian Classical School, Ridgefield, WA. April 2017.


Interviews 2017


LaBonte, JR. Frigid weather may help farmers battle destructive bugs. Information provided for article in the Capital Press. January 2017.


Events 2017


Publications 2017


Introduction

Tim Butler
Invasive Noxious Weed Control Program Manager

During 2017, the Invasive Noxious Weed Control Program continued to collaborate with cooperators statewide in the implementation of invasive noxious weed control projects in five regions of Oregon. Prioritized projects protect our agricultural economy and natural resources through early detection and rapid response (EDRR), containment, and integrated control of invasive weed populations on both public and private lands. I am extremely proud of the many accomplishments realized through collaborative efforts coordinated by our program staff, as well as partnerships with a wide variety of cooperators from across the state. Examples of efficiencies for the Invasive Noxious Weed Control Program reveals a 1:34 cost-benefit for EDRR efforts and 1:15 cost-benefit for biological control projects; these are dollars well spent.

The Invasive Noxious Weed Control Program’s Biological Control Entomologist position was cut in the Governor’s Budget for the 2017-19 biennium. Due to strong and widespread stakeholder support, the legislature was able to restore funding for this valued position. We welcomed Joel Price, our new Biological Control Entomologist, to the program in December.

Moving forward, the program will continue to evolve as is outlined in our 5-Year Programmatic Strategic Plan. The Invasive Noxious Weed Control Program will continue to provide leadership, communication, and capacity for technical support to cooperators. Our staff and equipment infrastructure are in place regionally to both coordinate and implement invasive weed management projects. Projects are directly tied to natural resource management strategies at federal, state, county, and local levels.

Controlling invasive noxious weeds is a critical component in achieving success in areas of water quality/quantity and fish/wildlife habitat preservation, especially for salmonids and the greater sage grouse. This includes preserving recreational opportunities, ensuring a robust agricultural economy, and achieving overall functioning watersheds free of invasive weeds. The program needs support of policy makers through stable, flexible funding to achieve these goals. I am confident that together with our cooperators, we can continue to make progress in protecting Oregon’s valued natural resources and agricultural economy.

Program Overview

The Invasive Noxious Weed Control Program has 40 years of successful leadership working with cooperators to implement invasive noxious weed prevention and control projects. The investment in invasive weed control has tremendous value to Oregonians. For example, a recent study, Economic Impact from Selected Noxious Weeds in Oregon, looked at 25 of 128 state listed noxious weeds and estimates their impact at $83.5 million a year to Oregon’s economy. If uncontrolled, the impact potential of these weeds could go up to $1.8 billion. For every dollar invested in Early Detection and Rapid Response (EDRR) projects, there is a $34 benefit to Oregon’s economy.

Our mission is to protect Oregon’s natural resources from the invasion and proliferation of invasive noxious weeds by:

- Providing leadership and coordinating noxious weed management
- Serving as a technical resource for noxious weed issues
- Providing public outreach, education, and awareness
- Conducting weed risk assessments and listing State listed Noxious Weeds
- Implementing early detection and rapid response projects for new invaders
- Coordinating and implementing biological control of weeds
- Administering the State Weed Board Grant Program
The program has nine technical staff located in Salem, Eugene, Grants Pass, Burns, Enterprise, and Prineville. The state is divided into five regions for the purpose of coordinating projects, working with local partners, and implementing a statewide approach to invasive weed management. The program also employs a grant coordinator, program assistant, and seasonal staff to help implement projects.

Invasive Noxious Weed Control staff collaborate with private landowners, county weed programs, state and federal land managers, and other cooperators to implement integrated weed management projects throughout their regions. The program is focused on early detection and rapid response for new invading noxious weeds, implementation of biological control, completion of statewide weed inventory and surveys, technology transfer and noxious weed education, noxious weed data maintenance, weed risk assessments, and maintenance of the State Noxious Weed List.

The staff works closely with the Oregon State Weed Board (OSWB) to host meetings, provide updates and technical support, and administer OSWB grants. The OSWB is a seven-member board appointed by the ODA Director. The primary mission of the OSWB is to provide oversight for the listing of noxious weeds, guide statewide noxious weed control priorities, and award noxious weed control grants.

Dan Joyce, the newest member of the OSWB, is the Malheur County Judge and chairman of the Malheur Board of Commissioners. Dan was appointed to the Oregon State Weed Board in June 2017 by ODA Director Alexis Taylor. Dan is one of two representatives from the Oregon Association of Counties that sit on the board.

A statewide approach that engages partners has proven successful for managing noxious weeds. Weeds do not respect boundaries and by their nature spread from one land ownership to another. To implement an effective weed program, ODA must foster relationships and work with private, federal, state, county, and local interests. Developing and maintaining partnerships is critical to accomplishing our mission. The program works closely with federal partners to develop Memoranda of Understanding (MOU), cooperative agreements, and contracts to facilitate control projects and financially assist the program. About 50 percent of the program's budget comes from federal sources and the balance is State Lottery and General Funds. Primary federal support comes from the US Forest Service Region 6 (USFS), Oregon Bureau of Land Management (BLM), US Army Corps of Engineers (USACE), and the US Bureau of Reclamation (BOR).
2017 Weed Program Highlights

- Program staff implemented 135 noxious weed projects, conducted 477 treatments, completed 83 pre- and post-treatment monitoring activities, and gave 33 presentations. Biological agents were released at more than 61 sites.
- Over 42 biocontrol release sites were monitored to determine establishment and effect. The ODA biocontrol database contains more than 13,000 records of biocontrol agent releases.
- The OSWB received $3 million for the 2017-2019 biennium from the Oregon Watershed Enhancement Board (OWEB). In 2017, 53 grant proposals were received and 50 grants awarded totaling $1,239,626.

New Biological Control Entomologist

Joel Price started as the Biological Control Entomologist for the Invasive Noxious Weed Control Program in December. His educational background includes a B.S. in Ecology and an M.S. from the University of Idaho in Entomology. His graduate research focused on a lack of effect that biocontrol weevil and fly agents have had on controlling Canada thistle throughout the Western United States. After graduate school, he worked at the Colorado Department of Agriculture’s insectary in Palisade, CO, pioneering the Canada thistle rust program while also managing the Russian knapweed and Oriental fruit moth control programs. Joel is excited to serve the state of Oregon and work on a broad range of biocontrol systems. He enjoys spending time doing outdoor activities with his wife, three little boys, and their dog.

2017 Risk Assessment and Noxious Weed List Update

The Invasive Noxious Weed Control Program develops risk assessments and gathers information to help the OSWB maintain and update the State Noxious Weed List. A weed risk assessment process is used to help identify which species are high risk and should be listed. Program staff prepared a risk assessment for welted thistle, *Carduus crispus*, and it was listed as an A-listed noxious weed during the February 2018 OSWB meeting.

Turkish thistle, *Carduus cinereus*, was confirmed in Hells Canyon, Wallowa County. First incorrectly identified as Italian thistle in 2014, genetic testing at Montana State University and subsequent consultation with national thistle experts helped to determine the correct identification. The Noxious Weed Program staff is initiating a risk assessment for this weed.

Oregon State Weed Board Grant Program

The Oregon State Weed Board (OSWB) Grant Program is a partnership with the Oregon Watershed Enhancement Board (OWEB). Grant funds reside within the OWEB budget and the Invasive Noxious Weed Control Program oversees and administers the program. There are two grant cycles per biennium and grants are awarded annually. Under the OSWB Grant Program, Invasive Noxious Weed Control Program staff and the board work to fund as many high-priority projects as possible with available funds. OSWB grants meet specific criteria and are used to implement projects for the protection and enhancement of watershed health and wildlife habitats. Success of the OSWB Grant Program is due to the great work that is being accomplished on the ground by grantees through regional partnerships. The OSWB grant program averages a 52% match rate to dollars funded.

For this current biennium, the OSWB received $2.5 million for the regular OSWB grant program and an additional $500,000 for a new county grant program. For 2017, 53 grant proposals were received for the regular OSWB grants and 50 grants totaling $1,239,626.00 were awarded. The intent of new county grants is to foster implementation of new projects that help to build stronger county weed control programs while meeting critical noxious weed control goals related to watershed health. Seventeen new County Weed Control Grant applications were reviewed and successful proposals were awarded at the February 2018 Oregon State Weed Board Meeting.
OSWB grants are selected for monitoring and review by the Invasive Noxious Weed Control Program each year. Program staff monitored 14 grant projects and also toured Coos County grant projects during a Coos County watershed tour. The following are a few highlights from monitoring this year's grants.

Umatilla County Weed Department received two grants through the OSWB grant program, one for the control of garlic mustard and the second for control of common bugloss. The Umatilla garlic mustard project is a good example of a collaborative project that includes the Confederated Tribes of the Umatilla Indian Reserve, ODOT, BOR, and multiple private landowners. Treatments resulted in 80% control and the project covered 5,000 gross acres. Net acres have decreased to 112 acres since treatments began in 2013. The second grant, a new grant, focused on common bugloss, has a well orchestrated outreach campaign that was able to garner widespread support for the first year of treatment. This project covers over 2,500 gross acres and early results show a significant reduction in the population.

Another grant implemented by Wallowa County Vegetation Department focused on the control of welted thistle at the only known site in Oregon. This project highlights how the Invasive Noxious Weed Control Program works with partners to implement an EDRR grant for a new A-listed noxious weed. The grantee was successful in educating private landowners about the new thistle through mailings, social media, and direct contact.

Education and Outreach Activities in 2017

Invasive Weed Awareness Week
The Governor declared the week of May 14-20, 2017 as "Oregon Invasive Weed Awareness Week." The written proclamation was highlighted as the story of the week on ODA's news blog. Weed Program staff created short video clips to showcase weed control projects around the state. Such videos and photos were posted on the program’s Facebook page and subsequently shared by cooperators. Videos from the National PlayCleanGo campaign were also featured daily on the Facebook page and emphasized prevention measures that citizens can take while enjoying Oregon's many wonderful trails and public spaces.

Oregon State Fair
The Invasive Noxious Weed Control Program set up a booth in the Natural Resources area at the Oregon State Fair. Staff answered questions from the public on invasive weeds and biocontrol agents, handed out...
alerts, brochures, and small promotional items. Invasive Noxious Weed Control Program staff and cooperators helped staff the booth during the week of the fair. Hundreds visited the booth, resulting in several invasive plant reports and connections to increase outreach opportunities. The focus was on preventing the spread of invasive plants and many kids tried their hand at a PlayCleanGo pinball game. Players learned ways in which recreational activities can move noxious weeds and there was an emphasis on cleaning hiking boots, tires, boats before and after an outing. Also on display were the Deschutes County “Invasive Species Education Station” trailer, a robotic weed dog, a selection of ornamental noxious weed live specimens, and a poster detailing the history and current status of tansy ragwort biocontrol efforts.

Social Media
The Invasive Noxious Weed Control Program used its Facebook page to post announcements, promote upcoming events, provide updates on Invasive Noxious Weed Control Program-led weed control projects, share progress updates on grant funded projects, and share timely news articles promoting greater public awareness concerning noxious weed prevention and management.

The program also utilized Flickr, a photo-based social media site, to compile photographs of individual noxious weeds and feature outreach activities.

The Invasive Noxious Weed Control Program helped the information office produce a short video on “A Day in the Life” of the program, highlighting the work we do in biocontrol, EDRR, and noxious weed prevention. It can be viewed on ODA's YouTube channel at https://oda.fyi/ODADayInTheLife.

Pop-Up Banners
The program collaborated with ODA's information office to produce six, eye-catching banners that can be utilized at meetings and outreach events across the state. The banners provide memorable, to-the-point messaging, and a focal point to engage the public in conversations about the impacts of noxious weeds to valued agricultural and natural areas in Oregon.

Outdoor Summit
The Invasive Noxious Weed Control Program was invited to set up an information table at the state's first Outdoor Summit, a gathering of recreation promoters and professionals. This was a great opportunity to give away boot brushes, promote the PlayCleanGo campaign, and increase awareness about the connections between noxious weed movement and recreation with this key group. An increased level of involvement at this event is planned for 2018.

Additional Outreach
Staff made 33 presentations to stakeholder groups and attended over 50 meetings with weed management cooperators and private landowners. The Invasive Noxious Weed Control Program participated in numerous education and outreach events promoting invasive weed awareness. Here are some highlights:
- Oregon Invasive Weed Awareness Week
- An Oregon State Fair weed booth (over 3,000 people engaged)
- The Oregon Outdoor Summit
- OSU applicator training short courses
- Douglas and Coos County Weed Days
- An Oregon Recreation and Park Association, Natural Areas Invasive Plant Management Workshop
• The NAISMA (North American Invasive Species Management Association) annual meeting
• The annual Oregon Vegetation Management Association Conference

Special Projects

Weed Free Forage Certification
The Invasive Noxious Weed Control Program completed inspections for 42 growers and certified 4,500 acres as weed-free. The program has been very successful in providing certified weed-free hay and straw to meet the needs for trail users and reducing the spread of invasive weeds. The program is administered through the ODA Commodity Inspection Program and follows the North American Invasive Species Management Association (NAISMA) weed free forage standards. The USFS supports this effort through State & Private Forest Health funding to ensure weed free products are available for use on National Forest lands.

The Oregon Department of Forestry, State Forest Division completed a rule revision in 2016 that requires the use of weed free forage on state forestland. This revised rule went into effect after the Board of Forestry unanimously approved several updates to the Division’s recreation administrative rule, General Forest Recreation Rules and Public Conduct 629-025-0040. Under subsection (12): “On State Forest Land, a Person must use hay, straw, and other livestock forage that is certified by the Oregon Department of Agriculture to be weed-free according to North American Weed Management Association standards. A database of certified growers in Oregon may be obtained through the Oregon Department of Agriculture “Weed Free Forage Program”.

WeedMapper
WeedMapper is an extensive database of noxious weed sightings displayed in an interactive website map. Each year, the Noxious Weed Program collects new reports of weed locations from multiple agencies and organizations around the state to add to the display, much of which originates from projects funded by Oregon State Weed Board grants. The Invasive Noxious Weed Control Program also has a data sharing agreement with imapinvasives.org which collects data from multiple sources and includes confirmed reports from the Oregon Invasive Species Hotline.

https://ODA.direct/WeedMapper

Improvements in the 2017 update include:
• Better display of information in tables and pop-up windows
• All records displayed in table format for each species (records were previously limited to displaying the first 10,000)
• Faster loading times

Early Detection and Rapid Response (EDRR)

EDRR is an essential focus of the program, with the goal of preventing the introduction and spread of new weed species through early detection efforts and quick implementation of control measures. The Noxious Weed Control Program accomplishes EDRR through: listing and prioritizing state listed noxious weeds, developing statewide management plans, and implementing EDRR projects. Priority listed species, A-listed and T-listed noxious weeds, are of limited distribution in the state and are primary EDRR targets.
Priority species are incorporated into presentations and outreach activities to increase public awareness. Pest alerts and educational materials are distributed in an effort to help locate and report new infestations. Surveys for target weeds are conducted and, when found, rapid response projects are planned and implemented for eradication or containment.

Noxious Weed Program staff work with state and federal cooperators, county weed programs, Cooperative Weed Management Areas (CWMAs), and private landowners to implement EDRR projects. Many EDRR projects are funded in part by OSWB grants and/or with help from federal partners. The Invasive Noxious Weed Control Program implemented 62 control projects targeting 29 A-listed and T-listed species during the 2017 field season. The following are highlights of these projects:

**African Rue, *Peganum harmala* – A(T)**

African rue is difficult to control and containment is considered a success. Two locations have been detected in Oregon. The first report was from an OSU herbarium record from the mid-1960’s in Crook County, but it did not mention a specific location. A member of the Native Plant Society located the site in 1991. African rue has been treated as an A-listed weed by the Noxious Weed Program and Crook County since the rediscovery. In September 2008, a second infestation was reported to the Invasive Noxious Weed Control Program. A contractor working for the Bureau of Indian Affairs noted a possible infestation on tribal allotments located in the Harney Basin southeast of Burns. The Noxious Weed Program verified the site and a subsequent survey revealed a project area of 2,700 gross acres and 19 landowners, including the Department of State Lands, private landowners, and tribal lands.

The Crook County infestation is along Highway 27 and occurs on both public and private lands. The main portion of the infestation is on BLM land, with BLM providing most of the funding for control. Crook County and the Invasive Noxious Weed Control Program are working together to treat the site. The population has remained static since 2013 and requires annual treatments to maintain control. An African Rue Cooperative Weed Management Plan was completed in 2009 for the Harney County site. This project is now largely funded by an OSWB grant to Harney County and is monitored by Noxious Weed Program staff. Overall, both populations of African rue have been reduced; both sites require annual treatment.

**Barbed Goatgrass, *Aegilops triuncialis* – A(T)**

Barbed goatgrass, an A-listed weed, was detected in 2003 along Hwy 199 near Rough and Ready Creek, south of Cave Junction in Josephine County. While infested acres of barbed goatgrass are increasing in California, this location in southwestern Oregon is the only known population in the state. Plants were manually removed and bagged. The infestation extends across private, state, and federal boundaries. No new sites were found this season. Support from both the Rogue River-Siskiyou National Forest and the Medford-Grants Pass BLM Office contribute to the ongoing success of this eradication project.

**Cordgrass, *Spartina* spp. Survey and Treatment – A(T)**

The state has maintained an excellent track record of finding and treating new infestations of cordgrass. Portland State University’s Center for Lakes and Reservoirs (PSU) and Noxious Weed Program staff have developed a comprehensive plan to implement regular surveys of 13 Oregon estuaries that are at high risk of infestation. Three species of *Spartina* have been documented in Oregon. Prior to 2013, only two species, *S. alterniflora* and *S. patens*, were known to occur. The third species of cordgrass, *Spartina densiflora*, was detected in Coos Bay during a 2013 survey.

Cordgrass prevention and control efforts have been very successful at preventing widespread establishment in Oregon’s coastal estuaries. Fewer than a dozen small sites have been found and eradicated since 1999. A new site located near Sand Lake was found and treated in 2014. The site was surveyed in 2017 and no additional plants were found.

**Flowering Rush, *Butomus umbellatus* – A(T)**

Since 2014, flowering rush has been a high priority for detection and control efforts in Oregon. Several small populations of flowering rush were found in Lake Wallula on the Columbia River in Umatilla County, Oregon in early August 2014. Surveys conducted by Portland State University’s (PSU) Center for Lakes and Reservoirs detected the infestations. These were the first known occurrences in Oregon of this A-listed
weeds. Populations of flowering rush were already known from the Spokane, Yakima, Pend Oreille, Snake, and Flathead rivers. Prior to 2014, the furthest known downstream population on the Columbia was at Two Rivers Park in the Tri-Cities.

Flowering rush continues to be a focus of survey and control efforts on the Columbia River. The Columbia River Flowering Rush Working Group and cooperators from Oregon and Washington are teaming up to work on the issue. Most of the Columbia River was surveyed by the end of 2016, from McNary Pool west to south of Portland. So far it has only been found above the John Day Dam. In 2017, flowering rush was detected in two sections on the Oregon side of the river; the initial finds were in Lake Wallula and below McNary Dam in the John Day pool.

**Garden Yellow Loosestrife, *Lysimachia vulgaris* – A(T)**

A new A-rated weed, garden yellow loosestrife, was found in 2016 on Wheatland Bar Island on the Willamette River along the Yamhill/Marion County line. Garden loosestrife is a riparian weed that outcompetes native vegetation and even the invasive, purple loosestrife in wetlands and shoreline settings. This new invader was quickly treated in 2016 and follow-up monitoring and treatment was completed in 2017.

**Giant Hogweed, *Heracleum mantegazzianum* – A(T)**

Noxious Weed Program staff worked with the City of Portland and Clackamas, Columbia, Clatsop, Tualatin, Tillamook, and Hood River SWCDs to monitor and treat all known locations of giant hogweed in Oregon. The majority of the sites occur in northwest Oregon in the Portland Metro area. A large percentage of the sites are in residential landscapes or escaped populations from ornamental plantings. Fanno Creek and Vermont Creek, both in the Metro area, are the two known riparian sites. Of the 193 known sites, 64 are considered eradicated. Overall, active giant hogweed sites and plant numbers have dropped significantly since it was first discovered in Oregon in 2001.

**Goatsrue, *Galega officinalis* – A(T)**

Goatsrue is a state and federally listed noxious weed. A new population was identified in 2017 at an organic farm in Junction City. The plant is being grown and sold as a medicinal herb. The Invasive Noxious Weed Control Program contacted the grower and has issued a notification letter informing the grower that he is prohibited from growing goatsrue. The Invasive Noxious Weed Control Program is working with the farmer to develop a control and monitoring plan. Goatsrue is also known from historic sites in Josephine and Klamath counties, four locations in Portland, and one near Tualatin.

**Hoary Alyssum, *Berteroa incana* – A(T)**

Hoary false alyssum was listed as an A-listed weed in 2015. It occurs in two regions of the state; one site in northeast Oregon near the town of Wallowa and the second site in central Oregon in Deschutes County. The Noxious Weed Program surveyed 30 acres and treated 1.5 acres at the Wallow County site in 2017. Deschutes County is treating the central Oregon locations.

**Matgrass, *Nardus stricta* – A(T)**

Matgrass is a small perennial bunchgrass native to Eastern Europe. It is unpalatable to grazing animals and can quickly render infested pastures unusable and outcompete desirable or native species. Matgrass was first noticed about 36 years ago in a peat pasture near Fort Klamath. The Klamath site was the only Oregon infestation until 2015, when three new coastal sites were detected. The new finds prompted the Noxious Weed Program to take action in 2016 to expand efforts for detection and control in coastal counties.

In 2015, infestations were confirmed at Cape Blanco airport in Curry County and Devil’s Kitchen State Park in Bandon, Coos County. A third site was also confirmed in Clatsop County on the North Coast Land Conservancy. Impacts to coastal habitats are less well known, but early surveys reveal an aggressive invader
that pushes out native flora. The south coast sites are in an area of botanical importance. The Coos site is noted for a unique pygmy forest and is one of the few remaining habitats for the federally endangered western bog lily. In 2017, the Invasive Noxious Weed Control Program continued treatment efforts and completed additional surveys and outreach activities for coastal prairie habitats.

**Mouse-ear Hawkweed, *Pilosella pilosella* – A(T)**

Mouse-ear hawkweed is a yellow-flowered species of the aster family native to Europe and northern Asia. Similar to most other hawkweeds, it is highly invasive in pasture and meadows and is highly variable and adaptive to a wide range of habitats. One site is known to occur in Yamhill County. It was reported in 2010 by The Nature Conservancy (TNC) at a location in Gopher Valley; the infestation is spread over 20 acres in an oak woodland habitat. The site is managed by TNC for the protection of Kincaid’s lupine. The Invasive Noxious Weed Control Program has worked with TNC to manage the infestation since it was discovered. In 2017, a satellite population was found on an adjacent private property during a survey of the area. The Invasive Noxious Weed Control Program will be working with TNC and the Yamhill SWCD to conduct additional surveys and treatment of the infestation.

**Oblong Spurge, *Euphorbia oblongata* – A(T)**

Oregon’s largest site, located in Salem, is believed to have been introduced as a contaminant in flax seed that was grown and processed at the location in the mid 1900s. The core infestation is at the Oregon Office of Emergency Management along the south shore of a pond. It has also moved off site to a drainage ditch that is adjacent to Oregon State Penitentiary property along Mill Creek. Noxious Weed Program staff treated all known locations; sites this year had minor regrowth following a 2015 resurgence.

There are also scattered locations in the Portland Metro area that the City of Portland and Clackamas SWCD staff are monitoring and treating. It is not entirely clear how these urban locations originated, but some of them may have been planted as ornamentals.

**Orange Hawkweed, *Pilosella aurantiacum* – A(T) and Meadow, *P. caespitosum* – B(T)**

Hawkweeds are highly invasive members of the aster family. Once established, hawkweeds can quickly develop patches that spread until they cover an area and form solid mats of rosettes. Hawkweeds displace native plants, posing a serious threat to native plant communities. They can also dominate pastures, lawns, and roadsides, crowding out desirable species.

Two new populations of orange hawkweed were found in Clatsop County in 2017. The sites were reported by the Oregon Department of Forestry. The closest infestations are in Washington and Clackamas counties. Additional populations occur in Wallowa, Union, Deschutes, Klamath, and Harney counties. Overall, orange and meadow hawkweeds continue to be found at new locations in central and eastern Oregon. So far, most of the new finds on national forests and private timberlands are manageable. One concern is the increasing number of new orange hawkweed sites occurring in urban areas in Deschutes County where management in lawns and landscapes is difficult. It is an attractive plant and has been traded and used as an ornamental. Awareness and outreach activities have helped to increase the reporting of new sites and the number of new locations continues to increase.

**Paterson’s Curse, *Echium plantagineum* – A(T)**

Paterson’s curse is an A-listed weed that threatens Oregon’s native habitats with the potential to invade oak woodlands, native prairies, and dry upland slopes. Despite a beautiful appearance, this invasive weed truly is a curse in that it is extremely toxic to livestock. It infests thousands of acres across Australia. Two counties have infestations, Douglas and Linn, and both sites are under intensive eradication. Both sites continue to see an overall decline in plant numbers and acres treated in 2017.

**Plumeless Thistle, *Carduus acanthoides* – A(T)**

Plumeless thistle is known from three counties: Klamath, Grant and Wallowa counties. Originally, plumeless thistle sites were discovered nearly 20 years ago in western Oregon. A single population was discovered in Washington County in 2017; the site is located in a roadside cut in the downtown area of Gardiner. The infestation is spread over 20 acres in an oak woodland habitat. The site is managed by TNC for the protection of Kincaid’s lupine. The Invasive Noxious Weed Control Program has worked with TNC to manage the infestation since it was discovered. In 2017, a satellite population was found on an adjacent private property during a survey of the area. The Invasive Noxious Weed Control Program will be working with TNC and the Yamhill SWCD to conduct additional surveys and treatment of the infestation.
ago in Grant County. A second location was found in Klamath County in 2007 and most recently, several sites were discovered in Wallowa County. The Invasive Noxious Weed Control Program monitors the sites annually and works with the respective counties to treat the infestations aggressively to reduce plant densities and contain the populations.

**Ravenna Grass, Saccharum ravennae – A(T)**

Ravenna grass was listed as an A-listed weed in 2015. At the time of listing, the only known site was near McNary Dam in a wildlife area managed by the Army Corps of Engineers. In 2016, monitoring and follow-up treatments showed good results compared to 2015 treatments. Additional locations were found in Malheur County during surveys conducted in 2016; sites were monitored and treated in 2017.

**Squarrose Knapweed, Centaurea virgate – A(T)**

Squarrose knapweed is an A-listed weed in Oregon. A historic site in Malheur County continues to be monitored and no plants have been found since 2003. A Grant County site has been under intensive treatment since its discovery in the early 1980s. Grant County manages the project through an OSWB grant, while the Invasive Noxious Weed Control Program continues to monitor treatment efficacy. The original project area was spread across 3,200 gross acres. Over the past 20 years, the infestation has been reduced by 99% to less than 1.25 net acres over 140 gross acres. A site in Jefferson County was detected in 2003 and has been treated and monitored. No plants have been found for several years; the Invasive Noxious Weed Control Program will continue to monitor the site until the plant is declared eradicated.

**Taurian Thistle, Onopordum tauricum – A(T)**

Taurian thistle is a sister plant species to Scotch thistle, *Onopordum acanthium*, and has the same potential to be invasive. In Europe, it is more aggressive than Scotch thistle. Taurian thistle is lime green with large baseball-sized terminal flower heads that resemble an artichoke. The first Oregon infestation was detected and treated in Klamath County in 2007. Two new sites were found in 2012, located west of Klamath Falls on Hwy 140. Both sites totaled 200 plants and covered one net acre. The Invasive Noxious Weed Control Program and Klamath County continue to monitor and treat sites.

**Water Primrose, Ludwigia spp. – B(T)**

The Noxious Weed Control Program staff and cooperators have made efforts to escalate detection and control efforts for water primrose in the Willamette Valley. This species, along with flowering rush, has the potential to cause significant impacts to riparian health and water resources. These species alter water quality, increase sedimentation, and contribute toward the loss of important habitat. Control efforts in Lane County are now being coordinated to reduce or eliminate *Ludwigia* from water bodies that flow into the upper Willamette system. OSWB grants and Invasive Noxious Weed Control Program staff are assisting with treatments and surveys in the Long Tom River system and the main stem of the Willamette River. *Ludwigia* infestations were identified and recorded in a central database managed by the non-profit group, Willamette Riverkeeper. Many infestations were recorded and survey results will guide future treatment efforts. Partners include the Benton SWCD, US Army Corps Willamette Valley Projects, ODOT, ODFW, City of Eugene Parks, Long Tom Watershed Council, OSP, and Willamette Riverkeeper.

**Welted Thistle, Carduus crispus – A(T)**

Welted thistle, first thought to be musk or plumeless thistle, was discovered last summer in Wallowa County. Welted thistle is only known in North America from one other site west of the Rockies, in British Columbia. The Invasive Noxious Weed Control Program worked with Wallowa County and the site was surveyed and treated for the second season in 2017.

**Yellow Floating Heart, Nymphoides peltata – A(T)**

Yellow floating heart is an escaped ornamental aquatic that is highly invasive in ponds and water ways. Infestations are proving to be difficult to eradicate and are requiring annual treatments. First detected in 2004 in Washington County, it is now known from Lane, Linn, Jackson, Douglas, and Deschutes counties. As of this field season, over 23 sites have been documented. The number of new sites continues to increase in western and central Oregon. In 2017, new sites were found in Douglas, Lane, and Deschutes counties. The Invasive Noxious Weed Control Program and Klamath County continue to monitor and treat sites.
Program is working with a number of partners and private landowners to manage this species including Willamette River Keeper, local SWCDs, and the Umpqua National Forest.

**Alyssum (Yellowtuft), Alyssum murale and A. corsicum – A(T)**

*Alyssum murale* and *A. corsicum* species are unique in that they can hyper-accumulate metals extracted from the soil into their leaves and shoots. In the 1990s, Viridian LLC promoted the use of *Alyssum* species for phyto-mining, the process of using plants to accumulate metal and then harvest it from naturally high mineral (serpentine) soils. Viridian planted *Alyssum* on nine serpentine-rich sites in the Illinois Valley in southwest Oregon.

The venture failed and Viridian abandoned the projects around 2005. *Alyssum* spread from the planted fields and became invasive in the surrounding area. The Illinois Valley contains the largest concentration of serpentine soils in Oregon and supports a diverse and unique flora. There are more state and federally listed "Threatened" and "Endangered" plants on serpentine soils in Oregon than on any other soil class. Many of the planted *Alyssum* fields were directly adjacent to these highly valued botanically rich treasures. The Noxious Weed Program completed a weed risk assessment that resulted in both species being listed as A-listed weeds by the Oregon State Weed Board in 2009. Containment efforts continue with annual survey and control.

**Highlights in Biological Control of Weeds**

Classical biological control is the intentional introduction of selected natural enemies with the goal to manage and reduce the population of targeted exotic noxious weeds. Since 1947, there have been 77 species of classical biological control agents introduced against 27 species of noxious weeds in Oregon. The Noxious Weed Program manages over 120 biocontrol projects (weed/agent combinations). The Noxious Weed Program houses the State’s biocontrol database that contains more than 13,000 records of biocontrol agent releases. This is nearly 90% of all releases made in Oregon.

Several biocontrol projects in Oregon have been successful in controlling targeted invasive weeds, including tansy ragwort, St. Johnswort, musk thistle, Mediterranean sage, purple loosestrife, yellow starthistle, Dalmatian toadflax, and diffuse knapweed. Control is especially advantageous at sites that are managed to improve competitive or native vegetation. The program strives to adhere to the International Code of Best Practices for Classical Biological Control of Weeds in order to implement a safer and more effective biocontrol program.

Our goal is to protect our natural resources by managing approved biocontrol agents, redistribute them to major infestations of the target noxious weeds, and monitor their impacts on the target species. Further, we aim to get all approved biocontrol agents as widely distributed in as short of a time as possible. At the end of 2017, the percentage of established biocontrol agents that are widespread on their target weeds by county was 41%.

Classical biological control of invasive noxious weeds has a good safety record, but a somewhat scanty track record of documented economic benefits. Most of the funding for biocontrol projects is utilized during the foreign exploration, host specificity testing, and introduction phases, with little funding appropriated for long-term efficacy studies. Because biological control is a public good, it is best coordinated by public agencies, as it would be impossible for private enterprise to recuperate the development costs of each project. The average upfront cost per release for the Noxious Weed Program is about $500. Reported cost-benefit ratios (dollars spent vs dollars saved) from around the world vary from 1:112 to 1:2. For example, biocontrol of tansy ragwort in Oregon yielded an 85% internal rate of return and a 1:15 cost-benefit ratio. On successful long-term projects, benefits can occur as steady stream returns, i.e., $5 million/ year for the ragwort project in Oregon, where annual agency expenditures on this weed is now less than $20,000 per year. Where feasible, it is economically advantageous to implement biocontrol in order to reduce annual losses. By actively redistributing ragwort biocontrol agents, the Noxious Weed Program accomplished a successful regional project 5-10 years sooner than by the natural spread of the insects, thus averting $25-$50 million in losses to our agriculture industry.

A partially successful biocontrol project—one that reduces weed infestations by variable percentages over large areas—can provide a positive cost-benefit ratio, even though the degree of weed control may be less than desired. If biocontrol in Oregon would reduce just the top 12 weeds by 30%, annual losses could decrease by $20 million. A 10% reduction of Scotch broom alone by biocontrol agents would yield $1.5 million in annual benefits to private and public landowners. An estimate of the net economic benefit of biocontrol agents in Oregon is valued at $12 million/year.
Significant Accomplishments for 2017

Eric Coombs, the Invasive Noxious Weed Control Program’s longstanding biocontrol entomologist retired in 2016. As a cost saving measure, this position was not filled for most of the 2016-17 field seasons. Biocontrol work in 2017 was reduced by about half due to Eric’s retirement. The Noxious Weed Program continued to move forward on the biocontrol front by working with our partners to fill in the gaps. Regional staff continued their efforts to collect, monitor, and distribute agents and Colin Park, APHIS-PPQ Portland, assisted greatly with this year’s efforts.

This season, 12 species of biocontrol agents (over 95,000 biocontrol agents) were released against 9 species of targeted invasive weeds at more than 61 sites, resulting in a treatment of more than 305 acres. Over 42 biocontrol sites were monitored to determine establishment and impact of biocontrol agents. Releases of biocontrol agents were provided to cooperators in Oregon and neighboring states.

Field Bindweed

A cooperative research project is being conducted in conjunction with Dr. Ed Peachy and Jessica Green (OSU) to determine the distribution of the gall mite and the field bindweed moth, Tyta luctuosa, in western Oregon. The flight season of the moth was studied at the Baskett Slough National Wildlife Refuge in Polk County. The flight season begins in May and extends into September, with two peak periods. Additional monitoring did not reveal establishment at any of the release sites in Eastern Oregon.

Gorse

In 2008, testing of the gorse shoot moth, Agonopterix ulicitella, and the gorse thrips, Sericothrips staphylinus, began at the OSU quarantine facility. Insects were collected near Hilo, HI and brought to Oregon. The project is being coordinated by Dr. Fritzi Grevstad, OSU, and is primarily funded by the US Forest Service. A petition for field release of the gorse thrips was submitted in 2012 and pre-release studies were conducted along Oregon’s southwest coast. There are hopes for a 2018 field release, as the Technical Advisory Group (TAG) approved the thrips release to APHIS and it is now awaiting the final Environmental Assessment.

Japanese Knotweed

Host specificity tests of the plant sucking psyllid, Aphalara itadori, at the OSU Quarantine Lab by Dr. Fritzi Grevstad were finalized and a petition for field release was submitted to TAG. More testing is required on the southern strain; however, the northern strain was approved by TAG. Pending approval by USDA-APHIS, releases could be made in 2018.

Leafy Spurge

In 1982, the root/stem-boring beetle Oberea erythrocephala was released in Klamath County, but failed to establish. It was re-released in 1994 and established in several counties. The beetle now occurs at most sites in Crook County. The population at Smith Rock...
State Park in Deschutes County provides releases for other counties. This beetle is now widespread and has lead to a decline of the larger plants at many infestations in Eastern Oregon. Two releases were made this season near Milton-Freewater.

Purple Loosestrife
Eggs of the root weevil *Hylobius transversovittatus* were released in 1992. Adults were reared and released in Marion and Polk counties in 1993. Weevils were recovered at both sites in 1994 and 1995. Adults may live two to three years. The larvae in the roots can withstand flooding for several months. The root weevil may help to dampen the boom/bust cycle caused by the leaf beetles. In 2005, a cooperative weevil-rearing project was initiated with the US Army Corps of Engineers (and later with Earth Designs Inc.) to provide adults for areas along the lower Columbia River, where tides make establishment of the leaf beetles tenuous. In 2007, adults and larvae in infested plants were relocated to sites along the Columbia River. In 2012, a colony was established in the new Invasive Noxious Weed Control Program greenhouse in Salem to provide weevils for the 2013 field season. One release of *Hylobius* was conducted in the Hermiston area.

Rush Skeletonweed
Three agents were released on rush skeletonweed: a root-boring moth, *Bradyrrhua gilveolella*, a stem and leaf gall midge *Cystiphora schmidtii*, and a gall midge, *Eriophyes chondrillae*.

Russian Knapweed
The gall midge, *Jaapiella ivannikovi*, was extensively collected from the McNabb Road site in the Willow Creek area in Morrow County and redistributed throughout Oregon in cooperation with USDA-APHIS. An extensive redistribution program was conducted in 2017, which provided 57 releases throughout infested areas in Oregon. There were also 7 releases of the Russian knapweed gall wasp, *Aulacidea acropilionica*: this is the first gall wasp used as a biocontrol agent in the US. The presence of these agents is best identified by the formation of distinctive galls on the plants.

St. Johnswort
*Aplocera plagiata*, a defoliating moth, was released at one site. The moth is widespread in northeast Oregon and in the Cascades south to Douglas County, and recently, in the Willamette Valley. There may be several generations per year. It does not occur in large enough numbers to cause much damage to plants.

Spotted and Diffuse Knapweed
Three species of seed head weevils, *Bangasternus fausti*, *Larinus minutus*, and *Larinus obtusus* were released at nine sites this season. All three agents attack spotted and diffuse knapweed. Attack rates at many sites exceed 95% of the seed heads. Heavy attack by adults can stunt or kill plants and delay flowering. Weevils are causing spectacular stand density reductions at numerous sites in eastern Oregon.

Yellow Toadflax
The stem boring weevil, *Mecinus janthinus*, was released at three yellow toadflax sites. This insect has been widely redistributed on Dalmatian toadflax in the state with the cooperation of County Weed Programs, Invasive Noxious Weed Control Program, APHIS, BLM, USFS, and private landowners. This is a very effective biocontrol agent. Some resurgence has been observed at some sites that were under control; however, weevil populations were observed to be building and they are expected to prevent the weed from achieving its original density. Weevils are spreading to new sites on their own and stand reductions have been observed at numerous sites in Oregon.
Northwest Region
By Beth Myers-Shenai & Glenn Miller

Lottery Fund Projects

Common Reed (*Phragmites australis*)
**Multnomah Channel – Portland Metro Area**
- B-rated
- Cost Center: Lottery

Invasive Noxious Weed Control Program staff, in cooperation with Portland State University’s Center for Lakes and Reservoirs and West Multnomah Soil and Water Conservation District, have continued to locate and treat patches of non-native common reed on the lower Willamette River and in the Multnomah Channel.

Common reed is an aggressive riparian invader capable of colonizing wetlands and moist lowlands throughout the Pacific Northwest. High water events often fragment and transport roots downstream from parent populations. Elimination of these upstream populations reduces the chance of colonization on prime marshlands on the lower Columbia River. Utilizing boat-based surveys conducted in 2016, additional common reed infestations were treated in September along the lower reaches of the Multnomah Channel. Backpack applications of imazapyr herbicide were applied. These treatments are very effective in eradicating common reed. Many infestations upriver have already been eliminated in this way.

- 0.30 net acres treated
- 17.8 river miles surveyed

**Garden Yellow Loosestrife (*Lysimachia vulgaris*)**
**Willamette River – Grand Island**
- A(T)-rated
- Cost Center: Lottery

In 2017, Invasive Noxious Weed Control Program staff returned to monitor and treat the only known Oregon site of garden yellow loosestrife. This site, on an island in the Willamette River just north of the Wheatland Ferry, was reported in 2016 via the Invasive Species Hotline website by a recreational kayaker. The Invasive Noxious Weed Control Program collaborated with Yamhill SWCD to determine the best access point on the river, then boated to and treated an extremely dense 5’x5’ patch on the downstream tip of the island that had just completed flowering. Treatment was completed within a week of receiving the report. A comprehensive survey of susceptible habitat on the island was also completed at the time but no other plants were found. This year, there was some regrowth requiring treatment, but the plant cover was reduced by an estimated 95% from the 2016 extent. The source of this infestation is unknown, but an alert was sent to members of the Willamette Aquatic Invasives Network and more survey is planned in 2018 for the area upstream of this site.

Garden yellow loosestrife was introduced to the US as an ornamental plant and would cause severe disruption to sensitive wetland habitats if allowed to become established. A sample plant was taken from the site to rear in a greenhouse for educational purposes and, after first appearing to die back, nearly a dozen new sprouts emerged from the root crown. It is being managed aggressively with the goal of eradicating it in Oregon.

- 0.001 net acre treated over 0.01 gross acre
- 4 river miles of mainland and island shoreline surveyed; approximately 30 acres

**Giant Hogweed, (*Heracleum mantegazzianum*)**
- A(T)-rated
- Cost Center: Lottery

In 2017, Noxious Weed Program staff collaborated with the City of Portland, Clackamas SWCD, Tillamook SWCD, and Hood River SWCD to monitor and treat active Oregon locations of giant hogweed. One new site was reported in Portland via the Invasive Species Hotline website and was treated by the Invasive Noxious Weed Control Program within a week. Most sites are in current or former residential landscape settings, and the two known riparian infestations, both in the Portland Metro area, are either absent of plants or in steady decline. Detailed analysis of the giant hogweed tracking database is underway. Overall, active giant hogweed sites and plant numbers have dropped significantly since it was first discovered in Oregon in 2001.
Giant hogweed is a federally-listed noxious weed with sap that can cause serious burns. The plant is considered a public health hazard. It also is an aggressive invader of riparian and open areas and produces large amounts of seed that can easily scatter and float. It is being managed aggressively in Oregon with the goal of eradication.

- 0.01 net acre treated over 2.5 gross acres

**Goatsrue (Galega officinalis)**

- A(T)-rated
- Cost Center: Lottery

No goatsrue plants were found for the second year in a row at a site that was first reported in 2011 at a sand and gravel operation near Tualatin. One sighting of this plant in the Portland area came from West Multnomah SWCD, but it was determined that the plant is likely an ornamental hybrid since it is not producing seed or otherwise spreading. The City of Portland, Metro, Clean Water Services, and Clackamas SWCD are all working on active sites in the Portland metro area, the largest of which was discovered in 2016 along the banks of the Clackamas River at an old gravel quarry site, possibly the source for other plants in the region. Plant numbers are in slow decline at all these sites.

Goatsrue is a federally listed noxious weed that is highly toxic to livestock and is being managed aggressively with the goal of eradicating it in Oregon to prevent potential damage to the agriculture industry.

- 0 net acres treated
- 5 acres surveyed

**Matgrass, (Nardus stricta)**

- A(T)-rated
- Cost Center: Lottery

In 2017, the Invasive Noxious Weed Control Program conducted a follow up visit to the only known site of matgrass in northwest Oregon on the coast north of Gearhart. The small site was found in 2015 during a survey of Neacoxie Forest by North Coast Land Conservancy, which owns the property, and was first treated in the summer of 2016 by Clatsop SWCD. The treatment was very effective with only 2 plants requiring treatment in 2017.

Matgrass is an extremely dense, wiry grass that has no forage value for livestock. Though it appears to grow fairly slowly in coastal habitats, once it becomes established it can be very difficult to remove without damaging desirable vegetation since there is no selective herbicide options for grasses like these. This patch is growing in the Clatsop Plains, an area of sensitive coastal prairie habitat that serves as a migration corridor for wildlife. Matgrass is being managed aggressively in Oregon and the goal is to extirpate it from this site.

- 0.01 net acres treated over 0.1 gross acres
Mouse-ear Hawkweed (*Pilosella pilosella*)
Gopher Valley, Yamhill County
- A(T)-rated
- Cost Center: Lottery

The only known Oregon location of mouse-ear hawkweed is on private and Nature Conservancy land in Gopher Valley, Yamhill County. Treatments by the Conservancy and Invasive Noxious Weed Control Program staff have reduced populations significantly on reserve property. Treatment is complicated by populations of Kincaid's lupine, a federally threatened obligate food source for the federally endangered Fender's blue butterfly. Invasive Noxious Weed Control Program staff monitored the site in 2017 with Conservancy staff, verifying that treatments were having the desired reduction in weed population. Additional surveys in the surrounding area in 2018 may indicate outlier populations exist that would require treatment.

- 15 acres evaluated

Oblong Spurge (*Euphorbia oblongata*)
Salem
- A(T)-rated
- Cost Center: Lottery

In 2017, the Invasive Noxious Weed Control Program continued oblong spurge treatment in Salem at the Oregon State Penitentiary and Oregon Office of Emergency Management with the assistance of grounds keeping staff. Plants are responding well to treatment and densities have decreased by an estimated 99%. There were a number of new oblong spurge sites reported by cooperators around NW Oregon in 2016 and 2017, although it appears this is due more to increased awareness of this noxious weed rather than a sudden spread. Invasive Noxious Weed Control Program staff will be working on a tracking system to keep tabs on the progress cooperators are making on these sites and will directly manage locations as needed.

Oblong spurge was introduced to Oregon both as a contaminant of flax seed (there was a former processing facility at the Salem locations) and as an ornamental displayed for its showy yellow bracts. It is a perennial plant that spreads rapidly by seed and grows densely, crowding out native plants, and it is a threat to riparian and prairie habitats. It is being managed aggressively with the goal of eradicate it in Oregon.

- 0.01 net acres treated over 28 gross acres

Paterson's Curse (*Echium plantagineum*)
- A(T)-rated
- Cost Center: Lottery

There were three visits and two treatments in 2017 conducted by Noxious Weed Program staff on the Lebanon Paterson's curse roadside site. A total of four plants were found this year, giving hope that this site is close to eradication after nearly 15 years of treatment. Paterson's curse is a showy wildflower that produces copious amounts of long-lived seed and easily outcompetes native grasses and forbs in open, sunny areas due to its drought tolerance. It is a threat to pastureland and native prairies and is also toxic to livestock. It is being treated aggressively for eradication at this site and others in Oregon.

- 0.0001 net acre treated over 1.2 gross acres

Water Primrose (*Ludwigia hexapetala*)
Basket Slough Wildlife Refuge, Dallas
- B(T)-rated
- Cost Center: Lottery

Invasive Noxious Weed Control Program staff joined with refuge managers and the Polk SWCD to reverse rapidly growing populations of *Ludwigia* (water primrose) in the marshes of the Basket Slough Wildlife Refuge, west of Salem. First identified on the refuge within the last three years, *Ludwigia* has rapidly expanded, threatens the marshlands and waterways on the entire refuge, and adjacent sloughs on private farmland. Access throughout the project area was possible by using an all-wheel drive Polaris Ranger with spray tank and hose. Polaris herbicide was applied in cooperation with refuge staff using a tank mounted ATV and contracted backpack crews. *Ludwigia* is growing exponentially throughout the Willamette basin and poses a significant threat to vertebrate and invertebrate species that depend on backwaters and slow moving waterways for survival. Treating the weed on the refuge is part of a greater
effort to protect the best habitats in the Willamette Valley from further degradation.

- 0.5 net acres treated over 68 gross acres
- 120 gallons applied

Yellow Floating Heart (*Nymphoides peltata*)

Willamette River

- A(T)-rated
- Cost Center: Lottery

Yellow floating heart has emerged center stage in recent years along with *Ludwigia* as a rapidly growing threat to backwaters in the Willamette Basin and the vertebrates that live in them. Fragmentation and seed production is increasing on the Willamette River. As new sites establish, weed control practitioners have expanded their efforts to contain these species in response.

Invasive Noxious Weed Control Program staff treated a large infestation of floating heart on a side channel of the Willamette River at the confluence with the old Long Tom River channel. This is an old and well established infestation, highly disturbed and fragmented by cattle grazing in the riparian zone. Documented yellow floating heart locations are increasing in the Willamette Basin due, in large part, to survey efforts, and fragmentation from upstream infestations, the largest of which was identified near Eugene in 2017. With the assistance of State Parks staff and a jetboat, a backpack application of imazapyr was applied to all plants that were accessible in the Long Tom River area. Eradication may be a very long-term prospect, though a 2016 treatment reduced the weed density by 75%. Efforts to begin treatment at the Eugene location have been initiated for 2018.

- 0.75 net acres treated over 3 gross acres
- 9 gallons applied

**US Army Corps of Engineers**

**South Valley Projects**

Meadow Knapweed (*Centaurea pratensis*) – B-rated

Yellow Flag Iris (*Iris pseudacorus*) – B-rated

Fern Ridge Dam

Meadow Knapweed, (*Centaurea pratensis*)

Cottage Grove Reservoir

Sulphur Cinquefoil (*Potentilla recta*) – B-rated

Hills Creek Reservoir

- Cost Center: US Army Corps

Kincaid’s lupine habitat in the surrounding prairie land adjacent to Fern Ridge Reservoir contains populations of meadow knapweed that, gone unchecked, would impart considerable competition to the expanding federally threatened plant and associated endangered Fender’s blue butterfly colonies. Multiple spot treatments applied by backpack sprayer at Cottage Grove and Fern Ridge Reservoir provide selective control with no non-target impacts. While meadow knapweed continues to persist at each site, populations are currently at a small fraction compared to initial population levels.

Yellow flag iris is relatively rare in the targeted areas (east shore) of Fern Ridge Reservoir. Most original plants have been eliminated from three main areas including the Amazon Creek outlet. Newer populations persist from seed recruitment both onsite and probably from other locations on the reservoir. Access to much of the shoreline is limited by expanses of thick bull rush and reed canarygrass, stymying ground surveys during reservoir drawdown.

Sulphur cinquefoil at the Hills Creek Reservoir fire camp is a relic population introduced before clean vehicle policies during fire events were enacted. ATV applications utilizing Milestone herbicide has reduced populations >95% from initial levels. Spot treatments continue to be used on remnant plants to prevent seeding and further spread.

- 0.08 net acre treated along 1.9 road shoulder miles of Fern Ridge Dam face
- 0.16 net acre treated in 56 gross acres lupine habitat at Fern Ridge prairie lands
- 0.04 net acre treated in 47 gross acres at Fern Ridge Reservoir
- 0.05 net acre treated in 16 gross acres wildland habitat at Cottage Grove Reservoir
- 0.10 net acre treated in 126 gross acres at Hills Creek fire camp

A three-acre infestation of yellow floating heart was found in a slough adjacent to the Willamette River in north Eugene in 2017.
US Forest Service Projects
Mt. Hood National Forest (MHNF)

Diffuse Knapweed (*Centaurea diffusa*) – B-rated
False Brome (*Brachypodium sylvaticum*) – B-rated
Garlic Mustard (*Alliaria petiolata*) – B(T)-rated
Japanese Knotweed (*Fallopia japonica*) – B-rated
Meadow Hawkweed (*Pilosella caespitosa*) – B(T)-rated
Orange Hawkweed (*Pilosella aurantiaca*) – A(T)-rated
Spotted Knapweed (*Centaurea stoebe*) – B(T)-rated
Sulfur Cinquefoil (*Potentilla recta*) – B-rated

- Cost Center: USFS-MHNF

Mt. Hood National Forest encompasses a varied landscape that includes wet, densely vegetated western slopes, dry open forest eastern slopes, lush river valleys, wilderness meadows and part of the Columbia River Gorge. Invasive plant populations on Mt. Hood National Forest are generally small, localized infestations with the exception of meadow and orange hawkweeds in the Lolo Pass area and spotted knapweed on the Hood River and Barlow Ranger Districts. Much work is done each year to prevent the spread of small, dispersed sites and to keep vector areas like roadsides and trailheads clear of noxious weeds. All priority sites in these areas were treated by the Invasive Noxious Weed Control Program in 2017, and new sites were discovered and treated as surveys of road systems continue to expand.

Clackamas and Zig Zag Ranger Districts

Most of the effort in this area was aimed at suppressing meadow and orange hawkweeds in the 5,000-acre Lolo Pass site in order to protect vulnerable wilderness meadow habitat. The Bonneville Power Administration corridor and Lolo Pass Rd. 18 system treatment was a cooperative effort with the Invasive Noxious Weed Control Program, USFS, Clackamas SWCD, and Portland Water Bureau staff, as well as contract crews hired by Clackamas SWCD. Orange hawkweed was also treated in a meadow along the Burnt Lake trail in the Zig Zag Wilderness. Both hawkweed species plant counts are down considerably from original population levels. Native forbs and shrubs continue to repopulate the sites, contributing significant competition to the hawkweed and preventing seed escape from under the canopy.

Other areas of treatment include Highway 26, Highway 224/Road 46, Timberlake Job Corps campus, Ripplebrook Rd. 4631 & 4635, and Bagby Hot Springs Rd. 70. Other priority species include false brome, Japanese knotweed, and sulfur cinquefoil.

Hood River Ranger District

Activities on the Hood River Ranger District were primarily focused on treating priority sites of spotted, diffuse, and brown knapweed along roadsides to prevent further spread, and exploring lightly used roads to find and treat new infestations. Some of the Lolo Pass area hawkweed treatments also occurred on the Hood River Ranger District treatment areas including Lost Lake and Wahtum Lake Rd. 13 and Rager quarry area, Laurence Lake Rd. 2840, and Red Hill Rd. 16.

In 2017, Invasive Noxious Weed Control Program staff also assisted Hood River SWCD staff with a garlic mustard survey on private property adjacent to Mt. Hood N.F. land where garlic mustard suppression efforts are underway. This year's survey also detected a small 20-plant patch of false brome, and surveys for this plant will be expanded in 2018 to try to discover a source population.

- 2.9 net acres treated over 5,100 gross acres
- 6.2 net acres of knapweed treated over 601 gross acres
- 110 acres surveyed for garlic mustard
**Willamette National Forest**

Armenian Blackberry (*Rubus armeniacus*) – B-rated
Dalmatian Toadflax (*Linaria dalmatica*) – B(T)-rated
Diffuse Knapweed (*Centaurea diffusa*) – B-rated
False Brome (*Brachypodium sylvaticum*) – B-rated
Giant Knotweed (*Fallopia sachalinensis*) – B-rated
Japanese Knotweed (*Fallopia japonica*) – B-rated
Perennial Peavine (*Lathyrus latifolius*) – B-rated
Reed Canarygrass (*Phalaris arundinacea*) – Not rated
Spotted Knapweed (*Centaurea stoebe*) – B(T)-rated
Yellow Archangel: (*Lamiastrum galeobdolon*) – B-rated

- Cost Center: USFS-WNF

2017 was a challenging year with a shortened treatment window due to late spring rains and fire closures in August-September. Primary targeted species continue to be roadside spotted knapweed, forest populations of false brome, reed canarygrass at Lost Lake, Dalmatian toadflax, and blackberries on forest roads and road spurs, and outlier populations such as yellow archangel on the Detroit district. Treatments utilized truck mounted sprayers, Polaris mounted sprayers, and backpacks. In most treatment areas, weed populations are stable or reducing, though a large increase in false brome was noted on the McKenzie district due to the fact that a key partner on the Andrews Experimental Forest had retired and no replacement had stepped in to continue treatments. Key management goals on this forest are to protect vulnerable areas like logging sites from new invasions, keep invaders out of pristine and sensitive habitats, and prevent further spread off-forest from well-traveled roads and trailheads.

**Detroit Ranger District**

Nearly all treatments on the Detroit district in 2017 were at small, dispersed sites, which helped prevent further spread on the district. Plant numbers are steadily declining at nearly all locations. Priority areas treated in 2017 were Highway 22, Blowout Rd. 10, Straight Creek Rd. 11 and interior roads north of there, French Creek Rd. 2223 areas, Breitenbush Rd. 46, Woodpecker Ridge Rd. 040, and Marion Creek Rd. 2255. False brome, spotted knapweed, and yellow archangel were all treated on the district, and 2 privately owned knotweed sites near district boundaries were also treated. Herb Robert and shiny geranium detection and treatment will be an added focus in 2018.

- 0.7 net acres treated over 35 gross acres

**McKenzie Ranger District**

Forest fires and logging operations restricted access to many previous project areas. Treatment areas were reduced from 2016 levels.

Priority areas included Horse Creek, East Fork McKenzie, 1501 near Blue River Reservoir, Foley Ridge Rd. 2643, Highway 126, Deer Creek Rd. 2654, Highway 20, and Lost Lake. Priority species were spotted knapweed, false brome, and reed canarygrass.

- 3.8 net acres treated over 407 gross acres

**Middle Fork Ranger District**

Priority areas include: Aufderheide Rd. 19, Fall Creek roads, Winberry Creek roads, Hills Creek Rd. 23, Rigdon Rd. 21, and Highway 58. Priority species included false brome, spotted knapweed, and Dalmatian toadflax.

Blackberry treatments occurred on Forest roads 5828, 5826, and the North Shore Road near Lookout Point Reservoir.

- 6 net acres treated over 344 gross acres surveyed

**Sweet Home Ranger District**

Priority areas were Moose Mountain and Moose Creek roads, Vine Maple Rd., and Highway 20. False brome was the primary target with spotted knapweed being secondary. Weed populations remain relatively stable with some increases where previous treatments failed to provide adequate control.

- 1 net acre treated over 211 gross acres
Bureau of Reclamation Projects

Hagg Lake

Armenian Blackberry (Rubus armeniacus): B-rated

Scotch Broom (Cytisus scoparius): B-rated

• Cost Center: USBR-Hagg Lake

Noxious Weed Program staff treated Armenian blackberry and Scotch broom on a 10-acre parcel along the shores of Hagg Lake in Washington County that provides core habitat for Kincaid’s lupine and its associated threatened and endangered Fender’s blue butterfly. This is a collaborative project between the Invasive Noxious Weed Control Program, Bureau of Reclamation, US Fish and Wildlife Service, and Washington County Parks. In an attempt to reopen prairie habitat, large monocultures of blackberry and Scotch broom were treated using a RTV handgun during prescribed treatment windows to avoid disturbing the lupine and butterflies. Following 2016 treatments, large mowing equipment was brought in by USFWS to knock down dead canes. This work has resulted in a transformed landscape that will hopefully allow the lupine population to greatly increase its range at this end of the lake.

• 3.14 net acres treated over 17 gross acres

Southwest Region

By Carri Pirosko

State Funded Lottery Projects

Woolly Distaff Thistle
Douglas, Josephine, Curry Counties

Woolly distaff thistle, Carthamus lanatus, was discovered in Oregon in 1987. While this A-rated noxious weed is known to infest vast acreages in California, it is only found in three Oregon counties. It is important to continue to protect Oregon’s range, pasture, and overall watershed health from further invasion by this non-native thistle. Elimination of seed production and seeds banks in the soil are both key in efforts to eradicate populations of this annual thistle. This long-standing project involves the control, survey, and monitoring of all known infestations of distaff thistle. At a minimum, each site is worked three times each year. The Invasive Noxious Weed Control Program continues to provide supervision and coordination for this project.

• 97% decrease in distaff thistle since program began in 1987
• 4.1 net acres treated over 4,000 gross acres surveyed in 2017
• Out of 49 total sites: 13 sites have zero plants; 27 sites showed a decrease in plants from last season
• Two new large populations of distaff thistle were detected in Douglas County and treated this season

Regional Education and Outreach Activities

• Cost Center: Lottery

NW Oregon Noxious Weed Program staff gave presentations and updates at 14 regional CWMA meetings, the OSU Extension applicator short course, ODOT applicator training, and the NAISMA annual meeting.

The same sign before and after removal of Armenian blackberry to open up habitat for federally endangered Fender’s blue butterfly.

Left: Woolly distaff thistle. Right: In 2017, a large population of woolly distaff thistle was detected and treated in Douglas County.
Paterson’s Curse
Douglas County

Paterson’s curse is an A-listed weed species that threatens oak woodlands, native prairies, and dry upland slopes. Despite a beautiful appearance, this invasive weed is truly a curse in that it is toxic to livestock and has the potential to infest thousands of acres, as demonstrated in Australia. An infestation of Paterson’s curse was found in two ownerships southeast of Dillard in Douglas County in 2004. This project is a collaboration between the Douglas SWCD, the Invasive Noxious Weed Control Program, Roseburg Forest Products, the Cow Creek Band of the Umpqua Tribe, and private landowners.

- Only 1 net acre of Paterson’s curse plants was detected and treated this season.
- This project has achieved a 99% decrease in plants since first detected in 2017.

Yellow Floating Heart
Private Ponds

Yellow floating heart, *Nymphoides peltata*, was introduced into the United States as an ornamental pond plant. Prior to being declared a noxious weed in Oregon, yellow floating heart was sold in the aquatic plant trade. Although it is an attractive plant for water gardens, if introduced into the wild, yellow floating heart can rapidly colonize lakes, ponds, and slow-moving streams, engulfing them in dense mats of vegetation.

- No plants were found at Little Squaw Lake in Jackson County in 2017.
- No plants have been detected for two years in ponds at a golf course in Roseburg.
- Private ponds near Kellogg and Elkton continue to show reductions in percent cover.
- A new pond near Melrose was treated within days of being reported, a classic example of Early Detection and Rapid Response.

Before and After Treatment at a private pond near Kellogg in Douglas County.
See table below for location and status of yellow floating heart treatments in southwest Oregon, ponds listed from top to bottom in order detected, 2009–2017.

<table>
<thead>
<tr>
<th>County</th>
<th>Location, Land use</th>
<th>Years Treated</th>
<th>Population Status/Treatment Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jackson (Rogue River-Siskiyou NF)</td>
<td>Little Squaw Lake, USFS</td>
<td>7</td>
<td>Only 1 small fragment found/hand &amp; mechanical only</td>
</tr>
<tr>
<td>Douglas</td>
<td>Roseburg golf course, private</td>
<td>2</td>
<td>NO plants found for 2 years/ herbicide</td>
</tr>
<tr>
<td>Douglas</td>
<td>Kellogg, private</td>
<td>4</td>
<td>99% reduction/ herbicide</td>
</tr>
<tr>
<td>Douglas</td>
<td>Elkton, private</td>
<td>4</td>
<td>95% reduction/ herbicide</td>
</tr>
<tr>
<td>Douglas (Umpqua NF)</td>
<td>Willow Sump, USFS</td>
<td>3</td>
<td>95% reduction/ herbicide</td>
</tr>
<tr>
<td>Douglas</td>
<td>Melrose, private</td>
<td>1</td>
<td>Will be evaluated in 2018/ herbicide</td>
</tr>
<tr>
<td>Douglas (Umpqua NF)</td>
<td>Beaver Pond, USFS</td>
<td>0</td>
<td>Estimated 10% Cover of this 1-acre pond (August 2017), Treatment pending USFS EA</td>
</tr>
</tbody>
</table>

BLM, USFS and Lottery: Regional Education and Outreach Activities

Noxious Weed Program staff gave 3 presentations and workshops this season:
- Douglas County Weed Day
- Oregon Recreation and Park Association, Natural Areas Invasive Plant Management Workshop
- Oregon Vegetation Management Association Conference

Lottery, Collaborative Working Groups

Noxious Weed Staff served as the lead in the facilitation and coordination of several collaborative working groups in southern Oregon. Funds from the USFS and BLM helped promote collaborations across southwest Oregon.

I-5 Noxious Weed Partnership

Invasive Noxious Weed Control Program staff organized and facilitated an annual meeting of partners from northern California and southwestern Oregon to discuss noxious weed concerns along the I-5 corridor. Participants included representatives from the Invasive Noxious Weed Control Program, ODOT, CalTrans, Siskiyou County Agricultural Commissioner’s office, BLM, USFS Rogue River-Siskiyou NF, Siskiyou Weed Management Area group, SWCDs from Jackson and Douglas counties, and CWMAs representing Jackson, Josephine, and Siskiyou (CA) counties.

Past collaborations have included:
- Weed treatments on the Siskiyou Summit
- Tailgate trainings
- Directional mowing to help prevent spread
- Equipment washing
- Early Detection and Rapid Response (EDRR)
- Biocontrol releases
- Discussion around herbicide efficacy
- Review of seed mixes post highway construction
- Letters of support for programs at risk of being eliminated

Alyssum Working Group

The purpose of the Yellowtuft Alyssum Working Group is to increase the effectiveness of land management agencies and the public responding to the A-rated noxious weed, Alyssum, in the Illinois Valley. The primary goal is to eradicate Yellowtuft Alyssum in Oregon. Full eradication will be reached when surveys confirm that no new Alyssum seed is produced from known sites and no new populations are detected for at least five years.
The Yellowtuft Alyssum Working Group will work together to:

- Promote awareness
- Produce educational outreach materials
- Coordinate survey and treatment with all affected landowners
- Guide prevention measures
- Foster volunteer opportunities
- Explore grant funding and further partnering opportunities

Lake County, OR and Modoc County, CA Joint Meeting

A need to initiate collaboration on shared noxious weed concerns across the OR/CA border was met through the organization of a partner meeting in 2017. Partners included the Invasive Noxious Weed Control Program, BLM-Lakeport, BLM-Alturas, Lake CWMA, and the Modoc Agricultural Commissioner’s Office. Dyers woad and Scotch thistle are two species that were raised as priorities. The sharing of data and submission of a ‘Pulling Together’ initiative grant were two positive outcomes of the meeting.

Gorse Science Team and Mapping Working Groups

The south coast “Gorse Action Group” formed a Science Team to help review and summarize all available gorse control methods, provide guidance on effective herbicides and Best Management Practices, and assist with the prioritization of gorse sites targeted for containment, control, and reduction. The formation of a mapping working group was an offshoot of Science Team efforts. The Invasive Noxious Weed Control Program, ODF, and Oregon Parks and Recreation Department will continue work into 2018 in the development of a comprehensive map that will guide control activities.

Rogue River-Siskiyou National Forest (NF)

Funds from both the USFS Rogue-River Siskiyou NF and the Grants Pass/Medford/Cave Junction BLM Offices are instrumental in A-rated eradication efforts for Alyssum.

**Alyssum**: Illinois Valley, Josephine County

*Alyssum murale* and *Alyssum corsicum* are perennial plants native to Eastern Europe. Alyssum species are unique in that they can hyper-accumulate metals extracted from the soil in leaf and shoot material. In the 1990s, a private company leased land from a handful of private and county landowners and planted Alyssum with prospects of phyto-mining nickel from high mineral Serpentine soils. The Illinois Valley contains the largest concentration of serpentine soils in Oregon and supports a diverse and unique flora that is threatened by the spread of Alyssum species. In less than ten years, Alyssum escaped planted areas to such an extent that, in 2009, the Oregon State Weed Board listed both species as A-rated noxious weeds. The Invasive Noxious Weed Control Program, BLM, USFS, The Nature Conservancy, Cultural Ecological & Enhancement Network, private landowners, and citizen volunteers have collaborated in pushing Alyssum closer to our eradication goals.

- In less than ten years, net acres of treated Alyssum have been reduced by 98%.
- Helicopter surveys resulted in more efficient ground treatments.
- No new sites of Alyssum were found in 2017.
- A concerted effort by local, state, and federal partners continues to make Alyssum eradication goals possible.
Rogue River-Siskiyou NF: Knapweeds

A limited number of spotted knapweed acres is known to occur in the Rogue River Watershed. Continual soil disturbance from wildfire, logging, road construction, and maintenance have resulted in expanded populations along Highways 140 and 230, and to a lesser extent, along Old Highway 99 and roads leading up to the Mt. Ashland Ski Resort. Noxious Weed Program staff and partners treated spotted knapweed infestations on the east side of the Rogue River-Siskiyou National Forest and USFS crews control and monitor west side infestations:

- This season, Noxious Weed Program staff put out 26 gallons of mix at spotted knapweed sites along Highway 140 and at a few sites off of adjacent side roads.
- USFS and Noxious Weed Program staff put out 6 gallons of mix at spotted knapweed sites along Highway 230.

USFS State and Private Forestry Program & BLM Coos Bay

Funds from both the State and Private Forestry Program and the BLM Coos Bay Office are instrumental in A-rated weed eradication efforts for matgrass and biddy biddy.

Matgrass
Coos and Curry Counties

Matgrass, *Nardus stricta*, was discovered at several locations along the south coast in 2015. Matgrass, an invasive grass native to Eastern Europe, has no natural predators in Oregon, allowing it to form dense carpets or “mats” that limit the ability of native plants to establish and associated native fauna to thrive. Botanically, the Cape Blanco Airport and adjacent lands are noted for a unique pygmy forest and is one of the few remaining habitats for the federally endangered western bog lily. On the south coast, matgrass seeds have spread via muddy boot treads of hikers recreating along the popular coastal trails leading out to Blacklock Point, as well as through contaminated mowing equipment used to maintain State Park lawns at two State Natural Areas: Devil’s Kitchen and Bandon Wayside.

- A 42% reduction of matgrass has been achieved after two years of treatment at the Cape Blanco airport and along trails at Blacklock Point in Curry County.
- Two years of treatment have been completed at Devil’s Kitchen and Bandon Wayside just south of Bandon in Coos County resulting in an 80% reduction in cover.
- Treatments have been a collaborative effort between Oregon State Parks and Recreation Department, Oregon Department of Aviation, and ODA Noxious Weed Program staff.

Biddy-biddy
Coos County

Biddy-biddy, *Acaena novae-zelandiae*, a native to New Zealand, likely spread to the United States in the wool of imported sheep. Plants thrive in well drained soils and compete with native plants on coastal bluffs and in lawns where they form dense mats. High traffic locations in coastal habitats where some summer moisture occurs and frosts are infrequent are subject to invasion.

To date, biddy biddy is only known to occur in limited distribution along the coastline in Coos and Curry counties. Biddy biddy targeted for treatment included populations at the Cape Blanco Lighthouse and USFS Ranger Station in Gold Beach.
• Noxious Weed Program staff entered year two of a collaborative biddy-biddy control effort with Oregon Parks and Recreation Department at Cape Blanco State Park.

• Treatment of heavily infested lawns at the USFS Ranger Station in Gold Beach are ongoing.

**Umpqua National Forest**

Yellow Floating Heart

A new yellow floating heart infested water body, Beaver pond near Steamboat, was detected on the Umpqua NF this season. It is estimated that less than 10% percent of the 1-acre pond is covered in yellow floating heart. Signs were posted and containment measures undertaken to prevent spread to other forest ponds until a site-specific EA can be written to allow treatment.

An infestation at Willow sump was detected in 2011 and a site-specific EA was completed in 2015 allowing treatment. Yellow floating heart was estimated to blanket 1.2 acres of this 2-acre pond when it was first detected in 2011. Percent cover has been reduced by 95% after two years of treatment.

Diffuse Knapweed (*C. diffusa*)

Spotted Knapweed (*C. stoebe*)

Knapweed control is a high priority on the Umpqua NF in eastern Douglas County. The USFS intensively surveys and monitors both knapweed species across the forest. Noxious Weed Program staff assisted with herbicide treatments at larger sites, while the USFS manually removes smaller patches.

This federal-state partnership has resulted in a steady decline of spotted and diffuse knapweed on the Umpqua NF. This season, 20.5 gallons of mix were used to treat knapweed sites along Highways 138 and 230 and other locations across the Diamond Lake Ranger District. Umpqua NF staff accompanied Invasive Noxious Weed Control Program staff and took detailed records as to the number of plants treated each season.

**BLM Grants Pass/Medford District**

Noxious Weed Control Program staff collaborates regularly with the Grants Pass/Medford BLM District staff and seasonal crews. The BLM Medford District support both BLM and USFS seasonal Weed and Botany Crews that contribute toward critical noxious weed work across the Medford/Grants Pass/Cave Junction region. This BLM District is also instrumental in funding Jackson and Josephine CWMA groups, resulting in valued B-rated weed control across the region. In 2017, the Grants Pass BLM District staff prioritized the daunting task of updating their Noxious Weed EA that will result in more effective and efficient weed control across the District.

**ODOT immediately responded by treating a lone patch of Japanese knotweed found in the median strip between the north and southbound lanes of I-5. How knotweed got to this remote location is unknown. Preventing spread across the border is a priority for the I-5 Noxious Weed Partnership since knotweed occurs in very limited distribution in California.**
Barbed Goatgrass: Josephine County

Barbed goatgrass, *Aegilops triuncialis*, is an annual that invades rangeland, grasslands, and oak woodlands. When mature, it is unpalatable to livestock and can cause injury to grazing animals. Goatgrass infestations can reduce forage quality and quantity by 50 to 75 percent. Because livestock tend to avoid this weedy grass, dense stands form that push out natives and desirable forage. While barbed goatgrass infests thousands of acres in California, only two known populations are known to occur in Oregon. Both populations are found off of Highway 199 in Josephine County.

- One new site was found this season in Gold Canyon off of Highway 199 between Kirby and Selma. It is suspected that equipment brought in to fight the Gold Canyon fire may have been contaminated with barbed goatgrass seed.
- Three sweeps were made across the Rough and Ready Creek area to manually remove and bag plants from this 10-gross acre site.

Support from both the Rogue River-Siskiyou National Forest, the Medford-Grants Pass BLM Office, and the locally based Cultural & Ecological Enhancement Network lend to the ongoing success of this eradication project.

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rough and Ready Creek, south of Cave Junction</td>
<td>1.3 bags</td>
<td>2.5 bags</td>
<td>4 bags</td>
<td>1 bag</td>
<td>3/4 bag</td>
</tr>
<tr>
<td>Gold Canyon, south of Selma</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>3 bags</td>
</tr>
</tbody>
</table>

Tracking barbed goatgrass sites: Bags of barbed goatgrass are manually removed by project cooperators annually. The detection of a new site in Gold Canyon, south of Selma in Josephine County, brings the total number of barbed goatgrass sites in Oregon to two.

BLM Coos Bay

Spotted Knapweed

In 2017, a spotted knapweed population was found on private timber ground immediately adjacent to BLM land and prioritized for treatment, as it is the only known population in Coos County.

BLM Coos and State and Private Forestry

Funds from both the State and Private Forestry Program and the Coos BLM Office were instrumental in coastal work conducted on behalf of the Gorse Action Group and A-rated eradication efforts for matgrass and Cape ivy.

Gorse Action Group (GAG)

Dense populations of gorse create a fire hazard in populated coastal regions, destroy native coastal habitats, decrease land values, and degrade valued forage ground. The Gorse Action Group is an informal group of participants including federal and state agencies, non-profit organizations, private industry, and landowners. The GAG is working to control and reduce the spread of gorse, minimize the impact of gorse to the coastal economy and natural resources, and provide a successful process to share with others facing gorse infestations.

In 2017, the Governor designated GAG as an Oregon Solutions Project.

- Oregon Solutions provides a system and a process whereby community leaders join forces to define a problem, agree on a solution, and collaborate towards a resolution.
- Noxious Weed Program staff served as a Science Team Leader for the Oregon Solutions project and joined the Coordinating Committee for the GAG.
- In a Declaration of Cooperation, the Invasive Noxious Weed Control Program committed to taking a leadership role in mapping development, EDRR, promoting effective gorse control methods, and biological control.
Matgrass

Matgrass is an invasive grass native to western Asia and southern Europe and has no natural predators in Oregon, allowing it to form dense carpets or “mats” that limit the ability of native plants to establish and associated native fauna to thrive. Three populations of matgrass are currently under control on the south coast.

Cape Ivy

Cape ivy, *delairea odorata*, listed as an A-rated noxious weed in 2015, is considered to be invasive in California, Hawaii, and Australia. An extensive rhizome system makes it challenging to control and its vines form dense mats of vegetation that extend over trees and shrubs, killing understory plants. Fifteen populations are known to occur between Ophir and Brookings. Noxious Weed Program staff collaborate with the Curry SWCD in survey, control, and monitoring of Cape ivy populations in Curry County.

Nursery Program Assistance

Noxious Weed Program staff assisted the Nursery Program with inspections and certifications on an as-needed basis in SW Oregon this season.

North and South Central Region

*By Mike Crumrine*

North and South Central Lottery Fund Projects

Biocontrol Distribution

- Cost Center: Lottery

In 2014, initial releases of the biological control agent, *Aulacidea acroptilonica*, for Russian knapweed were made and since then the stem gall wasp has established and can readily be collected from Rimrock Springs on the Crooked River National Grasslands south of Madras. In 2017, independently and coupled with an OSWB grant funded project with the Crooked River CWMA, several collections and releases were made from the nursery site to release sites in Crook, Gilliam, Klamath, Lake, Morrow, Umatilla, Wasco, and Wheeler counties.

Other biocontrol agents collected from sites in Crook, Deschutes, and Morrow counties include the Canada thistle stem gall fly (*Urophora cardui*), the leafy spurge root-feeding flea beetle (*Aphthona lacertosa*), the leafy spurge stem boring beetle (*Oberea erythrocephala*) and the Russian knapweed bud gall midge (*Jaapiella ivannikovi*).

- 31 biocontrol releases delivered to cooperators
- 16 biocontrol releases made by the Invasive Noxious Weed Control Program

Private Land Noxious Weed Treatments

- Cost Center: Lottery

Throughout the central region, the Invasive Noxious Weed Control Program conducts herbicide treatments on isolated patches of state listed A and B rated noxious weeds. In 2017, treatments were made to: isolated yellow starthistle patches in Wasco County, the only known infestation of matgrass east of the Cascades in Klamath County, isolated spotted knapweed patches in Klamath County, Taurian thistle in Klamath County, and patches of Mediterranean sage and Russian knapweed in Lake County.

- 13 separate treatments on private lands
- 7 net acres treated with herbicide
- 600 gross acres protected and surveyed

Mike Crumrine describes the damage caused by the stem gall wasp, *Aulacidea acroptilonica*, to Oregon State Weed Board members and guests on a summer tour of Crook and Grant counties.
North and South Central Bureau of Land Management Fund Projects

Prineville BLM Biocontrol Project
- Cost Center: BLM
In 2017, the Noxious Weed Program was excited to collect and introduce two biocontrol agents, a bud gall midge (*Jaapiella ivannikovi*) and a stem gall wasp (*Aulacidea acroptilonica*) for Russian knapweed control on BLM lands near Mitchell and Clarno. Agents were initially introduced in 2016 to areas along the Columbia River and in the Crooked River Grasslands. Establishment and damage to adult plants provide a renewed hope for long-term control and reductions to dense populations of Russian knapweed. Twelve releases were made at seven different sites. Releases were made again in two areas, while both agents were already established at a third site near Priest Hole on the John Day River.
- 10 releases made to five new sites
- 2 releases made to sites visited in 2016
- 1 established site (2016) with over-wintering biocontrol agents

Lakeview BLM Noxious Weed Treatment Projects
- Cost Center: BLM
In 2017, the Invasive Noxious Weed Control Program started treating Mediterranean sage on slopes and in valleys west of Caulderwood Lake. The Invasive Noxious Weed Control Program treated 2.3 acres of widely scattered Mediterranean sage spread across a 1,000 acre project area.

The Warner Valley pepperweed project is a combined effort between Invasive Noxious Weed Control Program treatment crews from the south, central, and southeast regions. The whole BLM Wetlands area has been designated as an Area of Critical Environmental Concern. The Invasive Noxious Weed Control Program conducts perennial pepperweed and Canada thistle treatments in the northern portion of the valley around Flagstaff Lake. In addition, biocontrol releases of *Aulacidea acroptilonica* and *Urophora cardui* were made in the fall on Russian knapweed and Canada thistle.
- 67 acres were treated
- 10 biocontrol releases
- 5,000 acres surveyed

Klamath Falls Resource Area BLM Noxious Weed Treatment Projects
- Cost Center: BLM
In 2017, five regions were the focus of treatment and survey. Noxious weed species in the area include: Canada thistle, musk thistle, yellow starthistle, Scotch thistle, Mediterranean sage, yellow toadflax, dalmatian toadflax, leafy spurge, diffuse knapweed, spotted knapweed, Russian knapweed, dyers woad, spiny cocklebur, whitetop, perennial pepperweed, and St. Johnswort.
- 45.25 net acres treated
- 15,000 acres surveyed
- 4 biocontrol releases of *Aulacidea acroptilonica* on Russian knapweed were made to private lands adjacent to the BLM

Rob Banks on Bryant Mountain.
North and South Central Bureau of Reclamation Fund Projects

Crane Prairie, Haystack, Prineville, and Wickiup Reservoirs
- Cost Center: BOR

The Bureau of Reclamation owns and manages several facilities throughout central Oregon. The Bend Field Office of the Pacific Northwest Region contracts with the Noxious Weed Program and Crook County to address weed and vegetation problems in both eastern and western Oregon. The Invasive Noxious Weed Control Program conducts treatments at Crane Prairie, Haystack, Prineville, and Wickiup Reservoirs.

A joint effort with Crook County for the aquatic treatment of Eurasian watermilfoil, *Myriophyllum spicatum*, on Haystack Reservoir continued in 2017. A survey was conducted in 2015 and revealed that ten acres of the 233 acre lake were affected by a mix of elodea, coontail, and milfoil. Despite nearly half of the original infested acres remaining untreated, extensive surveys this season revealed no evident weed patches. The Invasive Noxious Weed Control Program suspects that the unusual drawdown in 2016 coupled with freezing soil temperatures may have been effective in the decline of milfoil in Haystack Reservoir.

Treatments continued through the 2017 season for Russian and spotted knapweeds, St. Johnswort, perennial pepperweed, and mullein along the banks and earthen dams at Crane, Prineville, and Wickiup reservoirs.
- 34 net acres treated
- 6,300 gross acres surveyed

North and South Central USFS Fund Projects

Deschutes National Forest
- Cost Center: USFS

The Invasive Noxious Weed Control Program has had a long-standing partnership with the Deschutes National Forest to conduct noxious weed control. In 2017, Invasive Noxious Weed Control Program staff treated 69 acres of noxious weeds over thousands of gross acres. Treatments included:
- Spotted knapweed in campgrounds, recreation areas, and open forest
- Knapweed, St. Johnswort, and medusahead along roadsides
- Orange hawkweed, ribbongrass, and yellow flag iris in riparian areas

The most notable projects continue to be the treatment of ribbongrass and yellow flag iris on the Metolius River. Treatments began in 2013 downstream of Camp Sherman, immediately adjacent to the Gorge Campground. This area was treated for the fifth year in a row and has seen significant reductions in both iris and ribbongrass populations.

Two one-mile reaches of the Metolius River were treated this season, one above the Allingham Bridge and one above Camp Sherman. The Invasive Noxious Weed Control Program backpack sprayed these stretches along the river and in the Gorge Campground area. Significant reductions of ribbongrass and yellowflag iris have been achieved.
- 69 net acres treated
- 10,000 acres surveyed

Eurasian watermilfoil at Haystack Reservoir, pre-treatment October 2015.
USFS State and Private Projects

- Cost Center: USFS S&P

In 2017, the Invasive Noxious Weed Control Program conducted treatments in two privately forested areas of Klamath County:
- 11 acres of dyer’s woad on the eastern slope of the Cascades
- 2.5 acres of spotted knapweed by Boulder Creek in eastern Klamath County

**Northeast Region**

By Mark Porter

**Lottery Fund Projects**

**Hoary Alyssum, Berteroa incana**

Wallowa, Oregon

- Cost Center: Lottery

The Invasive Noxious Weed Control Program treats hoary Alyssum on two adjacent properties in Wallowa County. These are the only known infested properties in northeast Oregon. Further, hoary Alyssum is only found in limited distribution in two counties in Oregon. Last season, a total of 4 net acres were treated. At one property, the infested number of acres dropped by 99% between 2016 and 2017 due to broadcast treatments with residual herbicides. Net acres treated only dropped by 25% on the second property likely due to the fact that there have been no broadcast treatments at this site since 2015. Very little, if any, seed production is occurring on these sites. Carefully timed treatments are critical since hoary Alyssum has staggered germination, widening the seed production window. There is some question about the viability of late season seeds because they do not harden.

- 1.5 net acres treated over 38 gross acres
- 45 gross acres surveyed

**Orange Hawkweed, Pilosella aurantiaca**

Wallowa and Morrow Counties

Cost Center: Lottery, Wallowa Whitman National Forest

There are only four known active sites of Orange hawkweed in NE Oregon, all on the Wallowa Whitman National Forest. All of these sites are mixed with or in very close proximity to meadow hawkweed infestations.

- Two sites are located in the bottom of Davis Creek Canyon, north of Enterprise; in 2017, less than 0.01 acre of orange hawkweed was treated at the lower canyon site and no plants were found at the upper canyon site. The Invasive Noxious Weed Control Program coordinated orange hawkweed treatments with Wallowa Whitman NF treatments of meadow hawkweed in the drainage.
Section 4 — Noxious Weed Control Program

- One site is near Hat Point, perched on the edge of Hells Canyon Wilderness Area; in 2017, no orange hawkweed was found.
- One site in the town of Wallowa is managed by the County
- One site in Morrow County is considered historic since it hasn’t been found for a number of years.
- Invasive Noxious Weed Control Program staff and Morrow County will revisit this site next summer to confirm eradication.

**Plumeless Thistle, *Carduus acanthoides***  
Wallowa, Morrow and Grant Counties

- Cost Center: Lottery

Plumeless thistle is an A rated weed with a very limited distribution in northeast Oregon:
- Grant County has two large, historic sites spread across 40,000 acres; 12.5 net acres were treated.
- Wallowa County has 9 sites; there has been no seed production for three years; 1.01 net acres were treated over 39 gross acres.
- Five sites had no plants.
- A total of 20 plants was treated at three sites.
- A one acre site was detected and treated by the Wallowa County Vegetation Department.

- Morrow County discovered and treated one small site in 2017.

**Ravenna Grass, *Saccharum ravennae***  
Umatilla, Morrow and Malheur Counties

- Cost Center: Lottery

Ravenna grass is an appealing ornamental plant in NE Oregon. It is tall with showy plumes and is cold hearty. It also happens to spread rapidly by seed into a variety of natural environments. Its ability to spread and its limited distribution earned it an A-rated listing for the state. Invasive Noxious Weed Control Program staff treated the infestation in the McNary Wildlife Area for the US Army Corps of Engineers for the third year in a row. Treatment included removal of seed heads and treatment of leaves with glyphosate. While net acres have remained about the same, the structure of the population is changing from mature stands to seedlings.
- 0.16 net acres treated over 340 gross acres

Ornamental plants were detected this year by Invasive Noxious Weed Control Program staff in Milton-Freewater, Pendleton, and Boardman. Malheur County has multiple sites and some are moving out of yards and into waste areas, irrigation ditches, and roadsides. Follow-up is being left to the respective counties.

**Giant Cane Grass, *Arundo donax***  
Morrow and Umatilla Counties

- Cost Center: Lottery

Portland General Electric (PGE) has been experimentally growing giant cane grass in the Columbia Basin as a potential source of biofuel for their coal fired power plant in Boardman. That project was terminated by PGE this year with the intent shifting from growing to eradicating the plant. Invasive Noxious Weed Control Program staff is working with Morrow County Weed Control, Oregon State University Extension, and Morrow County SWCD to monitor the eradication process being undertaken by PGE and private landowners. Giant cane was initially established in four locations: three sites on private lands used to test production methods and a fourth site at the Hermiston Agricultural Research Center used by OSU Extension to test control methods.
Two of the three private fields were taken out of *Arundo* production in 2016; both fields had giant cane volunteer plants emerging this season. Eradication efforts began this season at the primary site used for giant cane production. *Arundo* canes were harvested, bailed, and hauled to the Finley Buttes Landfill and buried. Canes that had been bailed and stored at the Boardman Power Plant were also hauled to the landfill and buried. Rhizomes were dug up and piled near the field, allowed to dry, and then burned. The field was disced, tilled with a seed bed prep mulcher, and planted with Roundup Ready corn. The field was sprayed with glyphosate and atrazine to kill remaining giant cane plants. Follow-up treatments will continue until no giant cane plants are found for three years.

- 10 net acres surveyed and monitored
- 90 acres gross project area

**Rush Skeletonweed Eradication, *Chondrilla juncea***

**Union and Grant Counties**

- Cost Center: Lottery and Wallowa Whitman NF

The two most interior counties in northeastern Oregon have very little skeletonweed. Grant County has one 1/4 acre site near Ritter that was discovered last season. Grant County and the Invasive Noxious Weed Control Program have intensively surveyed nearly 1,000 acres in the vicinity and found no other sites. Even broader inventories are planned for 2018. While the history of skeletonweed in Union County dates back to 2005, known populations are still very small. The Invasive Noxious Weed Control Program manages two populations of skeletonweed along the I-84 corridor.

The large majority of historic sites had no plants in them, but broadcast treatments continue over low density sites to control seed germination.

- 1.2 net acres treated across 43 gross acres at the Hilgard population.
- 0.7 net acres treated; a 50% reduction in treated acres realized since 2015 at the Flying J population.

In 2017, Union County discovered a third site on and adjacent to the Ladd Marsh Wildlife Area. Union County staff used OSWB grant funding and teamed up with Invasive Noxious Weed Control Program staff to treat that area. Another small site was discovered during weed inventories in 2016 near Jarboe Creek on the Umatilla National Forest. That site was treated by Union County Weed Control staff.

- 12.6 net acres treated over 2,944 gross acres.
Meadow Hawkweed, *Pilosella caespitosum*


Meadow hawkweed control is the largest project in northeast Oregon and thus involves many private, state, and federal partners from Baker, Union, Wallowa, and Morrow counties. As a part of this effort, the Invasive Noxious Weed Control Program treated 58 net acres over 5,900 gross acres. Meadow hawkweed is one of the most versatile and aggressive invaders in this part of the state. Left unchecked, the plant takes over a wide variety of habitats and forage production systems, often crowding out desirable vegetation. The majority of hawkweed in the region occurs in Wallowa and Union counties. Umatilla and Morrow counties each have one site. The Umatilla site was detected while conducting tansy ragwort inventory in the Saddle Mountain area. Two patches, each less than 100x100 square feet, were treated. Umatilla County has requested funding for EDRR inventory and treatment in a 2018 OSWB application. The site in Morrow County is along a roadside in a lodge pole pine stand just west of Ukiah and has been managed by Umatilla NF staff for several years. The Invasive Noxious Weed Control Program and Umatilla NF staff treated 0.17 acres; 500 acres were surveyed with no new sites found. Technical advice from the Invasive Noxious Weed Control Program on herbicide prescriptions and treatment methodology should further improve eradication efforts.

Tansy Ragwort, *Senecio jacobaea*

- Cost Center: S&P, lottery, Umatilla National Forest

Tansy ragwort is kept largely in check by biological control agents on the west side of the state. Tansy is a persistent invader on the eastside where the agents do not survive the colder winters. Tansy ragwort is found primarily in the forested rangelands and riparian areas of eastern Oregon.

A project map for meadow hawkweed work created by Wallowa Resources. This map illustrates the scope of the problem and the cooperative effort that must go into the project.

In Union and Wallowa counties, meadow hawkweed is much more widespread and therefore treatment goals are containment and control. That said, most sites are small and herbicide applications effective. The challenge is finding plants before they go to seed each season. The attached map was created by Wallowa Resources Canyonlands Partnership for both counties to illustrate control efforts in the area. Area cooperators meet often to coordinate work across the landscape, address labor needs, discuss herbicide prescriptions, mapping standards, and other relevant topics. Invasive Noxious Weed Control Program’s help comes as technical assistance, outreach and education, OSWB grants, and treatments of outlying sites. This year, Invasive Noxious Weed Control Program staff treated 58 net acres over 5,900 gross acres.

Tansy ragwort monitoring and treatment program has been ongoing in northeast Oregon for more than 30 years. Starting in 2016, tansy monitoring and treatment are conducted by counties and CWMA groups in the region. The Invasive Noxious Weed Control Program is working toward the creation of an up-to-date tansy GIS layer that can be shared.
with partners. Over 1,000 small tansy infestations were detected over the years; the number of active locations has dropped to less than ten per year.

Multiple sites can still be found at Bear Creek and Saddle Mountain in Umatilla County and Looking Glass Creek in Union County. Annual visits by Invasive Noxious Weed Control Program staff and partners receiving OSWB funding help to address tansy in these areas.

- 3 net acres treated over 550 gross acres

**Common Bugloss, Anchusa officinalis**

- Cost Center: S&P, Lottery, Umatilla National Forest

Most of the Common bugloss in Oregon is in the Imnaha River Canyon of Wallowa County. Consistent treatment efforts by the Wallowa Canyonlands Partnership for over a decade have largely kept this population contained. Last season, OSWB funded survey and treatment efforts by Wallowa County, addressed sites near the town of Lostine. Unfortunately, in 2017 a plant was found some 30 miles downstream of Lostine on the Grande Ronde River.

Outside of Wallowa County, the towns of Union and Baker City each have small sites of common bugloss that county and/or Invasive Noxious Weed Control Program staff treat and monitor. In Umatilla County, common bugloss was discovered in 2014 in Meacham Creek during a channel restoration project. Initially, all plants were bagged and burned. Weed staff from the Confederated Tribes of the Umatilla Indian Reservation, Invasive Noxious Weed Control Program, and the Umatilla NF treated all plants (0.1 net acre) this season with herbicide.

Last season, a large common bugloss site was found in the Walla Walla River drainage in Umatilla County. Initial surveys and treatments are being supported by a grant from the OSWB. Invasive Noxious Weed Control Program staff continues to provide technical and inventory services.

Invasive Noxious Weed Control Program staff helped:

- Treat 2.1 net acres over 22 gross acres in Union and Meacham Creek
- Inventory 160 acres in the Walla Walla River Riparian area

**BLM**

Rush Skeletonweed Containment – Baker, Malheur and Wallowa Counties

- Cost Center: Lottery, BLM, Wallowa Whitman National Forest

Rush skeletonweed management is a top priority for eastern Oregon. Wallowa, Baker, Umatilla, Morrow, and Malheur counties all have significant populations of rush skeletonweed on their eastern flanks and containment is the primary goal. Populations drop drastically as you move west and south in the region triggering cooperators to switch from mere containment to an early detection and rapid response mode. Invasive Noxious Weed Control Program staff helped treat 1.7 net acres over 733 gross acres.

Discovery and treatment of new sites in outlying areas are critical to a containment effort. Population
levels are steady to decreasing in areas where regular treatments have been consistently implemented. That said, getting to all populations is a challenge, as more sites are discovered each year. The Invasive Noxious Weed Control Program staff coordinated two skeletonweed-focused stakeholder meetings aimed at: prioritizing treatment areas, verifying and scheduling treatment of outlier sites, expanding the role of private landowners, increasing the use of aerial survey and treatment, and promoting integrated management, where possible. Additionally, Invasive Noxious Weed Control Program staff were able to verify that suspected skeletonweed sites in the Unity area were inaccurate reports.

The rush skeletonweed root moth (*Bradyrrhoa gilveolella*) was introduced at six sites in northeast Oregon between 2012 and 2015. Unfortunately, moths have not been recovered since then. Other skeletonweed specific biocontrol agents are present in eastern Oregon, but are not having a significant impact on skeletonweed populations.

### Miscellaneous Projects

**Welted Thistle, *Carduus crispus***

- **Cost Center:** Lottery, OSWB Grant funds through Wallowa County

Welted thistle was discovered at a site in Wallowa County last season and is the only known site west of the Rockies besides a location in British Columbia. Wallowa County used funding from an OSWB grant to hand pull and treat all known sites.

**Squarrose Knapweed, *Centaurea virgata* – Grant County**

- **Cost Center:** Lottery, OSWB Grant funds through Grant County

The Grant County Weed Control District manages the only known squarrose knapweed site in northeast Oregon. The Invasive Noxious Weed Control Program first treated an estimated 200 net acres spread across 800 gross acres back in 1988. The number of acres has steadily declined over the lifetime of the project to 15 acres in 2004 and to only 233 plants this season.

- Less than 0.1 net acres treated
- 3,200 gross acres surveyed

**“Turkish” Thistle, *Carduus cinereous***

The identification of a weedy thistle located in Hells Canyon once thought to be Italian thistle (*Carduus pycnocephalus*) underwent scrutiny in 2014 because of several subtle morphological differences. Genetic testing at Montana State University and subsequent consultation with national thistle experts indicate that this plant is not a match for any thistle currently known to exist in the United States, but resembles plants documented in Turkish botanical guides. The species has yet to be determined, but it is preliminarily being called *Carduus cinereous* and has been placed on the Invasive Noxious Weed Control Program's Watch List.

Invasive Noxious Weed Control Program Staff Also Accomplished the Following:

- Considered two whitetop biocontrol pre-monitoring sites for the potential release of *Aceria draba* at two sites in Baker County and advised the relocation of pre-monitoring sites in Grant County to public land. (Cost Center: Vale BLM biocontrol)
- Worked with APHIS staff to conduct a biocontrol survey in the Unity Area. Bioagents were identified for common toadflax, spotted knapweed, and diffuse knapweed. Findings were presented at a local weed group meeting. (Cost Center: Vale BLM biocontrol)
- Identified a new population of common crupina in Baker County on Pine Creek, near Halfway. Coordinated an inventory day with Baker County and Tri-County CWMA to begin delimitation and educated partners as to the identification and habitat of the plant. (Cost Center: Vale BLM EDRR)
- Identified Italian bugloss (*Anchusa azurea*) in Baker County. This plant occupies approximately 20 acres and covers 10%-15% of the site. This bugloss species has been known at this location for at least 10 years and has been treated with herbicide multiple times. It will be considered for the Invasive Noxious Weed Control Program’s Watch List. (Cost Center: Vale BLM EDRR)
- Treated an outlier site of sulfur cinquefoil in Mormon Basin. (Cost Center: Vale BLM EDRR)
• Collected and released 240 *Urophora cardui* into the Upper Imnaha of the Eagle Cap Wilderness Area. (Cost Center: WWNF)

• Treated priority weeds (spotted knapweed, Russian knapweed, sulfur cinquefoil, meadow knapweed, scotch broom, and white top) along the I-84 corridor on Wallowa Witman NF within the ODOT right-of-way (Cost Center: WWNF)

**Education and Outreach**

Invasive Noxious Weed Control Program staff gave noxious weed presentations at: the Oregon Vegetation Management Association Conference, to the Columbia River Operations Group for Umatilla County regarding flowering rush, at the Lower Burnt River Weed District annual meeting, a meeting of the Halfway Area landowners regarding skeletonweed, a regular meeting of Upper Burnt River Weed District regarding biocontrol, and the OSU Extension Pest Management Short Course in La Grande focusing on noxious and ornamental weeds.

**Southeast Region**

*By Bonnie Rasmussen*

**BLM-Burns District**

A former *Mecinus janthinus* nursery site in Mortimer Canyon.

In east Steens Mountain, diffuse knapweed was monitored at the Grant place and in the vicinity of Little McCoy Creek. Plant densities remain the same, but overall plant biomass has been decreased and plants appear to be stunted in growth. A release of *Larinus minutis* made on Little McCoy Creek is present, but it is not having a significant impact on the site density. Invasive Noxious Weed Control Program and BLM staff monitored Dalmatian toadflax sites in Devine Canyon and Mortimer Canyon. The bioagents have been highly successful and the original nursery sites have been diminished to small patches.

**Steens Wilderness**

The Invasive Noxious Weed Control Program/BLM Steens Wilderness project was put on hold for the 2017 season due to extreme fire danger, followed by limited helicopter availability. Some fall portions of the plan were on track, but were cancelled when federal funding became an issue. Invasive Noxious Weed Control Program staff assisted the BLM Range and Weed Program in a consultant capacity during an annual grass survey and monitoring tour. Medusahead ryegrass is rapidly consuming acres of new rangeland and an action plan is needed.

**Biological Control**

The Invasive Noxious Weed Control Program continues to work at both Faye Canyon and east Steens Mountain on diffuse knapweed sites. This year, Invasive Noxious Weed Control Program staff introduced the new Burns BLM Coordinator to the project area and monitored for the presence of *Larinus minutis* and *Bangasternus fausti*. All biocontrol agents are present at Faye Canyon, but they are not having a significant impact on the target species. Two new releases of *L. minutis* were made in fringe areas of Faye Canyon.
Districtwide EDRR

Invasive Noxious Weed Control Program staff work directly with the Burns District to keep an eye out for new invaders and monitor new sightings of known invaders. In addition, we often act as a conduit for information between cooperators and private landowners. Burns District has recently gone through a change in the weed coordinator after many years, so regional staff have been on call to assist with answers and project introductions.

P Hill Project

The P Hill Project is located southwest of Frenchglen, along both sides of highway 205 up to the intersection with Rock Creek Road. The project area also includes the dump and gravel pit area and targets Mediterranean sage and Scotch thistle.

Over the past 20 years, plant numbers have fluctuated due to weather and fire events. This season, the Invasive Noxious Weed Control Program completed the main treatment with one applicator and an ATV unit. A few days were spent this fall with an applicator and ATV. Plant numbers were similar to previous treatment seasons. It should be noted that a single dyer’s woad plant was found and eradicated in the project area this season.

- 9.97 net acres treated
- 1,200 gross acres surveyed

Stinkingwater Creek Project

This project focuses on control of targeted noxious weeds including perennial pepperweed, Scotch thistle, diffuse knapweed, Russian knapweed, and purple loosestrife on BLM managed lands. Purple loosestrife and diffuse knapweed are targeted on the adjacent private lands. The project encompasses the Stinkingwater Creek Drainage from headwaters to the confluence with the Malheur River and some side tributaries. In 2017, Invasive Noxious Weed Control Program staff covered the entire drainage.

Purple loosestrife along this creek continues to be widespread and persistent along drainages and wet meadow areas passing through the irrigated ground on the Lamb Ranch. Plants were treated on BLM land south of Lamb Ranch and along the tributary just east of ranch headquarters.

In some lower portions of the drainage, loosestrife, white top, and pepperweed become very sporadic and a challenge to find.

In addition, wildlife and livestock grazing continues to make finding and control of targeted weeds challenging.
The Invasive Noxious Weed Control Program is working with Harney County to once again take the lead on this project.

- 7.88 net acres treated
- 1,750 gross acres surveyed

**BLM-Vale District**

**Three Forks Project Area**

Invasive Noxious Weed Control Program staff completed a summer treatment for this area in mid-June. Areas treated last year were generally clean. A single plant of squarrose knapweed was removed from the edge of the road as it intersects with Campground Road; it was sent to the OSU Herbarium for a positive identification. No leafy spurge was found growing in the vicinity of previously treated locations. Whitetop and Scotch thistle continue to persist due to the extensive amount of seeds banked in the soil from past infestations.

Scotch thistle and Russian knapweed plants were treated along the 3 Forks Road between Highway 95 and the 3 Forks Campground. The yellow starthistle site near Grassy Reservoir that was initially treated in 2013, was extensively surveyed and no plants were found this season. This area continues to show serious impacts from a multiple year drought and subsequent fires; the site was not revisited in the fall.

- 4.8 net acres treated
- 1,650 gross acres surveyed

**Pascal Reservoir Project Area**

Invasive Noxious Weed Control Program staff made multiple visits to Jordan Creek Rim in the spring and early summer months. Dangerous fire levels prevented further work in the area. Even with some moisture, the plant community has not recovered from recent drought and fire cycles. A very limited amount of yellow starthistle plants were present in the project polygons and border areas. It is worth noting that Scotch thistle numbers continue to increase and are targeted when surveying for yellow starthistle.

No new infested areas were found and the rim above Jordan Creek Canyon remained clean. The Invasive Noxious Weed Control Program staff continues to coordinate with Jordan Valley Cooperative Weed Management Area to ensure that known weeds located on adjacent, private lands to the north and southeast are monitored. Visibility and the sheer size of the gross project area continue to be a big challenge. No fall survey or treatments were undertaken due to budget issues.

- 4 net acres treated over
- 2,050 gross acres surveyed

**Succor Creek Area**

The Invasive Noxious Weed Control Program crew made a monitoring pass through the project area this season and plants were treated on Rockville Road.

No other work was completed due to budget issues. The Succor Creek Area was treated in May for Scotch thistle and white top from Highway 95 to Rockville Road.

- 0.04 net acres treated
- 1,500 gross acres surveyed
Sage Creek, Devil’s Gate/Camp Kettle Creek
Invasive Noxious Weed Control Program staff did not work in these project areas in 2017 due to funding restrictions.

Rome, Owyhee Spring, Skull Creek Road, Indian Fort Creek, Dry Creek Reservoir, and Arritolba Place Road
The Invasive Noxious Weed Control Program staff also continued to work on perennial pepperweed, whitetop, and Scotch thistle sites along the Owyhee River corridor, access roads east of Rome, and portions of the road system. White top was treated at Owyhee Springs corrals and at multiple locations along the road.

Skull Creek Road was surveyed towards Three Forks Hot Springs and Scotch thistle was treated along the road and at several historic sites. Invasive Noxious Weed Control Program staff also surveyed roads to the south, treating multiple sites of white top.

Perennial pepperweed and Scotch thistle at Dry Creek Reservoir were treated. The reservoir continues to be dry and the area is still stressed from drought conditions. Further, the road system was traversed and several new white top sites were treated in previously burned areas.

- 9.55 net acres treated
- 7,100 gross acres surveyed

Dago Canyon Spotted Knapweed and Lesley Gulch
A new spotted knapweed site was identified during the 2015 fire fighting efforts. Both cat lines and fire crossed a good portion of the site, exasperating the situation. A fall treatment was implemented in 2015 and a follow-up treatment was completed in 2016. In 2017, the site was greatly reduced despite significant seeds banked in the soil and movement of the seed and root fragments. No new spotted knapweed plants were found outside of the known site area, but Scotch thistle is on the increase in the disturbed burn areas. Scotch thistle and rush skeletonweed were treated on the Lesley Gulch Road. Further work was interrupted by equipment issues, followed by federal budget constraints.

- 3.5 net acres treated over
- 1,000 gross acres surveyed

Rush skeletonweed plant located along the Lesley Gulch road.
Biocontrol Work
Due to limited funding, southeastern regional Invasive Noxious Weed Control Program staff focused on monitoring Russian knapweed biological control agents in the southern portion of the Vale Resource Area. The larval stage of the bud gall midge, *Jaapiella ivannikova*, cause galls in the seed heads that act as a nutrient sink and interfere with seed production. The second biocontrol agent is a stem gall wasp, *Aulacidea acroptilonica*. The wasp damages the weeds by laying eggs in the stem of the plant. Eggs stimulate the plant to use energy to encapsulate the foreign object, making it harder for the weeds to use energy for other things, such as growing or making seeds.

Lottery Fund Projects

Hart Mountain Weed Management

Invasive Noxious Weed Control Program staff conducted spring and fall Scotch thistle treatments around the Hart Mountain headquarters and along the Frenchglen Road to Highway 205. Historic sites were monitored along Blue Sky and Hot Springs roads and noxious weeds were treated. The Poker Jim Mediterranean sage site was treated as well as the Calderwood Homestead in Big Flat. The Apple Orchard Homestead and the CCC Camp were also surveyed and treated. No new plants were found at a Dalmatian toadflax site, just west of the Hart Mountain Headquarters. That said, dyer’s woad plants were found at the Pipeline Site and treated.

- 2.99 net acres treated
- 3,100 gross acres surveyed

African Rue, *Peganum harmala*
In 2008, Invasive Noxious Weed Control Program staff verified an infestation of African rue on tribal allotments located southeast of Burns. The initial response plan was to contain and treat outlier sites, roadsides, barn yards, and pivots; an African Rue Cooperative Weed Management Plan was completed in 2009. The project area encompasses 2,700 gross acres and involves 19 landowners, including the Department of State Lands, private landowners, and tribal lands. This project is now largely funded by an Oregon State Weed Board Grant to Harney County and is monitored by Invasive Noxious Weed Control Program staff.

The treatment protocol involves an initial pass with a large crew, with follow-up survey and treatment two weeks later utilizing a smaller crew. Multiple site visits and subsequent treatments are essential to preventing seed production.

This year, Harney County treated African rue with Capstone (Triclopyr and Aminopyralid) at 8 pints to the acre. Also in the mix was a generic form of Escort called SMF 75 at 1.33 ounces per acre and a 2,4-D product at 1 pint to the acre. Included in the mix was a sticker (Syltac) at 1 pint per 50 gallons, a spray marking dye, and a no foam agent. The crew worked along transect lines, completing one pasture at a time. All treatment was done with a handgun, spot treatments at 50 gallons of water per acre. This high coverage rate is important for control success.

- 3.25 net acres treated
- 2,650 gross acres surveyed
Southeast EDRR

The Invasive Noxious Weed Control Program worked with Harney County to survey and implement control measures for orange hawkweed (0.25 net acres) and Japanese knotweed sites in Hines.

Invasive Noxious Weed Control Program staff continues to monitor the Pheasant’s eye, _Adonis aestivalis_, but has turned over coordination and treatment in the Riley Valley to Harney County. The net acres for 2017 was estimated at 4 acres with a gross of 150 acres.

Invasive Noxious Weed Control Program staff continued fall and spring management of a Mediterranean sage site located along HL Creek in the Catlow Valley. This site borders BLM managed lands and is the only known site of Mediterranean sage and medusahead in the Catlow Valley. Invasive Noxious Weed Control Program staff coordinated medusahead rye county road treatments with Harney County, as well as continued survey and treatment in an old fire scar. Invasive Noxious Weed Control Program staff monitored historic tansy ragwort sites in Kiger and Yellow Jacket Creek; no new plants were located at either site. Invasive Noxious Weed Control Program staff monitored historic yellow starthistle, spotted knapweed, squarrose knapweed and dyer’s woad sites in the southeastern region. With the ongoing effort to improve sage grouse habitat, the Invasive Noxious Weed Control Program strives to offer sound management advice that will help in this goal.

SE Region Biological Control Work

The Invasive Noxious Weed Control Program continues to assist with biocontrol work for diffuse knapweed, Canada thistle, Dalmatian toadflax, and Russian knapweed on non-federal lands. This year, releases were made in the Sagehen Creek, Silver Creek, Old Radar Base, and Hines Foothill sites. Releases of _Larinus minutis_ and _Bangasternus fausti_ were made with subsequent monitoring.

US Forest Service

**Emigrant Creek Ranger District**

Invasive Noxious Weed Control Program staff completed survey and monitoring of historical sites on multiple roads, including 31, 37, 43, and 47. Overall these roads looked clean, with only a few plants hand-pulled. Looking beyond 2017, regional Invasive Noxious Weed Control Program staff aims to coordinate more surveys and treatment on USFS-managed lands.

- 0.01 net acres
- 2,500 gross acres

USFS State and Private Projects

**Poison Creek Project**

Invasive Noxious Weed Control Program staff dedicates time annually toward the survey, treatment, and monitoring of the spotted and diffuse knapweed sites in the Poison Creek and Wilson creek drainages. Livestock, wildlife, and human movement in these drainages are a potential source for the spread of knapweeds across other public lands, on to private lands, and ultimately into the forest. Knapweed plants originally established along old railway right-of-way, in riparian areas, and along streams, roadides, and pastures. Significant knapweed reduction has been realized in these drainages, but monitoring and treatment of plants that continue to germinate from the seed bank is vital to long term project success. In 2015, the Invasive Noxious Weed Control Program stepped back into a lead role of this project; in 2018, it is anticipated that Harney County will once again play a more active role.

- 9.31 net acres treated
- 570 gross acres

**Upper Silver Creek**

The Invasive Noxious Weed Control Program coordinates noxious weed surveys and control efforts between federal cooperators and private landowners in the Upper Silver Creek Watershed. Landowners are engaged in this watershed by targeting new invaders, as well as managing medusahead rye. Spotted and diffuse knapweed sites remain static in density.

The Harney County Weed Board will be targeting this area in 2018 for new landowner specific projects targeting invasive weeds in the watershed.

**Yellow Jacket Reservoir**

For the fifth year in a row, no new plants were found at a historical tansy ragwort site at the head of Yellow Jacket Creek. However, spotted knapweed plants persist on private lands, both above and below the 37 road.

**Regional Education and Outreach Activities**

Numerous presentations were given at meetings and trainings. Invasive Noxious Weed Control Program staff consulted with many ranchers, land managers, and public entities. In addition, Invasive Noxious Weed Control Program staff attended weed board and CWMA meetings across the region.
Introduction

ODA’s Native Plant Conservation Program (NPCP) was established by the Legislature in 1987 to preserve Oregon’s impressive natural heritage and unique biodiversity. This was done in response to citizens’ concerns about the loss and degradation of native plant species and natural habitats in many areas of the state.

The program’s primary focus is to assist public agencies and private citizens with management issues involving native plants on non-federal public lands. The program meets this legislatively-mandated responsibility by:

- Assisting the general public with native plant management and protection issues.
- Limiting the management and regulation of state-protected plant species to public lands (state plant conservation laws are not applicable or enforceable on private property unless requested by the owner).
- Overseeing and regulating research and restoration activities involving target species and habitat on state lands.
- Providing guidance and support to state and local government agencies managing lands that contain target plant species or their habitats.
- Setting priorities for the establishment of conservation programs for protected native plant species, and subsequently developing such plans in collaboration with public and private stakeholders.
- Managing a permit system to regulate activities associated with protected plant collection and related actions on public lands.
- Establishing and revising Oregon’s list of protected native plants, as well as providing state review of the federal government’s process for listing Oregon plant species under the national Endangered Species Act.
- Conducting independent research to develop protocols for protected species recovery efforts, designed to aid in their eventual delisting.

2017 Program Overview and Highlights

Cooperative Conservation Planning, Partners, and Recovery Efforts

- Work in 2017 focused on a wide range of projects (and many additional consultations) situated throughout the state, involving a diversity of species and partners from both the public and private sectors.
- The NPCP worked cooperatively with a range of partners in 2017, including the Oregon Military Department, Oregon Parks and Recreation Department, Oregon Department of Energy, Oregon Biodiversity Information Center, Portland State University, the Nevada Natural Heritage Program, Oregon State University, the US Fish and Wildlife Service, multiple field offices of the Bureau of Land Management and US Forest Service, the Burns-Paiute Tribe, Oregon Justice Department, Oregon Department of Transportation, Oregon Institute of Technology, the City of Klamath Falls, the City of Ashland, Jackson County, Josephine County, Benton County, Lane County, the City of Jacksonville, the City of Medford, the City of Corvallis, the City of Salem, the Jacksonville Woodlands Association, The Nature Conservancy, the Southern Oregon Land Conservancy, and the Native Plant Society of Oregon.
- The 2017-19 General Fund allocation to the NPCP was instrumental in leveraging 2017 external support for program work, including grants and contracts from the US Departments of Agriculture and the Interior (Forest Service, BLM, and Fish and Wildlife Service), the Oregon Military Department, the Oregon Department of Transportation, and Federal Aviation Administration.
- These partnerships provided the NPCP with ongoing opportunities to improve our conservation efforts in many areas of the state, and furthermore, allowed Native Plant Conservation Program staff to provide management input for endangered species decision-making on federal, state, and locally administered lands.
- Stability in state funding is crucial for maintaining the legislatively assigned mission of the program, in particular completing the current list review and update (see below), as well as meeting our regulatory and consulting obligations with state and local public agencies.
• NPCP initiatives and projects are supported primarily through external grants and reimbursable consultation work, together with very limited state general funds.

State Endangered and Threatened Species List Review

• With some General Fund initially made available in the 2015-17 biennium, the Native Plant Conservation Program initiated a much-needed review in early 2016 of the State List of Threatened and Endangered Plant Species (maintained by the Native Plant Conservation Program as part of its regulatory authority), which was last updated in the late 1990’s. This work has continued through 2017 and is expected to wrap up in 2018.

• We anticipate some significant shifts in the list, with a number of currently protected species expected to be eligible for delisting, and several others that may need to be added to the list.

• It has been evident for some time that much work would be needed to wade through substantial updated information, gather outside recommendations and comments from experts and the general public, and conduct spot field studies, in order to determine which plant species could be delisted and which currently unlisted species may need to be given protective status.

• Completing this review will be one of the program’s most important tasks for 2017 and 2018, as the state’s Threatened and Endangered plant lists can impact on-the-ground activities of all state and local land managing agencies.

• We anticipate to re-hire a recently retired position in the program in early 2018, which will assist in completing this review.

2017 Cooperative Field Project Highlights

Rough Popcornflower (Plagiobothrys hirtus; PLHI): Listed Endangered (State and Federal)

• A broad initiative to assess the status of this state- and federally-listed species across its limited range in Douglas County was initiated by the Native Plant Conservation Program in 2016 and continued in 2017, in cooperation with BLM and USFWS.

• In late 2017, the Native Plant Conservation Program made plans to continue its long-standing cultivation and outplanting project for this locally endemic species, to further recovery efforts, focusing on public lands in the Umpqua Valley.

• Most of the transplants were used to create new wild populations of PLHI on the Roseburg BLM District’s North Bank Habitat Management Area, east of Sutherlin.

• Monitoring of our earlier 2016 transplant populations continued into 2017. The Native Plant Conservation Program anticipates moving this species from endangered to threatened status by 2020, assuming the North Bank site and other expected transplant areas remain protected and continue to thrive.

• Complete delisting of PLHI by 2024 is a state and federal objective.

• In late 2017, the Native Plant Conservation Program entered into a cooperative project with ODOT to assist them with mitigation issues for PLHI populations along I-5 in southern Oregon—this project will become fully active in 2018.

• The NPCP-ODOT mitigation project will also assist ODOT in meeting obligations under state and federal wetland conservation rules.

Silvery Phacelia (Phacelia argentea; PHAR): Listed Threatened (State)

• A range-wide status survey assessment was started in 2017 for this rare sand dune species that occurs on the Oregon coast.

• The support for the project came from the federal Coastal Fund, administrated by the US Fish and Wildlife Service (USFWS) in Bandon.

• In cooperation with USFWS and local land managers, significant number of the known sites for this species were visited in 2017, in order to gain a more current understanding of what, if any, risks the species faces.

• The data gathered by the Native Plant Conservation Program will be critical, as USFWS needs to decide whether or not to list the species under the federal ESA in the near future—
listing the species could have consequences for recreation and other industries on coastal dunes. If at all possible, it is important to find ways to avoid this while still ensuring that existing populations remain sustainable.

- Material was collected in late 2017 to allow Native Plant Conservation Program staff to begin work on cultivation requirements of the species.

- Understanding seed germination requirements will be important as we move ahead with greenhouse studies, to evaluate the potential for introducing the species back into suitable areas where weedy beachgrass has been removed.

**Peck’s Milkvetch (Astragalus peckii, ASPE): Listed Threatened (State)**

- A significant lane addition project is currently in the final planning stages for US Hwy 97 in central Oregon.

- ODOT has demonstrated that adding passing lanes will increase the safety of Hwy 97 in certain straight-away areas where unsafe passing (due to heavy traffic) is common—the accident rate here is high.

- Preliminary surveys by ODOT and the Native Plant Conservation Program show that ASPE populations occur on ODOT right-of-ways within the project zone—under normal circumstances, the species would need to be avoided during any road construction.

- However, state rules allow for exceptions when public safety is at stake, and NPCP staff began work in 2017 to develop a comprehensive mitigation plan that will allow limited take of ASPE (so work can move forward).

- Offsetting the take from construction will be a number of the Native Plant Conservation Program supervised off-site mitigation projects, designed to enhance the overall conservation of the species.

- This mitigation work (to begin in earnest in 2018) should ensure that ASPE is not elevated to Endangered status, which would have been a potential result of the Hwy 97 project otherwise.

**Gentner’s Fritillary (Fritillaria gentneri, FRGE): Listed Endangered (State and Federal)**

- In 2017, we continued our transition to a transplanting approach that solely targets geographic areas that are furthest from reaching recovery goals.

- Native Plant Conservation Program staff again transplanted greenhouse-grown bulbs of this species (from Native Plant Conservation Program’s OSU greenhouse operation) at field sites in 2017 (on lands managed by the Medford BLM, the Forest Service, City of Jacksonville, and ODOT). This work is bringing us closer to upgrading the conservation status of this high impact species, with the goal of potential delisting by 2022.

- Approximately 15,000 small FRGE bulbs from Native Plant Conservation Program’s OSU greenhouse operations are now being grown in Jackson County, to support the development of fritillary cultivation techniques at the local Forest Service nursery.

- We continued a lab-based molecular study in 2017 (in cooperation with an OSU lab), to better identify the species affiliation of large numbers of non-flowering fritillary plants occurring within the range of FRGE. The cooperative work underway at OSU is slated for completion in 2018.

- Non-flowering plants of FRGE look identical to non-flowering plants of a common fritillary species also found in the area, and molecular studies of field samples should give us a better handle on the actual numbers of FRGE present in nature (which should then enable us to de-list the species much quicker than originally anticipated).
Oregon Military Department (Site Surveys)

- We continued our on-going program of surveys of OMD’s National Guard training properties in Oregon, focusing in 2017 on the Biak Military Reservation in central Oregon east of Redmond.
- This was the fourth base we have worked on for OMD—others were Camp Rilea (Clatsop Co.), Camp Adair (Benton Co.), and the Umatilla Army Depot (Umatilla Co.).
- Field work (initiated in 2016) was completed in 2017, with species lists and map data (covering Native Plant Conservation Program vegetation and weed surveys) being summarized in 2018.
- OMD has a policy of maintaining accurate records regarding the status of natural resources on state lands they administer, including vegetation and endangered species, and ODA’s NPCP survey work plays an important role in this project.

Oregon Semaphoregrass (*Pleuropogon oregonus*; PLOR): Listed Threatened (State)

- Native Plant Conservation Program staff botanists again conducted monitoring of our previously created populations in Lake and Klamath counties (at Sycan Marsh and a Fremont-Winema National Forest site, respectively), and found that our PLOR transplants have persisted and established despite years of on-going drought conditions.
- The outplanting work is being coordinated by the Native Plant Conservation Program on federal land to help ensure populations in the wild remain stable.
- This cultivation work will allow the Native Plant Conservation Program to further its recovery efforts for the species on the Malheur National Forest and Burns-Paiute lands.

- With a new PLOR population enhancement project underway with the Malheur National Forest, Native Plant Conservation Program efforts to establish new populations of the species continue to be the main reason that federal listing of this open range wetland species (as Endangered) has been prevented thus far.
- Fiscal year 2017 funding and collaboration with Forest Service has facilitated Native Plant Conservation Program’s efforts to transplant cultivated PLOR stock back into the wild.
Miscellaneous

Employee Training

Like in previous years, many of our colleagues have participated in a variety of training opportunities throughout this year, such as defensive driver training, needs based communication training, first aid, CPR, export certification, and pesticide applicator recertification classes. This year, several of our staff also have attended professional society meetings and conferences, including the Entomology Society of America Conference (ESA) in Denver, CO, the Western Plant Board (WPB) meeting in Fairbanks, AK, the National Plant Board (NPB) meeting in Savannah, GA, the North American Plant Protection Organization (NAPPO) meeting in Merida, Mexico, and many other local, regional, and national meetings, and presented our programs' results. Employee training and career development remain a high priority of our Programs Area.

Plant Protection and Conservation Programs Online

In 2017, Plant Protection and Conservation webpages were maintained and updated by a team of staff members: Tristen Berg, Jordan Brown, Bonnie Rasmussen, Lisa Rehms, Kerri Schwarz, and Cara McFetridge. The new Oregon Department of Agriculture website has been up since August 2014 at: www.oregon.gov/ODA. Continuous maintenance of our webpages is essential to offer up-to-date information to our target audience, but requires hard work from our web team. We appreciate the efforts our web team have invested in putting together and to continue improving our Programs Area’s webpages.

Federal Permits and Compliance Agreements

In 2017, Plant Protection and Conservation Programs staff reviewed 147 federal permit applications through the e-permit system. Eighty-seven of those permits were Plant Pest Quarantine (PPQ) 526 applications to import live plant pests or noxious weeds, including twenty-two PPQ 526 permits to import butterflies and moths; sixteen were for P546 Post Entry Quarantine. There were also seven PPQ 525 permits to import soil and twenty-two PPQ 588 permits to import restricted plants or plant products for experimental purposes and fifteen BRS (Biotechnology Regulatory Services) permits for genetically modified crops.
Oregon Revised Statute and Administrative Rule Changes

In 2017, Plant Protection and Conservation Programs Area adopted or amended the following rules and statutes:

In a housekeeping update, we removed the listing of Monarch butterfly from the approved invertebrate list. The Monarch butterfly was still listed on the approved list but was not allowed to be released for biogeographical reasons. The reason to completely remove the Monarch butterfly from the approved list was to avoid confusion with the public and companies trying to import and release Monarchs in Oregon. In addition, the US Fish and Wildlife Services is currently considering a petition to list the Monarch butterfly as a threatened and endangered species under the Endangered Species Act (ESA).

Here is the previous listing:

- Monarch Butterfly, *Danaus plexippus*, (education, releases)*
- *Monarch butterfly importation and release from out-of-state sources is prohibited to allow biogeographical research related to determining why wild monarch populations in Oregon are declining.*

Oregon Invasive Species Council

Plant Protection and Conservation Programs Area Director, Helmuth Rogg serves as the ex-officio member for the Oregon Department of Agriculture on the Oregon Invasive Species Council (OISC). The OISC was created by the Oregon Legislature in 2001 defined by ORS 570.750 – 570.810. The council consists of seven permanent or ex-officio, and 10 appointed members, representing important natural resource agencies and a cross-section of Oregon's agricultural and natural resources and business interest. Rick Boatner, Invasive Species Management Coordinator, Oregon Department of Fish and Wildlife, was the OISC Chair in 2017. In late 2016, the Invasive Species Council Coordinator position was re-filled with the Samara Group LLC. The principle OISC coordinator is Jalene Littlejohn. Other members of the Samara Group are Leslie Bliss-Ketchum, Brian Turner, and Jessica Riehl. Here is a short description of our coordinators:

- **R. Jalene Littlejohn, Lead Coordinator**
  Jalene manages the project including management of tasks, deliverables, executive support to the council and chair, facilitation of meetings, and development of all reports. Jalene is a skilled project manager and partnership facilitator with a background in Pacific Northwest ecology and environmental management.

- **Leslie L. Bliss-Ketchum, Assistant Coordinator**
  Leslie closely supports project coordination, specifically leading legislative projects and event management. Leslie is a skilled project manager with experience coordinating large public events, liaising with state and regional government regarding wildlife and habitat issues, and supporting research of invasive species.

This year, the OISC Coordinator Group Samara assisted in various projects of our Programs Area, including the Oregon Bee Project, the "Don’t Pack a Pest" Campaign, the Emerald Ash Borer Preparedness Plan, and the Japanese beetle (JB) eradication outreach efforts coordinating communication and facts for affected types and quantities of federal permits.
stakeholders. They created a new website where all information, communication, and facts about the JB project are compiled and easily accessible to the interested public.

One of the highlights of the OISC in 2017 was the launch of the Oregon Statewide Strategic Plan for Invasive Species focusing on prevention, early detection and rapid response, control and management, education and outreach, and coordination and leadership. The following is a summary of the objectives.

Oregon Statewide Plans for Invasive Species

The statewide strategic plan and statewide action plan for invasive species, linked below, set forth long-term and short-term strategies for invasive species control. The Council’s governing statute acknowledges the stakeholders that support the overarching mission of the invasive species control: “The Invasive Species Council has a strong network of local, state, federal tribal, and private entities that actively and cooperatively combat the threat posed by harmful invasive species.” ORS 570.740(4). The recommendations in the plan below are the robust and feasible products of 15 months of collaborative planning among Council members, the Council’s Advisory Group, stakeholders, and other entities engaged in invasive species issues.

I. Prevention:
It is critical that we prevent the introduction and establishment of invasive species. Our strategies include endorsement of pathways management, enhancement of law enforcement, promotion of research, sharing of best management practices, and engagement in cooperative partnerships.

II. Early Detection and Rapid Response:
Our next line of defense from invasive species establishment, after prevention, is early detection of entering or small populations and capacity to rapidly and effectively respond. Our strategies include collaborative networks of detectors and responders, promotion of risk evaluation, facilitation of rapid response teams, and ensuring local species prioritization.

III. Control & Management:
It is necessary to contain, control, and manage invasive species, once established in Oregon, for long-term protection of our resources. Our strategies include containment, management along pathways in and out of affected areas, increasing funding and resources dedicated to our long-term protection of resources, identification of new eradication methods, and integration of a systems approach to ensure ecosystem recovery and resilience.

IV. Education & Outreach:
Every Oregonian shares responsibility for protecting Oregon from invasive species. Our strategies include increasing awareness for all Oregonians by leveraging partner resources, coordinating educational materials, building public support, and involving historically underrepresented audiences.

V. Coordination & Leadership:
Invasive species do not abide by political or jurisdictional boundaries and management efforts are not centrally organized. Our strategies include maintain an information clearinghouse, facilitating communication networks, ensuring adequate funding is available for management efforts, engaging in collaborative planning with diverse stakeholders, evaluating effectiveness, and coordinating closely with State of Oregon officials.

More information is available at:
www.oregoninvasivespeciescouncil.org

Reporting Invasive Species

The Oregon Invasive Species Council manages the www.oregoninvasiveshotline.org, where people can report suspected invasive species. In addition, the Oregon Department of Agriculture maintains a toll-free 1-866-INVADER phone line for the public to report suspected invasives.

Presentations 2017

Blom, PE. NGMB Meeting, Sec-Treas, AV. February 2017.
Blom, PE. Present on EOR IPPM trapping and GH/MC program at the Farm Fair in Hermiston, OR. December 2017.


LaBonte, JR. The rising tide of exotic terrestrial invertebrates in Oregon. Marion County Master Gardener Class, Salem, OR. January 2017.


LaBonte, JR. My experiences in entomology (to several classes). Cedar Tree Christian Classical School, Ridgefield, WA. April 2017.


Interviews 2017


LaBonte, JR. Frigid weather may help farmers battle destructive bugs. Information provided for article in the Capital Press. January 2017.

Events 2017


Publications 2017


