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Cover photo: Turkish thistle, Carduus cinereous, was confirmed in Hells Canyon, Wallowa County.
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).
Invasive Noxious Weed Control Program Annual Report—2017

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

Listing a Noxious Weed

Steps in the ODA weed listing process

Plant species are Submitted to ODA for review
Species that warrant investigation are placed on the ODA Watch List
OSWB Review: Risk assessment(s) presented to OSWB. OSWB votes and species are listed or rejected
ODA Staff Complete a Risk Assessment:
- available habitat or resource exploitation
- introduction and dispersal potential
- economic and environmental impacts

Annual Assessment: Priority species are selected from the Watch List

New Watch listed species are presented to the OSWB (plants may stay on the Watch List for several years for monitoring and evaluation)

Watch List:
- gather information
- literature review
- field observations, etc.

Appropriate Action Taken:
- Added to the State Noxious Weed List
- Develop management plan
- Control projects, OSWB grants, education and outreach

Low priority species are dropped from further review
Findings are recorded for future reference
If new information warrants additional review, the species will be reevaluated
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.

Tim Butler and Mark Porter with ODA and Ryan Oberhelman, Wallowa County Vegetation Department Manager, hand pulling welted thistle.

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.
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 weed. 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 Wallowa 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 pasturelands 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 help to increase the reporting of new sites. 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 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 a highly invasive aquatic 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 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
Invasive Noxious Weed Control Program Annual Report—2017

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.

The United States Department of Agriculture Animal Plant Health Inspection Service Plant Protection and Quarantine (USDA-APHIS-PPQ) biocontrol program remains a very important partner in implementing biocontrol in Oregon. Regional Noxious Weed Program staff and APHIS provide surplus biocontrol agents to many local agencies and other states. In 2017, Noxious Weed Program, APHIS staff, and other cooperators provided over 95,000 biocontrol agents (42 releases) to county weed programs, other agencies, and states. The Noxious Weed Program continues cooperative research projects with Drs. Peter McEvoy, Fritzi Grevstad, Ed Peachy, and their staff at Oregon State University (OSU). The Noxious Weed Program is also a partner with Dr. Fritzi Grevstad, at the OSU Forestry Sciences Quarantine Laboratory, where we are working on cooperative projects on the biological control of knotweeds and gorse.

**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 led 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 acropitlonica*; 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.

The Harney County weed program modified their treatment approach for 2016, after monitoring
revealed skips and missed plants in 2015. Three rounds of treatments were planned for this season; an early initial pass with a large crew including five ATVs was implemented to improve coverage of the area. A second pass was made two weeks later by a smaller crew performing survey and treatment to catch plants that were either missed or that had not germinated. After completing the first two rounds of treatments, a third pass later in the season resulted in the finding and treating and additional half of an acre. Overall, the total population of African rue was down 8.5 acres from 2015 treatments.

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
Garden yellow loosestrife was discovered on the downstream tip of Grand Island in the Willamette River near the Wheatland Ferry. 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.

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
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)**

- Tualatin
- 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)**

- Gearhart
- 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 eradicating 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
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

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

A three-acre infestation of yellow floating heart was found in a slough adjacent to the Willamette River in north Eugene in 2017.
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

**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 caespitosum*): B(T)-rated
- Orange Hawkweed (*Pilosella aurantiacum*): 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.

- 2.9 net acres treated over 5,100 gross acres

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.

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: (Lamiostro 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

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.
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

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.

Paterson’s Curse: Net Acres Treated

Paterson’s curse net acres in Douglas County have been reduced by 99% since first found in 2004.
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.

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>

Before and After Treatment at a private pond near Kellogg in Douglas County.
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, CalTran, Siskiyou County Agricultural Commissioner’s office, BLM, USFS Rogue River-Siskiyou NF, Siskiyou Weed Management Area group, SWCDs from Jackson and Douglas counties, and CWMA’s 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

A patch of Alyssum (circled) is spotted from the helicopter.
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 \textit{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 \textit{Alyssum} species. In less than ten years, \textit{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 \textit{Alyssum} closer to our eradication goals.

- In less than ten years, net acres of treated \textit{Alyssum} have been reduced by 98%.
- Helicopter surveys resulted in more efficient ground treatments.
- No new sites of \textit{Alyssum} were found in 2017.
- A concerted effort by local, state, and federal partners continues to make \textit{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, \textit{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.

Treatment of biddy biddy at the Cape Blanco lighthouse is challenging due to high winds, frequent fog, and difficulties in accessing biddy biddy that grows as an understory mat amongst a complex-strata of other native vegetation.

**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.

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

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
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

## 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.

- 67 acres were treated
- 10 biocontrol releases
- 5,000 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

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

Map showing track log of PSU staff inventory for flowering rush in the Bonneville pool. No flowering rush has been found to date below the John Day Dam.
Invasive Noxious Weed Control Program Annual Report—2017
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.

- 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 discd, 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

Judit Barossa of Oregon State University Extension documents giant cane plants that re-sprouted from rhizomes in a crop circle corner where they had been grown the previous year. These plants were all treated soon after this photo was taken.

Giant cane eradication. Center: Giant cane re-sprouts were treated with herbicide. Clockwise from top right: bailed canes dried and buried at Finley Butte Land Fill, rhizomes removed from the field and dried, a large rhizome pile, and finally burned rhizomes. All sites will be monitored until no plants are found for three, consecutive years.
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

US Forest Service

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.

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, 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.

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

Baker County area weed managers get together for a field tour of the Hooker Flat Rush Skeletonweed project. Attendees include Baker County, Baker Resource Area BLM, Invasive Noxious Weed Control Program, Baker County Weed Board, and Tri-County CWMA.

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***

- 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 whitetop) 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**

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.

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.

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 Arritola 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
Invasive Noxious Weed Control Program Annual Report—2017

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

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

First spring treatment of white top and dyer's woad. Note: snow still present.

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

Comparison of the main site in Dago Canyon in 2016 (left) and 2017 (right).

Rush skeletonweed plant located along the Lesley Gulch road.

Dyer’s Woad site on the pipeline above headquarters.
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

Harney County Weed Supervisor, Jim Campbell showing a typical mature plant root.
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, roadsides, 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.