

San Luis Obispo County Weed Management Area

To better serve the SLO WMA community in efforts to educate, coordinate, promote & implement special and ongoing pest management projects.



Biological Control

by Zella Redus

SLO WMA Meeting In Person

July 27, 2023
2:00 - 4:00 pm

UCCE Auditorium
2156 Sierra Way
SLO, CA 93401

Biological control, or biocontrol, is the practice of using natural predators to control unwanted species. Biocontrol can reduce the use of pesticides in control of weeds; moreover, often the biocontrol agent is more efficient, precise, and/or wide-ranging than humans are able to be.

Yellow starthistle infests California on such a large scale that chemical control is not feasible. Thus it has been the subject of several intended biocontrol agents over the years: At the 2002 Cal-IPC symposium, six species of insects (both beetles and flies) were reported as attempted biocontrol agents against yellow starthistle: *Urophora jaculate*, *Urophora sirunaseva*, *Bangastemus orientalis*, *Chaetorellia australis*, *Eustenopus villosus*, and *Larinus curtus*. There has also been a rust fungus employed as a biocontrol agent.

These agents have shown less than broad success for a number of reasons. One important one is the fact that the insects employed consume the flowerheads of



Ceratapion basicorne
Photo: www.kerbtier.de

the intended plant. Since flowers are only present at specific times, this naturally reduces the efficacy of the treatment.

At the turn of the century, scientists theorized that the weevil *Ceratapion basicorne* could be a viable biocontrol agent that would get around these issues. This weevil, which, like yellow starthistle, is native to the Mediterranean region of the world, seems to prefer the plants of the tribe Carduae, and to be inclined in particular to four genera in the subtribe subtribe Centaureinae, of which the yellow starthistle is one (Centaurea).

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Photo: Lisa Scott
<https://iscmv.ca/invasives/detail/yellow-flag-iris>

"Weed of the Quarter" p.5
Yellowflag iris
Iris pseudacorus



Not only that, but *C. basicorne* eats leaves and roots rather than flowers, meaning it may be able to provide control over a much broader range of the life cycle of the plant.

It took some time, but USDA granted a release permit for *C. basicorne* in 2019. Following this approval, the USDA's Agricultural Research Service has conducted a series of research projects studying various aspects of the beetle

and its biology as well as its impacts on yellow starthistle. This series is projected to continue into 2026.

These studies are focused on two main subjects: the practicalities of rearing, establishment, and distribution of the weevil, and the actual effects of the weevil on the thistle. According to the project's 2022 progress report, efforts in both endeavors have appeared successful thus far.



Chaetorellia australis fly larvae

Photo: Gary L. Piper, Washington State University, Bugwood.org



Larinus curtus beetle

Photo: Linda Wilson, University of Idaho, Bugwood.org

References:

- <https://www.plantsciences.ucdavis.edu/news/release-weevil-control-yellow-starthistle>
- https://www.aphis.usda.gov/plant_health/ea/downloads/2019/revised-final-ceratapion-basicorne-ea-fonsi.pdf
- <https://www.ars.usda.gov/research/project/?accnNo=429088>
- <https://www.ars.usda.gov/research/project/?accnNo=0438306>
- <https://www.ars.usda.gov/research/project/?accnNo=0440251>
- <https://blogs.cdfa.ca.gov/Section3162/wp-content/uploads/2019/11/Ceratapion-basicorne.pdf>
- Smith, L. and Park, I. 2022. Conditions to Terminate Reproductive Diapause of a Univoltine Insect: *Ceratapion basicorne* (Coleoptera: Apionidae), a Biological Control Agent of Yellow Starthistle. *Environmental Entomology*, 2022, Vol. 51, No. 1: 71-76.



Photo: Ag Comm Staff

County Parks Grant Project

by James Moore

June 30, 2023, saw the end of a two-year grant the County of San Luis Obispo Department of Agriculture/Weights & Measures (SLO Co Ag Dept) had been working on, funded by the California Department of Food and Agriculture (CDFA). In recent years, CDFA has been allocating funds to local Weed Management Areas (WMAs) for the purpose of weed control. Grant applications are written by Agricultural Commissioners' offices throughout the State, and funding is dispersed once grant applications are approved.

The grant to SLO Co Ag Dept was dispersed to increase its knowledge of weeds within San Luis Obispo County's Public Parks; to increase cooperation between staff at SLO County's Parks and Recreation and Ag Departments; to better assist County Park's staff in positively identifying existing weeds in SLO Co, as well as bring new weeds to their attention; and to assist with

the treatment of weed populations identified by Parks staff. In this effort, SLO Co Ag Dept staff surveyed 12 county parks located throughout the county and treated 6 separate species in those parks. During surveys, no species new to the county were identified. The species treated were chosen by County Parks staff.

Treatment of weed species was performed through a variety of methods: backpack sprayer, truck-mounted hose wand, bumper-mounted roadside, and hand removal treatments were all employed. Santa Margarita Lake and Lopez Lake, as well as the Pirate's Cove parking area, were main areas of focus. These areas were highlighted by Parks and Recreation staff.

Species treated: *Centaurea solstitialis* (yellow starthistle), *Cortaderia jubata* (jubata grass), *Cynara cardunculus* (artichoke thistle), *Dittrichia graveolens*

(stinkwort), *Genista monspessulana* (French broom), and *Ricinus communis* (castor bean). A few other weed species were targeted adjacent to these primary species but were peripheral to the primary targets and not sought out individually.

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Photo: Ag Comm Staff

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Although areas treated will need continual control efforts incorporated going forward to ultimately see success in reduction of population density, the efforts were successful overall. The grant brought two different county agencies – Department of Agriculture and Department of Parks and Recreation – into a closer cooperative relationship, allowing future development and use of those networks, and creating synergistic energy in moving forward with some of the treatment areas outside of a grant cycle. SLO Co Ag Dept staff were able to closely survey County Parks and identify weed species present in those parks, identifying prime areas for treatment assisted by County Parks staff.

For more information on this grant and its implementation, please call County of San Luis Obispo Department of Agriculture/Weights & Measures at (805) 781-5910.



Photo: Ag Comm Staff

County Parks Grant Project Recap

- July 1, 2021, to June 30, 2023. Two year grant.
- Began with surveys of all County Parks listed on the permit filed with the SLO Co Ag Dept.
- All weeds listed on the CDFA 4500 list were documented through CalFlora and in the department's internal database.
- A meeting was organized to bring County Parks and Agriculture Department staff together in order to better understand the objectives each party had in mind and to work to coordinate efforts to execute those objectives. Training in weed identification was also provided during this meeting.
- After consultation with Parks staff, treatments were focused on areas identified by park supervisors based on level of infestation of weeds of concern and amount of traffic those areas received. Due to availability of resource, not all weeds were able to be treated. However, treatments that were made were seen to be effective.
- Parks surveyed: Pirate's Cove, Avila; Heilmann Park, Atascadero; Cuesta Park, San Luis Obispo; Hardie Park, Cayucos; Shamel Park, Cambria; Paul Andrew Park, Cayucos; Los Osos Community Park, Los Osos; Avila Beach Park, Avila Beach; Cypress Ridge Park, Arroyo Grande; Santa Margarita Lake, Santa Margarita; Lopez Lake and Biddle Park, Arroyo Grande; Jim Green Trail, Atascadero.
- Treatments were made by a variety of methods: roadside boomless sprayer, hand wand on truck-mounted spray rig, hand wand on quad-mounted spray rig, and backpack.
- Targeted species were chosen by parks staff based on their assessment of high-traffic areas intersecting with high density populations of weeds.
- Species treated: *Centaurea solstitialis*, *Cynara cardunculus*, *Ricinus communis*, *Cortaderia jubata*, *Genista monspessulana*, *Dittrichia graveolens*. Species treated were at the request of Parks staff.



Photo: www.calflora.org



Photo: www.plants.ifas.ufl.edu



Photo: Ag Comm Staff

Weed of the Quarter

Yellow Flag Iris by James Moore

Yellow flag iris, or *Iris pseudacorus*, is a perennial herb not native to California that is a garden water feature escapee. There have been relatively small numbers of observations made of this weed throughout the county, with several of those having been made over 10 years ago. It could be that some observations previously made have reestablished after the wet winter we have had. Surveying of past observations should be made.

Yellow flag iris is native to Europe where it prefers moist soils near pond margins, irrigation banks, and wetland sites. It can create dense stands near the edge of lakes, ponds, and other water sources. Propagating both

through seeds and vegetatively, thick rhizomes spread throughout colonies of this iris, making eradication difficult after establishment. Young plants do not flower until the third year, but each flower can produce a seed capsule which contains up to 120 seeds. Gas exists in the space between the seed and the seed coat, making the seed buoyant on water, and allowing the seed to float along, eventually seeding new ground as waters reside.

Yellow flag iris has sword-like leaves with many yellow to cream-colored flowers per stem. Plants grow 3 feet tall regularly but can reach heights of up to 5 feet. Numerous iris species exist in California and play an important role in the ecosystems of the state; yellow flag iris is one of only a few that is found in aquatic settings.

Mechanical removal of yellow flag iris is possible, but all the rhizomes must be removed for success, and this is very hard. Cultural control methods are limited, and biological control is currently not available and is likely not an option as many of the possible

biological predators would also affect native iris species which are relied on by native fauna.

Chemical control is achieved using 2,4-D, glyphosate and imazapyr. 2,4-D is seldom labeled for aquatic settings, and of those, no reliable trials have been run. Of glyphosate and imazapyr, imazapyr is the preferred chemical control agent to use on this species. Use with a non-ionic surfactant registered for use in aquatic settings. Consult the label or your PCA for exact rates.

Keeping an eye out for this in our day-to-day work can help limit the spread of this weed. Keep your eyes open, and please update any observations to Cal Flora.

References/works cited:

- www.calflora.org/app/taxon?crn=4358
- wric.ucdavis.edu/information/natural%20areas/wr_I/Iris.pdf
- www.cal-ipc.org/plants/profile/iris-pseudacorus-profile/



Photo: www.plantright.org

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2023 2nd Quarter SLO CAC Survey, Treatment & Removal Work

- Treated 80 miles of roadside for yellow starthistle
- Treated artichoke thistle on 208 acres of rangeland
- Surveyed a total of 50 acres
- Spent 22 hours hand-removing French broom, foxtail retharrow, and jubata grass
- Treated oblong or eggleaf spurge, jubata grass, yellow-flag iris, and Arundo on 30 acres of land

Thank you SLO WMA
members and readers!

Reach out to be part of our next
newsletter or to join
our mailing list!

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[www.cal-ipc.org/solutions/wmas/
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