CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Proposal for

Hypericum perforatum L., Klamathweed, common St. Johnswort

Family: Hypericaceae

Current Pest Rating: C

Proposed Pest Rating: C

Comment Period: 12/07/2020 through 01/21/2021

Initiating Event:
Hypericum perforatum is designated as a noxious weed as defined by the California Food and Agricultural Code (FAC) Section 5004 and is listed in Title 3, California Code of Regulations, Section 4500. A pest rating proposal is required to evaluate the current rating and status of the species in California.

History & Status:

Background: *Hypericum perforatum* is a rhizomatous herbaceous flowering plant that develops a woody perennial crown and clumping system of vertical and lateral roots (Robson, 2015; Sheahan, 2012). Stems have two forms: prostrate, densely leafy, and non-flowering; and erect and flowering. In winter stems will occur in the prostrate, non-flowering form (Briese, 1997). These are replaced in spring by erect, branching, flowering stems that grow to 30-90 (120) cm in height (CABI, 2020; Zouhar, 2004). All stems have two distinct ridges and bear lines of oil glands that appear as tiny black dots (DiTomaso and Kyser, 2013).

Leaves are opposite, sessile to short petiolate (1 mm or less), pinnately veined, 10 to 30 mm long, narrowly oblong to elliptic or linear-shaped, characteristically with an inrolled margin. Leaves are prominently dotted with tiny, translucent glands and black glands.

Flowers are bisexual, with five bright yellow petals and numerous stamens surrounding the pistil. Flowers are arranged in terminal cymose clusters containing 25-100 flowers per stem (DiTomaso and Kyser, 2013). Petals are also dotted with the dark colored oil glands (Sheahan, 2012). The fruit is a sticky, brown to reddish 3-parted capsule containing numerous small (1 mm) lozenge-shaped brown, minutely pitted seeds (CABI, 2020; Robson, 2015).

Worldwide Distribution: *Hypericum perforatum* is native to Europe, central and western Asia, and north Africa. It has been introduced into North America, South America, Japan, Cuba, South Africa, Haiti, New Zealand, and Australia (CABI, 2020; Robson, 2015). In North America it occurs in Canada in British Columbia and all of the provinces east of and including Manitoba, in Mexico, and in the United

States in Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming (CABI, 2020; Robson, 2015).

Official Control: *Hypericum perforatum* is designated a noxious weed in California and has received a pest rating of C. Shipments of plants, plant products, or conveyances infested with *Hypericum perforatum* may be subject to restrictions depending on the destination county. The species is a listed noxious weed in Colorado, Montana, Nevada, Oregon, Washington, and Wyoming and is a regulated species in South Dakota (USDA/NRCS, 2020).

Hypericum perforatum is designated as a restricted noxious weed seed in the California Seed Law (California Food and Agriculture Code, Division 18, Chapter 2, Section 52257). Intrastate shipments of agricultural or vegetable seed lots contaminated with restricted noxious weed seeds are subject to tolerances and noxious weed seed labeling requirements. The species is designated as a prohibited noxious weed seed by the states of Colorado, Hawaii, Idaho, Montana, Nevada, Utah, and Wyoming, and also designated as a restricted noxious weed seed subject to labeling requirements in agricultural and vegetable seed offered for sale in Oregon and Washington (USDA/AMS, 2020).

Hypericum perforatum has been the target of a biological control program in California and other western states starting in the 1940s and 1950s using leaf-feeding flea beetles and root-boring beetles, which in some areas has achieved over 90% reduction in infestation (DiTomaso and Kyser, 2013). Before use of biocontrol, it was estimated that *Hypericum perforatum* had infested about 2.5 million acres in California, and about 1.2 million acres in Idaho, Oregon, and Washington (Zouhar, 2004).

California Distribution: *Hypericum perforatum* has been collected from most counties in California, with over 3,500 collection records beginning in 1955. Most of the collections are from northern and central California, with a combined total of almost 900 records from Shasta and Trinity counties, followed by Tuolumne and El Dorado counties with over 200 records each (CalFlora, 2020). The Calflora and Consortium of California Herbaria databases lack records of *Hypericum perforatum* collections from Kings, Alpine, Inyo, San Bernardino, Imperial, Orange, Ventura, and Los Angeles counties.

California Interceptions: *Hypericum perforatum* has been intercepted and sent to the CDFA Plant Pest Diagnostic Laboratory by the California Border Protection Station inspectors eight times since 2004. Seven of the interceptions were from private vehicles. One interception appears to have been from an apiary shipment originating in Oregon. California county agricultural inspectors have submitted *Hypericum perforatum* samples to CDFA five times: twice from roadside locations in Sacramento and Shasta counties; once from a rangeland in Lassen County; and twice from private gardens in Sonoma and Shasta counties (CDFA PDR Database, 2020).

Consequences of Introduction

1) **Climate/Host Interaction:** Score is **High (3)**
Hypericum perforatum can tolerate a broad range of environmental conditions. In its native range it occurs in areas with temperate to sub-tropical climates, with low winter temperatures and a moderately warm and long growing season (CABI, 2020). In the United States and Australia, it is reported to occur at elevations below 1,680 meters (5,500 feet) in areas with mean annual rainfall greater than 760 mm (30 inches) (Zouhar, 2004).

Hypericum perforatum can occur in disturbed areas, roadsides, pastures, and open woodlands and forest clearings. It can survive in dry, rocky, shallow soils and deep, fertile, well-drained soils (Zouhar, 2004). It can tolerate drought (CABI, 2020). *Hypericum perforatum* is highly adaptable and reported to have varying observable characteristics and variable reproductive strategies depending on environmental conditions (Zouhar, 2004; Briese, 1997). It is currently widespread in distribution in northern and central California.

Evaluate if the pest would have suitable hosts and climate to establish in California

- Low (1) Not likely to establish in California; or likely to establish in very limited areas
- Medium (2) may be able to establish in a larger but limited part of California
- **High (3) likely to establish a widespread distribution in California**

2) **Known Pest Host Range:** Score is **High (3)**
Hypericum perforatum can occur wherever general ecological conditions exist that are conducive to its survival.

- Low (1) has a very limited host range
- Medium (2) has a moderate host range
- **High (3) has a wide host range**

3) **Pest Dispersal Potential: Score is High (3)**
Hypericum perforatum reproduces by seed borne only on upright stems. It is estimated that a single *Hypericum perforatum* plant can produce up to 33,000 seeds annually, and individual plants can live up to eight years (CABI, 2020). Seeds can remain viable in the soil for 10 years or more (Zouhar, 2004).

Briese (1997) notes that plants do not produce upright flowering stems every year, depending on environmental conditions. Studies of introduced *Hypericum perforatum* in Australia showed that under conditions of environmental stress such as drought or herbivory, plants displayed vegetative growth only, and plants only produced prostrate, non-flowering stems.

Vegetatively growth can occur from root fragments and through the development of new plants at intervals along the laterally spreading rhizomes. Rhizomes can spread up to 90 cm (approximately 3 feet) from the parent plant and will decay between plants once the new plant has become established (Zouhar, 2004).

Seeds of *Hypericum perforatum* may be dispersed via air, water, or soil movement. Seed capsules may attach to and be transported by animals (Briese, 1997; CABI, 2020). *Hypericum*

perforatum is known to be cultivated for its medicinal properties, and plants and seeds may be transported for use as medicinal or ornamental plants (CABI, 2020).

Evaluate the natural and artificial dispersal potential of the pest.

- Low (1) does not have high reproductive or dispersal potential
- Medium (2) has either high reproductive or dispersal potential
- **High (3) has both high reproduction and dispersal potential**

4) **Economic Impact:** Score is **High (3)**

Hypericum perforatum contains hypericin, an organic compound contained in the black oil glands that is toxic to grazing animals. Ingestion of hypericin can cause photosensitivity, which results in skin damaging sunburns on non-haired or white areas of sheep, cattle, and horses. Recently-sheared sheep are especially susceptible. Severe lesions can develop on the udders and teats of affected cows, causing them to quit lactating and weaning their calves. Cattle and sheep will avoid mature plants if other forage is available, but grazing may occur on younger plants. *Hypericum perforatum* remains toxic when dry and poisoning can occur if animals are fed contaminated hay (USDA/ARS/PPR, 2018).

Where employed, control efforts of *Hypericum perforatum* can increase crop production costs. Multiple control methods may be needed, including the use of herbicides, cultural methods such as cultivation, mowing, and over-sowing with desirable species, and application of biocontrol agents. Due to the longevity of the stored seed bank, control efforts may need to occur over several years (Zouhar, 2004; USDA/NRCS, 2012).

A. The pest could lower crop yield.
B. The pest could lower crop value (includes increasing crop production costs).
C. The pest could trigger the loss of markets (includes quarantines).
D. The pest could negatively change normal cultural practices.
E. The pest can vector, or is vectored, by another pestiferous organism.
F. The organism is injurious or poisonous to agriculturally important animals.
G. The organism can interfere with the delivery or supply of water for agricultural uses.

Economic Impact:

- Low (1) causes 0 or 1 of these impacts
- Medium (2) causes 2 of these impacts
- **High (3) causes 3 or more of these impacts**

5) **Environmental Impact:** Score is **High (3)**

Seedlings of *Hypericum perforatum* grow slowly and do not flower in the first year of growth, making establishment in undisturbed areas or properly managed rangelands difficult. However, in areas where it becomes established, the procumbent, heavily-foliated stems can impede the germination and establishment of other species through competion for sunlight, leading to reduced biodiversity. Additionally, the deep taproot may enable the plant to survive and recover more quickly from drought than other species (Briese, 1997).

A. **The pest could have a significant environmental impact such as lowering biodiversity, disrupting natural communities, or changing ecosystem processes.**
B. The pest could directly affect threatened or endangered species.
C. The pest could impact threatened or endangered species by disrupting critical habitats.
D. **The pest could trigger additional official or private treatment programs.**
E. The pest significantly impacts cultural practices, home/urban gardening or ornamental plantings.

Environmental Impact:
- Low (1) causes none of the above to occur
- Medium (2) causes one of the above to occur
- High (3) causes two or more of the above to occur

Consequences of introduction to California for *Hypericum perforatum:* **15**

Low = 5-8 points
Medium = 9-12 points
High = 13-15 points

6) **Post Entry Distribution and Survey Information**: Score is **High (3)**

-Not established (0) Pest never detected in California or known only from incursions.
-Low (-1) Pest has a localized distribution in California or is established in one suitable climate/host area (region).
-Medium (-2) Pest is widespread in California but not fully established in the endangered area, or pest established in two contiguous suitable climate/host areas.
-High (-3) Pest has fully established in the endangered area, or pest is reported **in more than two contiguous or non-contiguous suitable climate/host areas.**

7) **Final Score: Medium 12 (15-3=12)**

Uncertainty: There is little uncertainty as the species has been widely distributed in California and subject to biocontrol efforts over a period of decades.

Conclusion and Rating Justification: Due to the widespread establishment of *Hypericum perforatum* in California, a C-rating is recommended.

References:

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Author Contact: Courtney.Albrecht@cdfa.ca.gov.

Responsible Party: Robert Price, Primary State Botanist; California Department of Food & Agriculture; Seed Laboratory and Herbarium; 3294 Meadowview Road, Sacramento, CA 95832; (916) 738-6700; permits@cdfa.ca.gov.

***Comment Period: 12/07/2020 through 01/21/2021**

***NOTE:**

You must be registered and logged in to post a comment. If you have registered and have not received the registration confirmation, please contact us at permits[@]cdfa.ca.gov.

Comment Format:

- Comments should refer to the appropriate California Pest Rating Proposal Form subsection(s) being commented on, as shown below.

  Example Comment:

  Consequences of Introduction: 1. Climate/Host Interaction: [Your comment that relates to "Climate/Host Interaction" here.]

- Posted comments will not be able to be viewed immediately.

- Comments may not be posted if they:

  Contain inappropriate language which is not germane to the pest rating proposal;

  Contains defamatory, false, inaccurate, abusive, obscene, pornographic, sexually oriented, threatening, racially offensive, discriminatory or illegal material;

  Violates agency regulations prohibiting sexual harassment or other forms of discrimination;

Violates agency regulations prohibiting workplace violence, including threats.

- Comments may be edited prior to posting to ensure they are entirely germane.
- Posted comments shall be those which have been approved in content and posted to the website to be viewed, not just submitted.

Proposed Pest Rating: [C]