

Part IV. Plant Assessment Form

For use with “Criteria for Categorizing Invasive Non-Native Plants that Threaten Wildlands”
by the California Exotic Pest Plant Council and the Southwest Vegetation Management Association

Table 1. Species and Evaluator Information

| | |
|---------------------------------------|---|
| Species name (Latin binomial): | Hypericum perforatum |
| Synonyms: | enter text here |
| Common names: | St. John's Wort, klamathweed, tipton weed, goatweed |
| Evaluation date (mm/dd/yy): | July 26, 2004 |
| Evaluator #1 Name/Title: | Carri Pirosko, Associate Agricultural Biologist |
| Affiliation: | California Department of Food and Agriculture, Noxious Weed Program |
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| Address: | 20235 Charlanne Drive, Redding, CA 96002 |
| Evaluator #2 Name/Title: | Joseph M. DiTomaso |
| Affiliation: | University of California |
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| Email address: | ditomaso@vegmail.ucdavis.edu |
| Address: | Weed Science Program, Robbins Hall, Davis, CA 95616 |

Section below for list committee use—please leave blank

| | |
|--------------------------------|---|
| List committee members: | Cynthia Roye, John Randall, Jake Sigg, Peter Warner, Joe DiTomaso, Alison Stanton |
| Committee review date: | 8/27/2004 |
| List date: | enter text here |
| Re-evaluation date(s): | enter text here |

General comments on this assessment:

No choice is available for the DBAD selection in the impact section: selected B per List Committee.

Table 2. Criteria, Section, and Overall Scores

| | | | |
|---------------------|---------------------------------------|----------|-------------------|
| 1.1 | Impact on abiotic ecosystem processes | D | Rev'd, Sci. Pub'n |
| 1.2 | Impact on plant community | B | Rev'd, Sci. Pub'n |
| 1.3 | Impact on higher trophic levels | A | Rev'd, Sci. Pub'n |
| 1.4 | Impact on genetic integrity | D | Rev'd, Sci. Pub'n |

Impact

Enter four characters from Q1.1-1.4 below:

DBAD

Using matrix, determine score and enter below:

B

| | | | |
|---------------------|---|------------------|----------------------|
| 2.1 | Role of anthropogenic and natural disturbance | B (2 pts) | Rev'd, Sci. Pub'n |
| 2.2 | Local rate of spread with no management | B (2 pts) | Rev'd, Sci. Pub'n |
| 2.3 | Recent trend in total area infested within state | C (1 pt) | Observational |
| 2.4 | Innate reproductive potential Wksht A | A (3 pts) | Rev'd, Sci. Pub'n |
| 2.5 | Potential for human-caused dispersal | C (1 pt) | Rev'd, Sci. Pub'n |
| 2.6 | Potential for natural long-distance dispersal | C (1 pt) | Rev'd, Sci. Pub'n |
| 2.7 | Other regions invaded | C (1 pt) | Rev'd, Sci. Pub'n |

Invasiveness

Enter the sum total of all points for Q2.1-2.7 below:

11

Use matrix to determine score and enter below:

B

Plant Score

Using matrix, determine Overall Score and Alert Status from the three section scores and enter below:

Medium

No Alert

| | | | |
|---------------------|---|----------|----------------------|
| 3.1 | Ecological amplitude/Range | A | Rev'd, Sci. Pub'n |
| 3.2 | Distribution/Peak frequency Wksht C | C | Observational |

Distribution

Using matrix, determine score and enter below:

B

Table 3. Documentation

| | |
|---|---|
| <p>Question 1.1 Impact on abiotic ecosystem processes</p> | <p>D Rev'd, Sci. Pub'n back</p> |
| <p>Identify ecosystem processes impacted: Not much mentioned in the literature, increased fire hazard from dried plant material is all that was found, but this is probably rare.</p> | |
| <p>Rationale: in forested or wildland areas, dry flower stems can contribute to fire hazard risks</p> | |
| <p>Sources of information: Weeds of California and Other Western States, J.M. DiTomaso and E.Healy, as yet published</p> | |
| <p>Question 1.2 Impact on plant community composition, structure, and interactions</p> | <p>B Rev'd, Sci. Pub'n back</p> |
| <p>Identify type of impact or alteration: see referenced materials below</p> | |
| <p>Rationale: Dense stands can be a problem in pastures and rangelands because they displace native and indigenous plant species; the displacement of native and indigenous plant species may depreciate wildlife carrying capacity. Plant monocultures decrease biodiversity and increase a plant community's vulnerability to disease.</p> | |
| <p>Displaces desirable indigenous plant species and valued livestock forage</p> | |
| <p>*Can become established in either highly degraded or pristine rangelands.</p> | |
| <p>Hypericum perforatum is a particularly aggressive weed of rangeland characterized by dry summers. Its deep root system is capable of supporting the plant when the water available to more desirable species has been depleted. It forms a dense spreading canopy up to 1 m tall and large infestation covered over 1 million ha. in western N. America before biocontrol implementation.</p> | |
| <p>Sources of information: The Biology of Canadian Weeds. 83. Hypericum perforatum. C.W. Crompton, V. Hall, K.I.N. Jensen, and P.D. Hildebrand. Canadian J. Plant Sci. 68:149-162 (Jan 1988); Biology and Management of Noxious Rangeland Weeds, Sheley and Petroff. (St. Johnswort. Gary L. Piper); Krueger, J. and R. Sheley. Montana State University, Extension Service Montguide, MT199810 AG, St. Johnswort, July 2002; Sampson, A.W. and K.W. Parker, 1930. St. Johnswort on Range Lands of California. University of California College of Agriculture, Agricultural Experiment Station, Berkeley, California. Bulletin 503, December 1930, University of California Printing Office, Berkeley, California.</p> | |
| <p>Question 1.3 Impact on higher trophic levels</p> | <p>A Rev'd, Sci. Pub'n back</p> |
| <p>Identify type of impact or alteration: Displacement of wildlife and livestock.</p> | |
| <p>Rationale: Can greatly depreciate livestock and wildlife carrying capacities, and endanger the biological diversity of grazing lands;</p> | |
| <p>Displaces desirable wildlife; toxic to livestock</p> | |
| <p>Sources of information: Biology and Management of Noxious Rangeland Weeds, Sheley and Petroff. (St. Johnswort. Gary L. Piper)</p> | |

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| Question 1.4 Impact on genetic integrity | D Rev'd, Sci. Pub'n back |
| Identify impacts: Only known hybridization not with native CA species. | |
| Rationale: <i>H. perforatum</i> has been artificially hybridized with other species of the genus; There are numerous cultivated hybrids in existence, none with native flora of California though. | |
| Sources of information: The Biology of Canadian Weeds. 83. <i>Hypericum perforatum</i> . C.W. Crompton, V. Hall, K.I.N. Jensen, and P.D. Hildebrand. Canadian J. Plant Sci. 68:149-162 (Jan 1988). | |
| Question 2.1 Role of anthropogenic and natural disturbance in establishment | B Rev'd, Sci. Pub'n back |
| Describe role of disturbance: Good deal of both types disturbance- lead to establishment, although, one source found citing establishment into a pristine rangeland. | |
| Rationale: Seed are disseminated short distances by the wind; long distances by adherence to animals (facilitated by a gelatinous seed coat), animal ingestion and subsequent deposition in feces, water movement, and through the activities of humans. | |
| *Can be established in either highly degraded or pristine rangelands | |
| Sources of information: Krueger, J. and R. Sheley. Montana State University, Extension Service Montguide, MT199810 AG, St. Johnswort, July 2002; Sampson, A.W. and K.W. Parker, 1930. St. Johnswort on Range Lands of California. University of California College of Agriculture, Agricultural Experiment Station, Berkeley, California. Bulletin 503, December 1930, University of California Printing Office, Berkeley, California. | |
| Question 2.2 Local rate of spread with no management | B Rev'd, Sci. Pub'n back |
| Describe rate of spread: This weed can spread aggressively within a patch/site with no competition in particular, but new seedlings do not compete well. Spread will only be temporary because of presence of biological control agent. | |
| Rationale: <i>Hypericum perforatum</i> is a particularly aggressive weed of rangeland characterized by dry summers. Its deep root system is capable of supporting the plant when the water available to more desirable species has been depleted. It forms a dense spreading canopy up to 1 m tall and large infestation covered over 1 million ha. in western N. America before biocontrol implementation. | |
| Seedlings are very small, grow slowly and compete poorly with other vegetation. | |
| The seedlings are not strong competitors with other vegetation for light, nutrients, space, and moisture, and may exhibit high mortality under stress conditions. | |
| Sources of information: The Biology of Canadian Weeds. 83. <i>Hypericum perforatum</i> . C.W. Crompton, V. Hall, K.I.N. Jensen, and P.D. Hildebrand. Canadian J. Plant Sci. 68:149-162 (Jan 1988). Biology and Management of Noxious Rangeland Weeds, Sheley and Petroff. (ST. Johnswort. Gary L. Piper) | |

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| Question 2.3 Recent trend in total area infested within state | C Observational back |
| <p>Describe trend: Seems to be increasing along roadsides at higher elevations in the NE part of the state, but populations eventually decline because of biological control agents.</p> <p>Fluxuations occur naturally, cycling up and down, with fluxes in bioagent populations</p> <p>Localized outbreaks of the plant sometimes occur after disturbances such as logging, fire or during low population cycles of the bioagents</p> <p>Many St. Johnswort populations are still increasing in size, while others have remained static or decreased. Unfortunately, a reliable published estimate of the amount of land presently infested by St. Johnswort is not available. In the 1940s it occupied over 1 million acres and today it is only about 1% of that, or less.</p> | |
| <p>Rationale: Varies widely across the state, especially once you factor in elevational differences (bioagents can't survive); At this time (July 26, 2004) this weed seems to be increasing total area infested- personal observation and in speaking with other land managers; we could just be in a down-swing of the bioagent populations.</p> | |
| <p>Sources of information: Weeds of California and Other Western States, J.M. DiTomaso and E.Healy, as yet published; Biology and Management of Noxious Rangeland Weeds, Sheley and Petroff. (ST. Johnswort. Gary L. Piper)</p> | |
| Question 2.4 Innate reproductive potential | A Rev'd, Sci. Pub'n back |
| <p>Describe key reproductive characteristics: Reproduces by seed and vegetatively by rhizomes! Rhizomes have a protective tissue around them, making them hardier- and seeds have hard coat to aid in dispersal;survival.</p> | |
| <p>Rationale: Plants typically produce an average of 15,000-33,000 seeds per plant. Seed can remain viable 10+ years.</p> <p>There are several regional varieties of common St. Johnswort- the variety in the Pacific Northwest is aggressively competitive and can spread rapidly by seed and rhizomes.</p> | |
| <p>Sources of information: Weeds of California and Other Western States, J.M. DiTomaso and E.Healy, as yet published; Krueger, J. and R. Sheley. Montana State University, Extension Service Montguide, MT199810 AG, St. Johnswort, July 2002; Sampson, A.W. and K.W. Parker, 1930. St. Johnswort on Range Lands of California. University of California College of Agriculture, Agricultural Experiment Station, Berkeley, California. Bulletin 503, December 1930, University of California Printing Office, Berkeley, California.</p> | |
| Question 2.5 Potential for human-caused dispersal | C Rev'd, Sci. Pub'n back |
| <p>Identify dispersal mechanisms: Human caused disturbances and gardening largest methods of human-caused dispersal. Long distance dispersal by humans into wildlands is probably uncommon.</p> | |
| <p>Rationale: Sometimes cultivated like a crop or grown in herb gardens; Herbal medicine, hypericin is the antidepressant ingredient in St. Johnswort remedies</p> <p>Localized outbreaks of the plant sometimes occur after disturbances such as logging, fire or during low population cycles of the bioagents.</p> | |
| <p>Sources of information: Weeds of California and Other Western States, J.M. DiTomaso and E.Healy, as yet</p> | |

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| published | |
| Question 2.6 Potential for natural long-distance dispersal | C Rev'd, Sci. Pub'n back |
| Identify dispersal mechanisms: Some potential for long distance movement, especially due to hard, small seeds. However, the vast majority of seed (>99.9%) probably fall directly below parent plant. | |
| Rationale: seed and capsules can disperse with water and adhere to fur, feather of animals; seed are hard-coated and most ingested by animals remain intact and viable, but these mechanisms only account for movement of a very small proportion of the seed. | |
| Sources of information: Krueger, J. and R. Sheley. Montana State University, Extension Service Montguide, MT199810 AG, St. Johnswort, July 2002; Sampson, A.W. and K.W. Parker, 1930. St. Johnswort on Range Lands of California. University of California College of Agriculture, Agricultural Experiment Station, Berkeley, California. Bulletin 503, December 1930, University of California Printing Office, Berkeley, California. | |
| Question 2.7 Other regions invaded | C Rev'd, Sci. Pub'n back |
| Identify other regions: Northwestern region, Cascade Range, northern and central Sierra Nevada, Sacramento Valley, San Francisco Bay region, Central Coast, Peninsular Ranges, to 1500m. Most contiguous states except Arizona, New Mexico, Utah, Alabama, and Florida. south-eastern Australia, Eastern Canada and British Columbia; In California and E. Canada- populations of <i>H. perforatum</i> have been found to be more and weedy; In Britain and Eastern Canada, this weed is a minor problem Widespread in: Europe, Asia, N. and S. Africa, Australia, and western and eastern N. America | |
| Rationale: Invades elsewhere but only in ecological types that it has already invaded in the state. | |
| Sources of information: Weeds of California and Other Western States, J.M. DiTomaso and E.Healy, as yet published | |
| Question 3.1 Ecological amplitude/Range | A Rev'd, Sci. Pub'n back |
| Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known: enter text here | |
| Rationale: Rangeland areas and pastures, especially those that are poorly managed, fields, roadsides, and forest clearings or burned areas in temperate regions with cool, moist winters and dry summers. Grows best on open, disturbed sites on slightly acidic to neutral soils. Does not tolerate water saturated soils. By 1940 more than 1 million acres of rangeland and was infested- several years later biological control agents were released - the bioagents tended to only survive below 1500 m- dramatically reducing infestation across the Pacific Northwest. Seems to be increasing along roadsides at higher elevations in the NE part of the state; Small populations still exist in shady areas, boggy situations, north-facing slopes, and roadsides where the beetles are less active. | |

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| <p>Fluctuations occur naturally, cycling up and down, with fluxes in bioagent populations</p> <p>Localized outbreaks of the plant sometimes occur after disturbances such as logging, fire or during low population cycles of the bioagents.</p> | |
| <p>Sources of information: Weeds of California and Other Western States, J.M. DiTomaso and E.Healy, as yet published; Poisonous Plants of California, Fuller, T.C. et al. pp179-180; Sampson, A.W. and K.W. Parker, 1930. St. Johnswort on Range Lands of California. University of California College of Agriculture, Agricultural Experiment Station, Berkeley, California. Bulletin 503, December 1930, University of California Printing Office, Berkeley, California.</p> | |
| <p>Question 3.2 Distribution/Peak frequency</p> | <p>C Observational back</p> |
| <p>Describe distribution: See question above, 3.1</p> | |
| <p>Rationale: See question above, 3.1</p> | |
| <p>Sources of information: See question above, 3.1</p> | |

Worksheet A

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| | |
|---|-----------------------------------|
| Reaches reproductive maturity in 2 years or less | Yes: 1 pt |
| Dense infestations produce >1,000 viable seed per square meter | Yes: 2 pts |
| Populations of this species produce seeds every year. | Yes: 1 pt |
| Seed production sustained over 3 or more months within a population annually | Yes: 1 pt |
| Seeds remain viable in soil for three or more years | Yes: 2 pts |
| Viable seed produced with <i>both</i> self-pollination and cross-pollination | Yes: 1 pt |
| Has quickly spreading vegetative structures (rhizomes, roots, etc.) that may root at nodes | Yes: 1 pt |
| Fragments easily and fragments can become established elsewhere | No: 0 pts |
| Resprouts readily when cut, grazed, or burned | Yes: 1 pt |
| | 10 pts Total Unknowns |
| | A (6+ pts) |
| <p>Note any related traits: plants can develop seed with or without pollination (facultative apomixis); seedlings may require several years to reach reproductive maturity, a population has all stages of growth though</p> | |

Worksheet C - California Ecological Types

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(*sensu* Holland 1986)

| Major Ecological Types | Minor Ecological Types | Code* |
|--|--|-----------|
| Marine Systems | marine systems | score |
| Freshwater and Estuarine Aquatic Systems | lakes, ponds, reservoirs | score |
| | rivers, streams, canals | score |
| | estuaries | score |
| Dunes | coastal | score |
| | desert | score |
| | interior | score |
| Scrub and Chaparral | coastal bluff scrub | score |
| | coastal scrub | score |
| | Sonoran desert scrub | score |
| | Mojavean desert scrub (incl. Joshua tree woodland) | score |
| | Great Basin scrub | score |
| | chenopod scrub | score |
| | montane dwarf scrub | score |
| | Upper Sonoran subshrub scrub | score |
| | chaparral | score |
| Grasslands, Vernal Pools, Meadows, and other Herb Communities | coastal prairie | C. 5-20% |
| | valley and foothill grassland | C. 5-20% |
| | Great Basin grassland | C. 5-20% |
| | vernal pool | score |
| | meadow and seep | score |
| | alkali playa | score |
| | pebble plain | score |
| Bog and Marsh | bog and fen | score |
| | marsh and swamp | score |
| Riparian and Bottomland | riparian forest | score |
| | riparian woodland | score |
| | riparian scrub (incl. desert washes) | score |
| Woodland | cismontane woodland | C. 5-20% |
| | piñon and juniper woodland | score |
| | Sonoran thorn woodland | score |
| Forest | broadleaved upland forest | C. 5-20% |
| | North Coast coniferous forest | D. presen |
| | closed cone coniferous forest | D. presen |
| | lower montane coniferous forest | D. presen |
| | upper montane coniferous forest | score |
| | subalpine coniferous forest | score |
| Alpine Habitats | alpine boulder and rock field | score |
| | alpine dwarf scrub | score |

* A. means >50% of type occurrences are invaded; B means >20% to 50%; C. means >5% to 20%; D. means present but ≤5%; U. means unknown (unable to estimate percentage of occurrences invaded).