California Pest Rating Proposal for

Rorippa sylvestris (L.) Besser, creeping yellowcress, creeping yellow fieldcress

Family: Brassicaceae

Current Pest Rating: B

Proposed Pest Rating: B

Synonym: *Sisymbrium sylvestre* L. (basionym)

Photo credit: J. DiTomaso, bugwood.org

Comment Period: 07/27/2022 through 09/10/2022

Initiating Event:
Rorippa sylvestris has been previously assigned a B rating by the California Department of Food and Agriculture (CDFA), Plant Health and Pest Prevention Services, but has not gone through the current pest risk analysis procedure. The species 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 (CCR), Section 4500.

History & Status:

Rorippa sylvestris is an herbaceous, rhizomatous perennial. Stems are up to 1 meter in length, generally branched at the base, and may be prostrate, decumbent, or erect, glabrous or sparsely pubescent (Al-Shehbaz, 2010; eFloras, 2008). Leaf shape is variable and is described as deeply pinnately lobed or dissected with 3-6 lobes on each side, and can be linear to oblong, from less than five to up to 20 cm in length, with dentate or shallowly lobed margins (Al-Shehbaz, 2010; EDDMapS, 2014). Basal and stem

leaves are similar in appearance, and the basal leaves basal leaves do not form a persistent rosette after the first year. Flowers are small (less than 1 cm across), four-parted, with yellow petals and yellow-green sepals, arranged in an elongated raceme. The fruit (if developed) is a slender, 10-20 millimeter (mm) long silique. Seeds are reddish brown, ovoid, very small (0.5-0.9 mm), and have a minutely bubbled-reticulate surface pattern, but are rarely produced in North America (Al-Shehbaz, 2010).

Worldwide Distribution

Rorippa sylvestris is native to portions of northern and western Asia and many countries of Europe (USDA GRIN, 2022). It is reported as naturalized in northern areas of Scandinavian Europe (Finland, Norway, and Sweden), New Zealand, North America (United States and Canada) and South America (Argentina and Chile) (USDA GRIN, 2022). In the United States, the species has been reported from Alabama, Arizona, Arkansas, Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, Tennessee, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin, and in Canada from the provinces of Alberta, British Columbia, New Brunswick, Newfoundland, Ontario, Prince Edward Island, and Quebec (Al-Shehbaz, 2010; USDA PLANTS database, 2022).

Official Control:

Rorippa sylvestris is listed on CCR Section 4500 as a noxious weed defined by California FAC Section 5004. The Department is mandated by California FAC, Division 1, Chapter 3, Section 403 to prevent the introduction and spread of noxious weeds. *Rorippa sylvestris* is listed as a restricted noxious weed seed in California defined by California FAC Section 52258 and is subject to stringent tolerances in any shipment of agricultural or vegetable seed.

Rorippa sylvestris is designated as a Class B Noxious Weed subject to local control measures in the states of North Carolina and Oregon (NPB, 2022).

California Distribution: Between 1998 and 2010, *Rorippa sylvestris* was collected at nursery and outdoor cut flower growing operations in four coastal counties, with the following number of collections per county: Ventura (12), San Diego (2), Monterey (2), Santa Barbara (2) (CalFlora database, 2022; CDFA PDR database, 2022). The specimen records from south of Watsonville in the Monterey County area are referred to Santa Cruz County in the Consortium of California Herbarium database (2022) but appear to be from northern portion of Monterey County. None of the collection records indicate the plant had spread outside of the commercial production areas.

California Interceptions: *Rorippa sylvestris* was intercepted one time in 2006 in a shipment of nursery stock from Oregon to Sacramento County (CDFA PDR, 2022).

Consequences of Introduction

1) **Climate/Host Interaction:** Score is **Medium (2)**

Rorippa sylvestris prefers full sunlight, wet to moist conditions, and a soil with abundant organic matter (EDDMapS, 2014). The species occurs at elevations between 0-2,500 meters above sea level in ditches, streams, damp areas, on shores of ponds and lakes, on sandy beaches, waste grounds, wet roadsides, meadows, washes, fields, and gardens (Al-Shehbaz, 2010). *Rorippa sylvestris* can tolerate temporary flooding but not permanent standing water (EDDMapS, 2014). In the Czech Republic, *Rorippa sylvestris* "can act as a weed also in drier locations" (Jursík *et al*, 2009). In the United States it is most frequent in moist areas in the northern states (Stuckey, 1966; Invasive Plant Atlas, 2022).

-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)**
Rorippa sylvestris 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 **Medium (2)**
Reproduction in *Rorippa sylvestris* is usually vegetative, with the plants spreading rapidly from slender rhizomes (Stuckey, 1966; Elmore, undated). Rhizome fragments as small as 1.5 cm can be propagated (Elmore, undated). *Rorippa sylvestris* has been reported to grow roots from leaves floating on the water surface, and that "shoot explants have also been very successful" (Elmore, undated).

Stem or root fragments of *Rorippa sylvestris* can be moved via water, soil, plant debris, on the feet and feathers of birds (Stuckey, 1966) and in contaminated nursery stock (Elmore, undated).

Rorippa sylvestris siliques rarely contain seeds (Stuckey, 1966).

- 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)**
In the Czech Republic, *Rorippa sylvestris* infests mostly root crops and vegetables. "In stands of these crops, patches of *Rorippa sylvestris* can reduce the crop yield significantly" (Jursík *et al*, 2009).

Kawabata et al (1989) isolated (and then synthesized) a chemical compound from the roots of *Rorippa sylvestris* that, when concentrated, had an inhibitory effect of the growth of lettuce seedling roots in a laboratory setting. The authors suggest that *Rorippa sylvestris* may have an allelopathic effect of surrounding plants.

Agricultural shipments that are infested with *Rorippa sylvestris* that are shipped to a destination where it is listed as restricted or noxious are subject to regulatory actions, typically at the owner's expense.

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 **Medium (2)**
Rorippa sylvestris spreads profusely by creeping rhizomes and can form massive, monotypic colonies (Stuckey, 1996; EDDMapS, 2014).

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 *Rorippa sylvestris*: **Medium (12)**

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

1) Post Entry Distribution and Survey Information: Score is **Low (1)**

-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 (12-1=11)

Conclusion and Rating Justification:
Due to the Medium score of this analysis, and the fact that this species can be found in infested nursery shipments and aggressively spreads by rhizomes but is not known to produce seeds in California, a B-rating is recommended.

Uncertainty:
The species is polyploid and rarely produces seed in North America (Al-Shehbaz, 2010), but it is unclear whether any California material has the potential to produce viable seeds.

References:

Al-Shehbaz, I.A. 2010. *Rorippa* Scopoli. Pp. 493-506 in Flora of North American Editorial Committee (eds.). Flora of North America North of Mexico. Volume 7, Magnoliophyta: Salicaceae to Brassicaceae. Oxford University Press, New York and Oxford.
http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=200009673
Accessed March 27, 2022.

Calflora: Information on California plants for education, research, and conservation, with data contributed by public and private institutions and individuals, including the Consortium of California Herbaria. 2022. Berkeley, California. https://www.calflora.org Accessed March 28, 2022

California Department of Food and Agriculture (CDFA), Plant Pest Diagnostics Branch, Pest and Damage Record (PDR) Database. Accessed March 28, 2022.

Consortium of California Herbaria (CCH). 2022. https://ucjeps.berkeley.edu/consortium/ Accessed April 20, 2022.

Di Tomaso, J.M., and Healy, E.A. 2007. Weeds of California and Other Western States. University of California Agriculture and Natural Resources Publication 3488.

eFloras. 2008. Flora of China (FOC). Volume 8. Brassicaceae. *Rorippa sylvestris.* Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA http://www.efloras.org Accessed March 28, 2022.

Elmore, C. (undated) Creeping field cress (*Rorippa sylvestris*) A new weed in container and field grown ornamentals in California. University of California, Cooperative Extension and Agriculture Experiment

Station, The Weed Research and Information Center.
https://wric.ucdavis.edu/PDFs/creepingfieldcress.pdf Accessed March 28, 2022

Invasive Plant Atlas of the United States. 2022. Yellow fieldcress: *Rorippa sylvestris* (Capparales: Brassicaceae). yellow fieldcress: Rorippa sylvestris (Capparales: Brassicaceae): Invasive Plant Atlas of the United States
Accessed April 29, 2022

Jursík, M., Holec, J., Andr, J. 2009. Biology and control of another important weeds of the Czech Republic: creeping yellow-cress - *Rorippa sylvestris* (L.) Besser. (Rukev obecná - Rorippa sylvestris (L.) Besser.) Listy Cukrovarnické a Řepařské. Volume 125 Number 9/10 pp 267-269 ref.4 (abstract only)
https://www.cabdirect.org/cabdirect/abstract/20093353512 Accessed March 28, 2022

Kawabata, J., Fukushi, Y., Hayashi, R., Suzuki, K., Mishima, Y., Yamane, A., Mizutani, J. 1989. 8-methylsulfinyloctyl isothiocyanate as an allelochemical candidate from *Rorippa sylvestris* Besser. Agricultural and Biological Chemistry 53(12):3361-3362.
https://www.jstage.jst.go.jp/article/bbb1961/53/12/53_12_3361/_article/download/-char/en
Accessed March 29, 2022.

National Plant Board (NPB), State Law and Regulation Summaries. https://nationalplantboard.org/laws-and-regulations Accessed March 28, 2022

Stuckey, R. L. 1966. The distribution of *Rorippa sylvestris* (Cruciferae) in North America. SIDA. Contributions to Botany, 2(5): 361–376. http://www.jstor.org/stable/41966302 Accessed March 28, 2022.

Stuckey, R. L. 1972. Taxonomy and distribution of the genus *Rorippa* (Cruciferae) in North America. SIDA, Contributions to Botany 4(4):279–443. http://www.jstor.org/stable/41966420
Accessed March 28, 2022.

United States Department of Agriculture (USDA), National Resource Conservation Service (NRCS). 2022. PLANTS database. USDA Plants Database Accessed April 20, 2022

United States Department of Agriculture (USDA), Agricultural Research Service, National Plant Germplasm System. 2022. Germplasm Resources Information Network (GRIN). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ Accessed March 28, 2022.

University of Georgia, Center for Invasive Species and Ecosystem Health, Bugwood Network, Early Detection and Distribution Mapping System (EDDMapS). 2014.
https://wiki.bugwood.org/Rorippa_sylvestris/EDDMapSWest Accessed March 28, 2022.

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

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

***Comment Period: 07/27/2022 through 09/10/2022**

***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: [B]
