

California Pest Rating Proposal for

Physalis longifolia Nutt., smooth groundcherry, long leafed groundcherry

Family: Solanaceae

Pest Rating: C

Synonym: *Physalis virginiana* var. *sonorae* (Torr.) Waterf.

Comment Period: 04/14/2022 through 05/29/2022

Initiating Event:

Physalis virginiana var. *sonorae*, a synonym of *Physalis longifolia* (USDA GRIN, 2022), has been previously rated A by the CDFA and 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. A pest risk proposal is needed to assess the current status and rating of this taxon.

History & Status:

Physalis longifolia is a perennial herb with a stout, deeply buried rhizome and erect, 20–60-centimeter (cm) long stems. Leaves are lanceolate to ovate, 2-7 cm long, with entire or dentate margins. Stems and leaves are glabrous to sparsely hairy. Flowers are solitary and arise on a 5–14-millimeter (mm) pedicel from leaf axils. Flowers are five-parted, bell-shaped, yellow, and have five purple-brown smudges in the center. Anthers are prominent and yellow. Fruit is a small, orange, yellowish, or green berry surrounded by a papery, inflated calyx. The seeds are numerous, approximately 2 mm long, flattened, kidney-shaped, and brownish (Sullivan, 2004).

Worldwide Distribution

Physalis longifolia is native to North America east of the Rocky Mountains. In the United States, it occurs in Connecticut, Indiana, Maine, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, Illinois, Missouri, Wisconsin, Alabama, Arkansas, Georgia, Kentucky, Maryland, Mississippi, Tennessee, Virginia, and Texas. It occurs in Mexico and the provinces of Manitoba, Ontario, and Quebec in Canada (USDA GRIN, 2022). *Physalis longifolia* has become naturalized throughout the western United States (USDA, ARS, 2022) and it has become widely distributed in Oregon, Washington, and Idaho (Reyes Corral *et al*, 2020).

Official Control:

Physalis virginiana var. *sonorae* 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. *Physalis virginiana* var. *sonorae* is listed as a

restricted noxious weed seed defined by California FAC Section 52258 and is subject to tolerances when found in agricultural seed shipments.

California Distribution: *Physalis longifolia* is identified as a waif in California. It is reported to occur in the northern California area of Shasta Valley (Siskiyou County) (Nee, 2012; CalFlora, 2022). There are also individual records in the Consortium of California Herbaria database (CCH, 2022) from collections made in the 1960's in Santa Barbara and San Diego counties, the latter without a definite locality.

California Interceptions: There are no recorded interceptions of *Physalis longifolia* or *Physalis virginiana* var. *sonorae* in the California Department of Food and Agriculture, Pest and Damage Record database (CDFA/PDR database, 2022).

Consequences of Introduction

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

Physalis longifolia is described as low-water tolerant and grows at elevations ranging from 770-830 meters above sea level. It is found in disturbed places and fields (Nee, 2012). Rydberg (1896) states that “*Physalis longifolia* grows generally in rich soil in the prairie and plain region of the central United States.”

- 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)**

Physalis longifolia 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)**

Physalis longifolia reproduces by seed and propagates aggressively via an extensive rhizome system (Reyes Corral *et al.*, 2020). Hitchcock (1898) found that pieces of roots of *Physalis longifolia* larger than ½ inch in length were able to produce adventitious buds.

- 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 field and greenhouse studies conducted in the potato growing regions of Idaho and Washington, *Physalis longifolia* was found to be a host for multiple life stages (including egg and nymph) of potato psyllids (*Bactericera cockerelli*) (Reyes Corral *et al.*, 2020). Potato psyllids have been identified as the vector of ‘*Candidatus Liberibacter solanacearum*’ a bacterial pathogen that can infect and cause foliar die-back of *Physalis longifolia* and that causes zebra chip disease in potato

and vein greening disease in tomatoes (Reyes Corral et al, 2020). Zebra chip disease makes potatoes unmarketable (Reyes Corral et al, 2020). The study authors suggest that '*Candidatus Liberibacter solanacearum*'-infected *Physalis longifolia* plants can be a source of bacterial transmission to potatoes. The study authors warn that even if above-ground plant parts die back due to disease or are controlled with herbicide, infected rhizomes can overwinter and produce infected plants that could then “be available for psyllid colonization and pathogen acquisition” in the spring potato growing season (Reyes Corral et al, 2020). According to Prager et al (2016), the potato psyllid can be found in California throughout the year from San Diego to the Sacramento Valley.

Potatoes (including seed potatoes) were planted on approximately 28,000 acres in California in 2021 and had a total production value of over \$230,000 (USDA/NASS, 2021). Leading potato producing counties in 2019, with respective total of state’s potato production, were Kern (47.3%); San Joaquin (16.4%); Modoc (15.6%); Siskiyou (8.3%); and Imperial (6.0%) (CDFA, 2020).

Physalis longifolia is listed as a Harmful Organism subject to import restrictions by the country of Colombia (USDA, PExD, 2022). *Physalis longifolia* var. *subglabrata* is listed as a prohibited weed seed by the state of Idaho (NPN, 2022) and as a Harmful Organism by the County of Peru (USDA, PExD 2022). Agricultural shipments entering those destinations are subject to restrictions and/or quarantine actions.

- 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)

- 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 *Physalis longifolia* **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)

The CalFlora dataset contains six records of *Physalis longifolia* occurrences in Siskiyou County that were collected between 1965-1977, and one record of *Physalis longifolia* collected in Santa Barbara County in 1960 (Calflora, 2022).

-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, the existing state noxious weed restrictions regulating interstate shipments and controlling the movement of *Physalis longifolia* and/or *Physalis virginiana* var. *sonorae* to other states, and to help prevent the spread of *Physalis longifolia* to new areas within California, a C-rating is recommended.

Uncertainty:

There are multiple taxonomic varieties that have been recognized within *Physalis longifolia*, including var. *subglabrata* (Mack. & Bush) Cronquist and var. *texana* (Rydb.) J. R. Sullivan, in addition to variety *longifolia*, which includes the type of the species. *Physalis virginiana* var. *sonorae*, the scientific name currently used in the CCR 4500 list, is now treated as a synonym of *P. longifolia* var. *longifolia* (USDA GRIN, 2022). Because the biology and risks to California for each of these varieties is likely to be similar, an inclusive approach has been used to establish a rating for the entire species.

References

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. 2020. Berkeley, California. <https://www.calflora.org/> Assessed March 4, 2022

California Department of Food and Agriculture, California Agricultural Statistics Review (Crop Report), 2020. https://www.cdfa.ca.gov/Statistics/PDFs/2020_Ag_Stats_Review.pdf Accessed March 7, 2020.

California Department of Food and Agriculture (CDFA), Plant Pest Diagnostics Branch, Pest and Damage Record (PDR) Database. Accessed March 4, 2022.

Consortium of California Herbaria (CCH). 2022. <https://ucjeps.berkeley.edu/consortium/> Accessed March 24, 2022.

Hitchcock, A. S. (1898). Fifth report on Kansas weeds: Vegetative propagation of perennial weeds (No. 76). Experiment Station, Kansas State Agricultural College.
https://www.google.com/books/edition/Fifth_Report_on_Kansas_Weeds/shwnAQAAAMAAJ?hl=en&gbpv=1&dq=physalis+longifolia+poisoning&pg=PA1&printsec=frontcover Accessed March 7, 2022

National Plant Board (NPB), State Law and Regulation Summaries. <https://nationalplantboard.org/laws-and-regulations> Accessed March 7, 2022

Nee, M. H. 2012. *Physalis longifolia*, in Jepson Flora Project (eds.) Jepson eFlora, https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid= Accessed March 4, 2022

Prager S., Kund G., Trumble J. 2016. Low-input, low-cost IPM program helps manage potato psyllid. California Agriculture 70(2):89-95. <https://calag.ucanr.edu/Archive/?article=ca.v070n02p89> Accessed March 7, 2022

Rydberg, P.A., 1896. The North American species of *Physalis* and related genera. Torrey Botanical Club. https://www.google.com/books/edition/The_North_American_Species_of_Physalis_a/c7kUAAAAYAAJ?hl=en&gbpv=1&dq=physalis+longifolia&pg=PA295&printsec=frontcover Accessed March 8, 2022

Sullivan, J.R., 2004. The genus *Physalis* (Solanaceae) in the southeastern United States. *Rhodora*, pp.305-326. https://www.jstor.org/stable/23313648?seq=1#metadata_info_tab_contents Accessed March 7, 2022

Tropicos, 2022. Missouri Botanical Garden. <https://www.tropicos.org/name/29600208> Accessed March 4, 2022

United States Department of Agriculture, Agricultural Research Service, National Plant Germplasm System. 2022. Germplasm Resources Information Network (GRIN Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomydetail?id=316776>. Accessed March 4, 2022.

United States Department of Agriculture (USDA), Phytosanitary Certificate Issuance and Tracking System (PCIT), Phytosanitary Export Database (PEXD). 2022. <https://pcit.aphis.usda.gov/PEXD/faces/ViewPEXD.jsf> Accessed March 7, 2022.

United States Department of Agriculture (USDA), National Agricultural Statistic Service (NASS). 2021
California State Agriculture Overview

https://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=CALIFORNIA

Accessed March 8, 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: 04/14/2022 through 05/29/2022**

***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](mailto: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.
-

Pest Rating: C
