

**California Pest Rating Proposal for**  
*Osteospermum calendulaceum* L. f., stinking roger

Family: Asteraceae tribe Calenduleae

Pest Rating: A

Synonyms: *Oligocarpus calendulaceus* (L. f.) Less., *Osteospermum parviflora* Thunb.



Photo credit: R. Vanderhoff

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**Comment Period: 09/22/2022 through 11/06/2022**

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### **Initiating Event:**

*Osteospermum calendulaceum* was officially identified at CDFA from a specimen submitted from a single naturalized population in Orange County. It has been assigned a temporary rating of “Q” and a pest rating proposal is required to evaluate the current rating and status of the species in California.

### **History & Status:**

#### **Background:**

*Osteospermum calendulaceum* is an aromatic, weakly ascending to procumbent glandular pubescent annual herb up to approximately 60 cm in length (Flora of Australia, 2022). The plant is much branched from the base and along the stems. The leaves are narrowly lanceolate to oblanceolate and entire to shallowly toothed, up to 4-5 cm long, with both glandular and non-glandular hairs. The small flowering heads (5-8 mm across) are solitary at the tips of the branches or in leaf axils and have small numbers (approximately 6-12) of yellow ray florets. The one-seeded brown achene fruits lack a pappus and are commonly obconic and prominently ridged and pitted, but can be of multiple forms within plants and individual heads. Many fruits have narrowly winged vertical ridges and a hollow cup-shaped apical beak, but some lack the pitting and ridges or the cup-shaped beak, and others may have a solid horn-shaped beak (CalPhotos, 2022). More prominently winged fruits have been reported as one of the fruit types from other areas in the range of the species (Wagner et al., 1990).

**Worldwide Distribution:** *Osteospermum calendulaceum* is native to the Cape Region and KwaZulu-Natal in South Africa (USDA/GRIN, 2022) and has also been reported as native in Lesotho and Swaziland, and as naturalized in portions of Australia and the Hawaiian Islands (Flora of Australia, 2022; Plants of the World Online, 2022). It has recently been found in Orange County, California (Calflora, 2022; CDFA PDR database, 2022).

**Official Control:** *Osteospermum calendulaceum* has not been listed as a noxious weed or weed seed in the United States (USDA PLANTS database, 2022; USDA/AMS, 2022).

**California Distribution:** The species has been recently found in 2022 in Orange County (CalFlora, 2022; CDFA PDR database, 2022). It has not been previously collected in the state.

**California Interceptions:** No interceptions at border inspection stations have been recorded in the CDFA PDR database (2022).

### **Consequences of Introduction**

#### **1) Climate/Host Interaction: Score is High (3)**

In Southern and Western Australia, *Osteospermum calendulaceum* occurs in disturbed and arid areas on clay and calcareous sandy soils and is a weed of agriculture (Flora of Australia, 2022). It is native in the Mediterranean climate zone area of southern South Africa (USDA GRIN, 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
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- **High (3)** likely to establish a widespread distribution in California

**2) Known Pest Host Range: Score is High (3)**

*Osteospermum calendulaceum* 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)**

*Osteospermum calendulaceum* reproduces by seed and can produce at least several hundred seed units on larger plants. The nonwinged forms of the seed units do not have clear adaptations for dispersal but may be spread from the area of the parent population by human or animal activity, by water, wind, or in soil. The more prominently winged seed units seen as one of the fruit variants outside of California would aid in local wind dispersal of the plant. Given their introduction into Australia, the Hawaiian Islands, and now coastal California, propagules of the plant are sometimes dispersed long distances via global trade or transport activities.

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 Medium (2)**

*Osteospermum calendulaceum* has been reported to act as an agricultural weed and as an environmental weed in arid areas of Southern and Western Australia (Flora of Australia, 2022). It is strong-scented and likely to be avoided by livestock.

- 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 B, D:**

- 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)**

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*Osteospermum calendulaceum* is currently acting as an invasive plant in portions of the Laguna Canyon area of Orange County.

- 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 A, D:**

- 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 *Osteospermum calendulaceum*: **High (13)**

Low = 5-8 points

Medium = 9-12 points

**High = 13-15 points**

**1) Post Entry Distribution and Survey Information: Score is known only from incursions (0)**

- 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: High 13 (13-0=13)**

**Uncertainty:** Since the species is relatively newly reported for California it is unclear how well adapted it will be to the climatic regimes of the state, but it is native in areas of the Mediterranean climate zone in the Cape Region of South Africa, which suggests that it may be widely adapted to the comparable regions in the California Floristic Province.

**Conclusion and Rating Justification:** *Osteospermum calendulaceum* has been recently documented as a naturalized species in a single population in coastal California, and without control would be likely to spread to agricultural fields and dry and open habits in the state. Control and eradication of this population would mitigate the risk to agriculture and the environment of the state. An "A"-rating is recommended.

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## References:

Calflora Database. 2022. Berkeley, California. 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. <https://www.calflora.org/> Accessed July 22, 2022

California Department of Food and Agriculture (CDFA), Plant Pest Diagnostics Branch, Pest and Damage Record (PDR) Database. Accessed July 13, 2022.

CalPhotos database. 2022. [CalPhotos \(berkeley.edu\)](https://calphotos.berkeley.edu/) Accessed July 22, 2022

Flora of Australia. 2022. *Oligocarpus calendulaceus* (L.f.) Less. [Oligocarpus calendulaceus | Flora of Australia \(ala.org.au\)](https://ala.org.au/) Accessed July 15, 2022

Plants of the World Online. 2022. [Osteospermum calendulaceum L.f. | Plants of the World Online | Kew Science](https://www.kew.org/plants-of-the-world-online/) Accessed July 22, 2022

United States Department of Agriculture (USDA), Agricultural Marketing Service (AMS). 2022. State Noxious-Weed Seed Requirements Recognized in the Administration of the Federal Seed Act. <https://www.ams.usda.gov/sites/default/files/media/StateNoxiousWeedsSeedList.pdf> Accessed July 15, 2022.

United States Department of Agriculture (USDA), National Resource Conservation Service (NRCS). 2021. Plants Database. [PLANTS Profile for Osteospermum calendulaceum \(stinking roger\) | USDA PLANTS](https://plants.usda.gov/plant-profile/Osteospermum-calendulaceum) Accessed July 22, 2022:

United States Department of Agriculture (USDA), Agricultural Research Service, National Plant Germplasm System. 2021. Germplasm Resources Information Network (GRIN-Taxonomy). [Osteospermum calendulaceum L. f. GRIN-Global \(ars-grin.gov\)](https://ars-grin.gov/) Accessed July 22, 2022

Wagner, W.L., Herbst, D.R., and Sohmer, S.H. 1990. Pp. 345-346 in Manual of the Flowering Plants of Hawai'i. Bishop Museum, Honolulu.

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**\*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).

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**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.
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**Pest Rating: A**

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