Plant Risk Evaluator -- PRE™
Evaluation Report

Senecio angulatus -- California

California Invasive Plant Council (Cal-IPC)

PRE Score: 21 -- High Potential Risk
Confidence: 83 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: December 28, 2024

This PDF was created on August 21, 2025

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Plant Evaluated

Senecio angulatus

Image by John Beall

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Senecio angulatus*) in an effort to understand the invasive history, reproductive strategies, and the impact, if any, on the region's native plants and animals. This research reflects the data available at the time this evaluation was conducted.

Summary

Senecio angulatus is native to South Africa. It is a prolific, climbing, perennial, herbaceous plant that has been introduced as an ornamental mostly in temperate countries. It is a fast-growing plant with the potential to become an aggressive weed. Once established, it may form thickets and dense patches of more than 20 m that can cover, shade and smother native flora. S. angulatus produces large numbers of (possibly non-viable) seeds; and stem fragments can also easily root, often from discarded plant waste. It has escaped cultivation and currently, it is regarded as an invasive plant or weed in parts of Spain, Italy, Australia and New Zealand. There, it often forms dense infestations in open and disturbed areas, particularly along coastal habitats. In California it thus far has a patchy wildland distribution, primarily coastally from Santa Barbara to the Mexico border. Senecio angulatus is a significant wildlands invader in other Mediterranean climate areas. It is described as "One of the most invasive species in the western Mediterranean" (Brundu et al., 1999) and "Spreading ("major invader") in Mediterranean France" (Brunel and Tison, 2005). Senecio angulatus is very similar in appearance, habit, and habitat to invasive Delairea odorata, especially when not in flower. There may be a portion of California observations misidentified for this reason.

General Information

Status: Completed
Screener: Ron Vanderhoff
Evaluation Date: December 28, 2024

Plant Information

Plant: *Senecio angulatus*

If the plant is a cultivar, how does its behavior differs from its parent's?
The plant is not a cultivar.

Regional Information

Region Name: California

Climate Matching Map

To answer four of the PRE questions for a regional evaluation, a climate map with three climate data layers (Precipitation, UN EcoZones, and Plant Hardiness) is needed. These maps were built using a toolkit created in collaboration with GreenInfo Network, USDA, PlantRight, California Invasive Plant Council, and The Information Center for the Environment at UC Davis.

Click here to see the generated climate matching map for this region. This climate match database is hosted by GreenInfo Network and publicly accessible.

Evaluation Questions

These questions are based on an article published by PLOS One, which can be found here: https://doi.org/10.1371/journal.pone.0121053.

Invasive History and Climate Matching (Questions 1 - 6)

1. Has the species (or cultivar or variety, if applicable; applies to subsequent "species" questions) become naturalized where it is not native?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Yes. Senecio angulatus is native to South Africa and widely naturalized in many places such as Spain, France, Australia, New Zealand, Italy, Portugal, Croatia, Chile, Albania, and Tunisia, as well as California and Baja California. (iNat Observations, Calflora, GBIF, GISD, CABI) Altough not yet declared invasive, the plant is targeted by the Oregon Department of Agriculture for early detection and fast response if it were to escape from cultivation. (USDA APHIS) On the Costa Brava in Spain, it was one of the five most recorded species, where it was found in large assemblage, usually close to human residence, invading and colonizing the clifftops, roadsides and the proximate scrubland, including the undergrowth, replacing native flora species such as Pistacia lentiscus. It was introduced to Catalonia in the 1970s as a groundcover plant in home gardens, before escaping. It is one of the most common alien species present on the Catalan coast. (MedCliffs Life)

Reference(s):

- [Anonymous] (0). Senecio angulatus iNat Observations.
- [Anonymous] (0). Senecio angulatus on GBIF.
- Database, G. Invasive S. (2010). GISD Senecio angulatus.
- [Anonymous] (0). Senecio angulatus CABI.
- Calflora (0). Senecio angulatus Observation Search - Calflora.
- medCLIFFS, LIFE. (2023). THE FEATURED PLANT – Senecio angulatus \textbar2024.
- USDA, APHIS. (2013). USDA Risk Assessment - Senecio angulatus. Plant Protection and Quarantine Animal and Plant Health Inspection Service United States Department of Agriculture. Version 1,

2. Is the species (or cultivar or variety) noted as being naturalized in the US or world in a similar climate?

- Answer: **Yes**, which contributes **2** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Yes. Senecio angulatus is widely naturalized in many places with temperate or Mediterannean climates, and in California climate matching areas such as Spain, Australia, New Zealand, Italy, Portugal, Croatia, and Chile, as well as Baja California. (iNat Observations, GBIF, GISD, CABI) The plant is targeted by the Oregon Department of Agriculture for early detection and fast response if it were to escape from cultivation. (USDA APHIS) On the Costa Brava in Spain, a climate matching area, it was one of the five most recorded species, where it was found in large assemblage and is one of the most common alien species present on the Catalan coast, a climate matching area. (MedCliffs Life)

Reference(s):

- [Anonymous] (0). Senecio angulatus CABI.
- Database, G. Invasive S. (2010). GISD Senecio angulatus.
- [Anonymous] (0). Senecio angulatus iNat Observations.
- [Anonymous] (0). Senecio angulatus on GBIF.
- medCLIFFS, LIFE. (2023). THE FEATURED PLANT – Senecio angulatus \textbar2024.
- USDA, APHIS. (2013). USDA Risk Assessment - Senecio angulatus. Plant Protection and Quarantine Animal and Plant Health Inspection Service United States Department of Agriculture. Version 1,

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3. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

- Answer: **Yes**, which contributes **2** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Yes. Senecio angulatus is reported as invasive in Spain, Australia, New Zealand and Italy (CABI, GISD). Although not yet declared as invasive, the plant was evaluated as "High risk" by the Oregon Department of Agriculture for early detection and fast response if it were to escape from cultivation (USDA APHIS).

Reference(s):

- [Anonymous] (0). Senecio angulatus CABI.
- Database, G. Invasive S. (2010). GISD Senecio angulatus.
- [Anonymous] (0). Senecio angulatus iNat Observations.
- [Anonymous] (0). Senecio angulatus on GBIF.

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4. Is the species (or cultivar or variety) noted as being invasive in the US or world in a similar climate?

- Answer: **Yes**, which contributes **3** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Yes. Senecio angulatus is reported as invasive in Spain, Australia, New Zealand and Italy, all in areas with a California climate match (CABI, GISD). Additionally, the plant was evaluated as "High risk" by the Oregon Department of Agriculture (also with a California Climate match) for early detection and fast response if it were to escape from cultivation (USDA APHIS).

Reference(s):

- [Anonymous] (0). Senecio angulatus CABI.
- Database, G. Invasive S. (2010). GISD Senecio angulatus.
- USDA, APHIS. (2013). USDA Risk Assessment - Senecio angulatus. Plant Protection and Quarantine Animal and Plant Health Inspection Service United States Department of Agriculture. Version 1,

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5. Are other species of the same genus (or closely related genera) invasive in a similar climate?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Yes, many species in the large genus Senecio (and related genera) are declared invasive in California and California climate matching areas. Cal-IPC has declared Senecio elegans, Senecio glomeratus, Senecio jacobaea, and Senecio linearifolius as an invasive species in California (Cal-IPC). GISD reports Senecio inaequidens, squalidus and viscosus as addiional examples of invasive Senecios in climate matched areas of the world (GSID). The closely related Delairea odorata (formerly Senecio makanoides), and Jacobaea vulgaris are declared invasive species in California (Cal-IPC).

Reference(s):

- Database, G. Invasive S. (2010). GISD Senecio angulatus.
- [Anonymous] (0). Plants A to Z – California Invasive Plant Council.

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6. Is the species (or cultivar or variety) found predominately in a climate matching the region of concern?

- Answer: **Yes**, which contributes **2** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Using the climate matching tool this species is almost perfectly divided beween occuring in a California climate matching area and not. 58 climate matching areas were counted and 57 without a climate match. However, because this tool is a binary yes/no score of occurrance in polygon areas and not a quanitative obsevation count it is highly likely that a more fine scale analysis would place a good majority of the individual observation points within the areas of climate match. I feel confident in a YES answer to this question, yet purely from the close area count I am scoring a Medium confidence (Cal-IPC Climate Match Tool).

Reference(s):

- [Anonymous] (0). Cal-IPC Climate Match Tool.

Impact on Native Plants and Animals (Questions 7 - 10)

7. Does this plant displace native plants and dominate (overtop or smother) the plant community in areas where it has established?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Several sources document the species growth habit as rather clearly displacing native plants and dominating plant communities. Because it forms dense vine tangles and mats (Bergin, 2006; USDA, APHIS, 2013), Senecio angulatus changes community structure, alters species composition (Newton, 1996; Weber, 2011; USDA, APHIS, 2013), reduces regeneration of native species (Williams, 2007), and is likely to threaten rare species.

Reference(s):

- Williams, P. A. (2007). Emerging Weed Issues for the West Coast Regional Council and Their Prospects for Biocontrol. Landcare Research New Zealand Ltd.
- Bergen, D. (2006). Options for restoration of Cape ivy (Senecio angulatus) – dominated sites using native coastal species, Glinks Gully, Northland • Coastal Dune Ecosystem Reference Database.
- Weber, E. (2011). Invasive plant species of the world: a reference guide to environmental weeds.
- USDA, APHIS. (2013). USDA Risk Assessment - Senecio angulatus. Plant Protection and Quarantine Animal and Plant Health Inspection Service United States Department of Agriculture. Version 1,
- Newton, P. M. (1996). EFFECTIVE CONTROL OF CREEPING GROUNDSEL (SENECIO ANGULATUS). Agricultural and Food Sciences, Eleventh Australian Weeds Conference Proceedings.

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8. Is the plant noted as promoting fire and/or changing fire regimes?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

I find no published information about any of the plants impacts on fire. Given that it is a semi-succulent herbaceuous perennial, it is doubtful it would host fire impacts.

Reference(s):

- [Anonymous] .

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9. Is the plant a health risk to humans or animals/fish? Has the species been noted as impacting grazing systems?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Numerous publications report toxicity as common in plants in the genus Senecio. Senecio species contain hepatotoxic pyrrolizidine alkaloids (PAs), which if grazed can induce irreversible liver damage. Senecio species in general are known to be toxic to livestock and humans (Burrows and Tyrl, 2001). Senecio angulatus is toxic to both humans and pets according to The American Society for the Prevention of Cruelty to Animals. If ingested, it can cause vomiting, diarrhea and abdominal pains (Homeplantsguide, altough this is a secondary source with no reference citation and marginally validated). In South Africa, Senecio angustifolius contaminates Rooibos tea (Aspalathus linearis (Burm.f.) R.Dahlgren). Unfortunately, S. angustifolius has a similar growth habit and flower color as A. linearis, making it difficult to eliminate from Rooibos plantations. As the invading species grows among the Rooibos plants, it secretes pyrrolizidine alkaloids into the rhizosphere, where they are enter the root system of A. linearis and accumulate in the tea leaves. (VanWyk, e al) A 1962 paper documenting toxic alkaloids within the plant tissues further supports the conclusion of its toxicity. (Porter, 1962)

Reference(s):

- Burrows, G. E., & Tyrl (2001). Toxic Plants of North America. 1A, 1342.
- Van Wyk, B. - E., Stander M. A., & Long H. S. (2017). Senecio angustifolius as the major source of pyrrolizidine alkaloid contamination of rooibos tea. Herbal Teas. 110, 124–131.
- Homeplantsguide (0). Scrambling Groundsel (Senecio angulatus) Care Indoors.
- Porter, L. A., & A G. T. (1962). Angularine, a New Pyrrolizidine Alkaloid from Senecio angulatus L.. The Journal of Organic Chemistry. 27(12),

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10. Does the plant produce impenetrable thickets, blocking or slowing movement of animals, livestock, or humans?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

There is considerable documentation in the literature of the growth habit of the species. It readily forms dense infestations in open/disturbed areas, particularly coastal environments (Champion, 2005; Williams, 2007). S. angulatus is a prolific vine that has the ability to form thickets of more than 20 mteres that can cover and smother native flora (GISD). Bergin documents the species "forms dense vine tangles and mats" (Bergin, 2006; USDA, APHIS, 2013), suggesting an interference with animal movement. Not specifically discussing impacts to animal movement, but perhaps inferring it are Newton comments: "Senecio angulatus changes community structure, alters species composition" (Newton, 1996; Weber, 2003; USDA, APHIS, 2013). And Williams states "reduces regeneration of native species and is likely to threaten rare species" (Williams, 2007). Numerous in-situ photo images show dense mats and vegetation tangles, strongly inferring "blocking or slowing movement of animals, livestock or humans" (iNat, Calflora). Florabase is even clearer, stating "Completely smothers ground-flora vegetation and smaller shrubs". (Florabase)

Reference(s):

- Champion, P., & Zealand B. New (2005). Evaluation criteria for assessment of candidate species for inclusion in the National Pest Plant Accord.
- Bergen, D. (2006). Options for restoration of Cape ivy (Senecio angulatus) – dominated sites using native coastal species, Glinks Gully, Northland • Coastal Dune Ecosystem Reference Database.
- Newton, P. M. (1996). EFFECTIVE CONTROL OF CREEPING GROUNDSEL (SENECIO ANGULATUS). Agricultural and Food Sciences, Eleventh Australian Weeds Conference Proceedings.
- Weber, E. (2003). Invasive Plant Species of the World. 548.
- Williams, P. A. (2007). Emerging Weed Issues for the West Coast Regional Council and Their Prospects for Biocontrol. Landcare Research New Zealand Ltd.
- USDA, APHIS. (2013). USDA Risk Assessment - Senecio angulatus. Plant Protection and Quarantine Animal and Plant Health Inspection Service United States Department of Agriculture. Version 1,
- Herbarium, B. Western Au, & Science C. (0). Florabase—the Western Australian flora.
- [Anonymous] (0). Senecio angulatus iNat Observations.
- Calflora (0). Senecio angulatus Observation Search - Calflora.

Reproductive Strategies (Questions 11 - 17)

11. Does this species (or cultivar or variety) reproduce and spread vegetatively?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Yes. The species is clearly documented as reproducing and spreading vegetatively. In fact, its seed may not be viable. This species spreads through seeds(?) and stem fragments that can easily root (FloraBase, 2013; Hussey et al., 2007; Williams, 2007). Yard waste is believed to be a significant pathway for its spread, because it can establish from plant fragments (Hussey et al., 2007; Williams, 2007). This species reproduces by seed(?) and also via stem segments. Its seed are dispersed by wind and animals, while its seeds and stem segments can also be spread in dumped garden waste (CABI).

Reference(s):

- [Anonymous] (0). Senecio angulatus CABI.
- Herbarium, B. Western Au, & Science C. (0). Florabase—the Western Australian flora.
- Williams, P. A. (2007). Emerging Weed Issues for the West Coast Regional Council and Their Prospects for Biocontrol. Landcare Research New Zealand Ltd.
- Hussey, B. M. J., & al et. (2007). Publications – The Weeds Society of Western Australia Inc. A guide to the weeds of Western Australia.

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12. If naturally detached fragments from this plant are capable of producing new plants, is this a common method of reproduction for the plant?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Yes. The species is clearly documented as reproducing and spreading vegetatively. In fact, its seed may not be viable. This species spreads through seeds(?) and stem fragments that can easily root (FloraBase, 2013; Hussey et al., 2007; Williams, 2007). Yard waste is believed to be a significant pathway for its spread, because it can establish from plant fragments (Hussey et al., 2007; Williams, 2007). This species reproduces by seed(?) and also via stem segments. Its seed are dispersed by wind and animals, while its seeds and stem segments can also be spread in dumped garden waste. (CABI)

Reference(s):

- Hussey, B. M. J., & al et. (2007). Publications – The Weeds Society of Western Australia Inc. A guide to the weeds of Western Australia.
- Williams, P. A. (2007). Emerging Weed Issues for the West Coast Regional Council and Their Prospects for Biocontrol. Landcare Research New Zealand Ltd.
- Herbarium, B. Western Au, & Science C. (0). Florabase—the Western Australian flora.
- [Anonymous] (0). Senecio angulatus CABI.

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13. Does the species (or cultivar or variety) commonly produce viable seed?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Although this plant is well documented to produce copious quantities of seed, there is also modest documentation of the seed being either sterile or not viable outside of its native area of distribution. I can find no specific evidence that this species has produced viable seen anywhere in CA. The answer to this question about "viable" seed would still be "Yes", altough the apparent differences in seed viability regionally should be noted. CABI reports "A study in Wellington (New Zealand) found that S. angulatus is self-incompatible and no seeds were produced in the study site. However, artificial hand-pollination experiments suggest that a lack of pollinators is not the reason for the limited seed production. (CABI) "A vegetative experiment showed that cuttings of various ages and lengths had the ability to establish indicating that the predominant mode of dispersal of S. angulatus in the Wellington region is vegetative reproduction" (Scott, 2001). The same source continues "the predominant mode of dispersal of S. angulatus and D. odorata in the Wellington region is considered to be vegetative reproduction"(Scott, 2001). It would be reasonable speculation for non-viable seed in area away from its native range to be the result of self incompatability. This self incompatability could in-turn be due to a lack of genetic diversity in an alien population. However, over time, and with additional propagule recruitment, this non-viable seed trait could disappear. I am giving a "Yes" answer here, but only a medium confidence given some lack of published reseach and uncertainties about seed viability in different geographic areas.

Reference(s):

- [Anonymous] (0). Senecio angulatus CABI.
- Scott, P. (2001). The Reproductive Strategies of Scandent Groundsels Senecio Angulatus and Senecio Mikanioides (Asteraceae, Senecioneae). Victoria University of Wellington.

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14. Does this plant produce copious viable seeds each year (> 1000)?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Altough this plant is well documented to produce copious quantities of seed, there is also modest documentation of the seed being either sterile or not viable. In this case, the answer to this question about "viable" seed would be "No". Phillipa Scott, 2001 says "S. angulatus produces large numbers of seeds", but does not provide a count. CABI states "the predominant mode of dispersal of S. angulatus and D. odorata in the Wellington region is considered to be vegetative reproduction". (CABI) Finally Scott, 2001 continues saying "the presence of a sporophytic self-incompatibility mechanism. This supports the hypothesis that populations of S. angulatus and S. mikanioides [Delairea odorata] are both comprised of a single genotype, or at least are fixed for a single S allele so that seed is unable to be produced." (Scott, 2001) I am giving a "No" answer here, and a high confidence given the unlikely probability of >1,000 viable seeds.

Reference(s):

- [Anonymous] (0). Senecio angulatus CABI.

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15. Is there significant germination (>25%) of seeds the next growing season, with no requirement of an infrequent environmental condition for seeds to germinate (i.e. fire) or long dormancy period?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Altough this plant is well documented to produce copious quantities of seed, there is also modest documentation of the seed being either sterile or not viable. In this case, the answer to this germination question would be "No". Phillipa Scott, 2001 says "S. angulatus produces large numbers of seeds", but does not provide a count. CABI further says "the predominant mode of dispersal of S. angulatus and D. odorata in the Wellington region is considered to be vegetative reproduction". (CABI) Finally Scott says "the presence of a sporophytic self-incompatibility mechanism. This supports the hypothesis that populations of S. angulatus and S. mikanioides [Delairea odorata] are both comprised of a single genotype, or at least are fixed for a single S allele so that seed is unable to be produced." (Scott, 2001) I am giving a "No" answer here, and a high confidence, because >25% germination seems quite unlikely given the literature.

Reference(s):

- Scott, P. (2001). The Reproductive Strategies of Scandent Groundsels Senecio Angulatus and Senecio Mikanioides (Asteraceae, Senecioneae). Victoria University of Wellington.
- [Anonymous] (0). Senecio angulatus CABI.

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16. Does this plant produce viable seed within the first three years (for an herbaceous species) to five years (for a woody species) after germination?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

This plant is a perennial scrambler/vine, it can set seed within its first year (FloraBase, 2013; Williams, 2007). However, this seed is presumed to be either sterile or non-viable outside of its native range. The New Zealand Plant Conservation Network states "Seed is believed to be non-viable. Seeds are spread by wind" meaning that reproduction, in New Zealand (a non-native location) would be purely vegetative (New Zealand Plant Conservation Network). I am giving a "Yes" answer, due to published statements about seed germination in the plants native range. But I am only offering a medium confidence given some other documentation about non-viable seed in most/all alien locations.

Reference(s):

- Williams, P. A. (2007). Emerging Weed Issues for the West Coast Regional Council and Their Prospects for Biocontrol. Landcare Research New Zealand Ltd.
- Herbarium, B. Western Au, & Science C. (0). Florabase—the Western Australian flora.
- Network, N. Zealand Pl (0). New Zealand Plant Conservation Network: Senecio angulatus.

17. Does this plant continuously produce seed for >3 months each year or does seed production occur more than once a year?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Calflora reports flowering from April to November (8 months) (Calflora). A review of California observations on iNaturalist shows flowering at every month of the year. (iNat) The New Zealand Plant Conservation Network reports flowering during March, April, May, June, July, and August (New Zealand Network). There is doubt about seed viability in the species, but this apparently is not a consideration of the question.

Reference(s):

- Calflora (0). Senecio angulatus Taxon Page, Calflora.
- Network, N. Zealand Pl (0). New Zealand Plant Conservation Network: Senecio angulatus.
- [Anonymous] (0). Senecio angulatus iNat Observations.

Dispersal (Questions 18 - 20)

18. Are the plant's propagules frequently dispersed long distance (>100 m) by mammals or birds or via domestic animals?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Seeds are documented as wind dispersed (FloraBase, 2013; Weber, 2003; Williams, 2007), and very likely animal dispersed (FloraBase, 2013). However, seeds are not the likely or preferred method of dispersal and propagation for the species. Dispersal and propagation is primarily (or exclusively) from vegetative means, which is uncommon via mammals or domestic animals, but occasional from birds.

Reference(s):

- Williams, P. A. (2007). Emerging Weed Issues for the West Coast Regional Council and Their Prospects for Biocontrol. Landcare Research New Zealand Ltd.
- Herbarium, B. Western Au, & Science C. (0). Florabase—the Western Australian flora.
- Weber, E. (2011). Invasive plant species of the world: a reference guide to environmental weeds.

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19. Are the plant's propagules frequently dispersed long distance (>100 m) by wind or water?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Seeds are wind dispersed (FloraBase, 2013; Weber, 2003; Williams and Hayes, 2007), and very likely animal dispersed (FloraBase, 2013). Where the plant does produce viable seed it is wind dispersed, although the distance of this dispersal is less certain: Produces "fluffy seeds" that are dispersed a long way from the parent plant (WMC, 2013). Dispersed by wind (FloraBase, 2013; Weber, 2003; Williams and Hayes, 2007). "Achenes terete, with hairs on ribs" (Flora of New Zealand, 2013). "Produces an achene (i.e., a fruit that tightly envelopes a seed) that is 2.2 × 0.5 mm with a pappus" (bristles or feather-like hairs) (Newton, 1996). As noted elsewere, seeds are not necessarily viable in CA, amd not the likely or preferred method of dispersal and propagation for the species in CA. I cannot locate any specific documentation about water dispersal of stem fragments. But because the plant grows commonly on stream banks and reproduces easily from stem fragments, dispersal from detached stem fragments would seem very likely along water courses. One source indicates it is dispersed by water (FloraBase, 2013), but it provides no specific data or references. Because seeds of this species don't appear to be specifically adapted for water dispersal, seed dispersal by water is inconclusive and unknown. I am answering YES because of the documentation of seed dispersal by wind and the high likelihood of propagation from vegetative segments transported in stream water.

Reference(s):

- Herbarium, B. Western Au, & Science C. (0). Florabase—the Western Australian Flora.
- Williams, P. A. (2007). Emerging Weed Issues for the West Coast Regional Council and Their Prospects for Biocontrol. Landcare Research New Zealand Ltd.
- Weber, E. (2011). Invasive plant species of the world: a reference guide to environmental weeds.
- Newton, P. M. (1996). EFFECTIVE CONTROL OF CREEPING GROUNDSEL (SENECIO ANGULATUS). Agricultural and Food Sciences, Eleventh Australian Weeds Conference Proceedings.
- Flora of New Zealand Series (0). Flora of New Zealand: Senecio angulatus.
- WMC (2013). Cape ivy from Weedbusters.

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20. Are the plant's propagules frequently dispersed via contaminated seed (agriculture or wildflower packets), equipment, vehicles, boats or clothing/shoes?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

The plant is easily and commonly dispersed via garden waste and therefore presumably agriculture as well (Williams 2007, Hussey 2007, Florabase). Given the propensity of the species to root readily from stem fragments, dispersal via agriculture, equipment, and vehicles is almost certain. However, without a specific reference I am scoring only Medium confidence.

Reference(s):

- Williams, P. A. (2007). Emerging Weed Issues for the West Coast Regional Council and Their Prospects for Biocontrol. Landcare Research New Zealand Ltd.
- Herbarium, B. Western Au, & Science C. (0). Florabase—the Western Australian flora.
- Hussey, B. M. J., & al et. (2007). Publications – The Weeds Society of Western Australia Inc. A guide to the weeds of Western Australia.

Evaluation Notes

This taxon scored highly and would appear to be a strong candidate for invasiveness in California. Published documentation is fairly thorough and complete.

Seed viability in California remains somewhat uncertain.

Total PRE Score

PRE Score: 21 -- High Potential Risk
Confidence: 83 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

PRE Score Legend

The PRE Score is calculated by adding the point totals for each (answered) question.
< 13 : Low Potential Risk
13 - 15 : Moderate Potential Risk
> 15 : High Potential Risk

Questions Answered Legend

It is important to answer at least 16 questions to consider a PRE Score as "valid".
>= 16 : valid (80% or more questions answered)
<= 15 : invalid (not enough questions answered)

Organization Ownership and Content Privacy

Organization: California Invasive Plant Council (Cal-IPC)
Content Privacy: Public

Evaluation Reviewers

The PRE approach is to base decisions on science and make decisions by consensus of diverse horticultural stakeholders. The literature review and process of answering PRE's questions are based on science; the decisions of which plants to prioritize are based on consensus. To ensure this process is in place and that PRE is collaborative, volunteer stakeholders are recruited from each region to review evaluations. The following experts in their profession (plant science, conservation, or horticultural trade) have participated as volunteer PRE reviewers for this evaluation:

• Amy Bulone	March 9, 2025
• Justin Valliere	February 20, 2025
• Chris McDonald	February 12, 2025
• Jutta Burger	February 3, 2025
• Lauren Quon	December 30, 2024
• Ron Vanderhoff	December 28, 2024

This evaluation has a total of 6 reviewer(s).

Evaluation Issues

The following section lists all public issues for this evaluation. Issues provide a way for stakeholder reviewers to communicate any concerns or suggestions they might have with the plant or evaluation. Please email info@plantright.org if additional action is required to resolve open issues.

Issue ID # 11035

Date Created: March 9, 2025 - 2:07pm
Date Updated: March 10, 2025 - 10:22pm

Submitted by: Amy Bulone

Status: Fixed
Type: Suggestion
Severity: Major
Scope: Q16. Does this plant produce viable seed within the first three years (for an herbaceous species) to five years (for a woody species) after germination?

Issue Description

You answered the question with No, but then in the justification you say "I am giving a "Yes" answer..." Is your answer Yes or No? --Amy Bulone

Issue Resolution (Screener's Response to Issue)

I also failed to change my NO to a YES. Resolved.

Issue ID # 11034

Date Created: March 9, 2025 - 2:02pm
Date Updated: March 10, 2025 - 10:18pm

Submitted by: Amy Bulone

Status: Fixed

Type: Suggestion
Severity: Major
Scope: Q13. Does the species (or cultivar or variety) commonly produce viable seed?

Issue Description

You answered the question with No, but then in the justification you say "The answer to this question about "viable" seed would still be "Yes"..." and again several sentences later you say "I am giving a "Yes" answer here..." This gives me the impression you meant to answer the question with Yes. Which is it, Yes or No? -Amy Bulone

Issue Resolution (Screener's Response to Issue)

Thank you. I had originally given this a NO score, but with more research reconsidered it to be a YES, but failed to change it. Resolved.

Issue ID # 11033

Date Created: March 9, 2025 - 9:16am
Date Updated: March 10, 2025 - 10:32pm

Submitted by: Amy Bulone

Status: Fixed
Type: Comment
Severity: Minor
Scope: General Information

Issue Description

In the Evaluation Summary: "A significant wildlands invader in other Medierranean climate areas." This is not a complete sentence. You also stated the plant's native range twice (once at the beginning and once at the end) which seems redundant. --Amy Bulone

Issue Resolution (Screener's Response to Issue)

Deleted the redundency and wordsmithed my sentence a bit. Resolved.

Issue ID # 10870

Date Created: February 20, 2025 - 10:30am
Date Updated: March 3, 2025 - 7:36pm

Submitted by: Justin Valliere

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: General Information

Issue Description

Typo in first sentence - "South" not "Sout" - JV

Issue Resolution (Screener's Response to Issue)

Typo has been fixed.

Issue ID # 10823

Date Created: February 12, 2025 - 10:50am
Date Updated: February 15, 2025 - 7:03pm

Submitted by: Chris McDonald

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q20. Are the plant’s propagules frequently dispersed via contaminated seed, equipment, vehicles, boats or clothing/shoes?

Issue Description

Given the plant grows from fragments I think it should be added that equipment, horticultural and municipal (green waste) could frequently distribute the plant via fragments. I think this would also be a

medium confidence. Not changing the answer (Yes, medium), just providing more support. CM

Issue Resolution (Screener's Response to Issue)

I have expanded my comments a bit to more clearly communicate the likelihood of these dispersal methods. I am not changing my confidence from Medium without more documentation.

Issue ID # 10822

Date Created: February 12, 2025 - 10:41am
Date Updated: February 15, 2025 - 7:04pm

Submitted by: Chris McDonald

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q06. Is the species found predominately in a climate matching the region of concern?

Issue Description

I think based the density of locations in the Mediterranean the confidence of this could be increased to a High. Ron seems to be correct, the number of locations with and without an exact climate match are similar (such as multiple locations in South America), however the sheer density of locations in Iberian Peninsula, S France and Italy are quite high. CM

Issue Resolution (Screener's Response to Issue)

Thanks Chris, I think your agreement is what I needed. I have raised the confidence to High.

Issue ID # 10809

Date Created: February 11, 2025 - 12:47am
Date Updated: February 15, 2025 - 7:11pm

Submitted by: Lauren Quon

Status: Fixed
Type: Comment
Severity: Minor
Scope: Q08. Is the plant noted as promoting fire and/or changing fire regimes?

Issue Description

just a comment on this question- I came across a source stating that this species could be used as a "wet wall"/plant fence feature in a yard, given the nature of how it grows...kind of an interesting concept for areas that are more urban and not at the wildland urban interface...- LQ https://reforestation.me/fire-no-fines-concrete/ Also not sure if this is a very reputable source? Looked like a blog post of some sort...

Issue Resolution (Screener's Response to Issue)

That's an interesting observation. I could certainly see the plant clambering up and over surfaces like a chain-link fence. I think I'll leave this design reccomendation out of the evaluation - haha.

Issue ID # 10730

Date Created: February 3, 2025 - 5:46pm
Date Updated: February 7, 2025 - 8:49pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q19. Are the plant’s propagules frequently dispersed long distance (>100 m) by wind or water?

Issue Description

Add references cited to references section. - JB

Issue Resolution (Screener's Response to Issue)

References added.

Issue ID # 10729

Date Created: February 3, 2025 - 5:44pm
Date Updated: February 7, 2025 - 6:06pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Major
Scope: Q16. Does this plant produce viable seed within the first three years (for an herbaceous species) to five years (for a woody species) after germination?

Issue Description

Again, if this plant produces seed in its native range and matures quickly, the answer to this question - from my perspective - would be a "yes" (w/ medium confidence). - JB

Issue Resolution (Screener's Response to Issue)

I moved the answer to a YES with medium confidence, for the same reasons as Q15.

Issue ID # 10717

Date Created: February 2, 2025 - 8:41am
Date Updated: February 7, 2025 - 5:57pm

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion
Severity: Major
Scope: Q13. Does the species (or cultivar or variety) commonly produce viable seed?

Issue Description

Tricky question given its behavior outside of its native range! Nonetheless, I would vote for a "yes" answer for this possibly with a medium confidence. It appears to produce seed in its native range, and is even sold as seed https://seedsandall.co.za/product/cape-ivy-senecio-angulatus-3-seed-pack/. Several other answers in this evaluation also seem conflicting if this question is not answered "yes". Seems like, as you suggest, it's lack of seed production may be due in part to its self incompatibility (though not entirely?) and that is a very good point to emphasize. - JB

Issue Resolution (Screener's Response to Issue)

Thank you for the advice. I agree and have re-scored with a YES, but medium confidence. I also added comments re possible self-incompatability as a reason for non-viable seed and that this quality could disappear with additional plant recruitment and genetic mixing in these non-native geographic areas.

Issue ID # 10716

Date Created: February 2, 2025 - 8:34am
Date Updated: February 7, 2025 - 6:44pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q10. Does the plant produce impenetrable thickets, blocking or slowing movement of animals, livestock, or humans?

Issue Description

Maybe add more here about how it could block movements (could just be an add-on to the vine tangles sentence) to specifically address the "blocking movement" component of the question and differentiate the answer from that for #7. - JB

Issue Resolution (Screener's Response to Issue)

Done. I also added a comment (and biblio. reference) about the many iNat and Calflora images that rather clearly show large, dense tangles and vegetation mats. Although these are not written documentation of blocks to animals/livestock/humans they are published and documented evidence nonetheless.

Issue ID # 10715

Date Created: February 2, 2025 - 8:26am
Date Updated: February 7, 2025 - 6:11pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q01. Has the species (or cultivar or variety, if applicable) become naturalized where it is not native?

Issue Description

Please add where S. angulatus is native to as part of this answer. - JB

Issue Resolution (Screener's Response to Issue)

Done. Added to the General Information as well.

Issue ID # 10714

Date Created: February 2, 2025 - 7:58am
Date Updated: February 7, 2025 - 6:22pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion

Severity: Major
Scope: Regional Information

Issue Description

The wrong file was uploaded as the climate match pdf. Please re-attach the correct file. - JB

Issue Resolution (Screener's Response to Issue)

Got it right this time.

Issue ID # 10663

Date Created: December 30, 2024 - 7:32pm
Date Updated: February 7, 2025 - 8:59pm

Submitted by: Lauren Quon

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q13. Does the species (or cultivar or variety) commonly produce viable seed?

Issue Description

This is probably more of a question- does S. angulatus produce viable seed elsewhere (e.g. especially California)?

And more comments on seed viability and dispersal- I guess I find it a little funny and interesting that the research noted seed dispersal mechanisms, but there's the lack of seed viability, so plants are spreading and growing vegetatively...guess the plants are really sticky to get stuck on animals and dispersed that way!

-LQ

Issue Resolution (Screener's Response to Issue)

I can find no documentation of this species producing viable seed in California.

Issue ID # 10662

Date Created: December 30, 2024 - 7:21pm
Date Updated: February 7, 2025 - 6:13pm

Submitted by: Lauren Quon

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: General Information

Issue Description

would suggest adding picture of plant, just for visuals.

https://www.inaturalist.org/taxa/363595-Senecio-angulatus

-LQ

Note: Photo added by JB 2/2/2025

Issue Resolution (Screener's Response to Issue)

Image added by JB.

About PRE and this Plant Evaluation Report

The Plant Risk Evaluator (PRE) is an online database and platform designed to assess the risk of a plant becoming invasive in a given region.This tool offers many benefits, and we encourage you to visit the PRE website (https://pretool.org) for more information.

If you would like to learn more about PRE, please email us at info@plantright.org, requesting a PRE Account.

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