Plant Risk Evaluator -- PRE™
Evaluation Report

Euphorbia dentata -- Oregon

Cascade Pacific Resource Conservation & Development

PRE Score: 12 -- Low Potential Risk
Confidence: 67 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: March 5, 2025

This PDF was created on August 21, 2025

This project was funded in part by the USDA National Institute of Food and Agriculture through the Western Integrated Pest Management Center, grant number 2018-70006-28881.

Plant Evaluated

Euphorbia dentata

Image by Max Licher

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Euphorbia dentata*) 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

Euphorbia dentata (toothed spurge) has naturalized in some regions outside its native range, including parts of Europe and the U.S., but is not widely classified as invasive. It is considered invasive in certain areas, such as China and parts of the U.S., though not specifically in the Pacific Northwest. The plant does not form impenetrable thickets but may impact native vegetation in some regions. It reproduces exclusively by seed, producing viable seeds annually, but does not spread vegetatively or via detached fragments. While exact seed production numbers are unclear, it likely produces large quantities of viable seeds and does not require special conditions for germination. Seeds are dispersed locally through explosive dehiscence but are not frequently carried long distances by wind, water, or animals. However, human activities such as contaminated equipment, vehicles, and clothing may contribute to its spread. The plant's toxic sap poses risks to humans and livestock, potentially impacting grazing systems. Overall, E. dentata has the potential to establish and spread but lacks some of the most aggressive traits of highly invasive species.

General Information

Status: Completed
Screener: Courtney Gattuso
Evaluation Date: March 5, 2025

Plant Information

Plant: *Euphorbia dentata*

Regional Information

Region Name: Oregon

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 **High** confidence in this answer based on the available literature.

Answer / Justification:

Euphorbia dentata, commonly known as toothed spurge, is native to parts of North and South America, specifically from northern Mexico and the south-central United States north and east through the Ohio River Valley. However, it has become naturalized in regions outside its native range. For instance, in New England, it is absent except for an introduced occurrence in northern Vermont. Additionally, Euphorbia dentata is present in Europe, indicating its naturalization beyond its native habitat.

Reference(s):

- Native Plant Trust - Go Botany (0). Euphorbia dentata — toothed spurge.
- SEINet Arizona - New Mexico Chapter (0). Euphorbia dentata.
- Garcke, K. & (1803). Euphorbia dentata (Flora of North America).

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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 **High** confidence in this answer based on the available literature.

Answer / Justification:

There are occurrences of toothed spurge in the Pacific Northwest (Idaho, Oregon, and Utah) and many observations in the Appalachian region of the eastern United States. The Climate Matching Map shows Euphorbia dentata's potential to naturalize in areas outside of its native range due to the high volume of documented observations.

Reference(s):

- GBIF—the Global Biodiversity Information Facility (0). Euphorbia dentata Michx..

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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 **Medium** confidence in this answer based on the available literature.

Answer / Justification:

While it has become naturalized in regions beyond its native range, it is not widely recognized as an invasive species in the United States. For example, the USDA Plants Database does not list it as invasive or noxious. However, in Idaho, it is classified as a noxious weed due to its potential adverse impacts. In China, E. dentata is considered invasive and is known for its toxicity and potential to reduce crop yields.

Reference(s):

- USDA Natural Resources Conservation Service (0). Euphorbia dentata Michx..
- Xu, C-S., & Liao Z-X. (2024). Dentatacid A: An Unprecedented 2, 3-Seco-arbor-2, 3-dioic Triterpenoid from the Invasive Plant Euphorbia dentata, with Cytotoxicity Effect on Colon Cancer. (Shao, Y-L., Li Q., & Wu H-W., Ed.).Plants.

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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 **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Several states recognize toothed spurge as an introduced species, but few deem it an invasive or noxious. The Colorado State University Extension considers E. dentata an invasive weed, though it is not officially listed as a noxious weed in the state. They recommend removing it from gardens to prevent its spread. The species has been reported in countries such as Switzerland and France, primarily in railway areas. While many populations are small and confined to these disturbed sites, E. dentata has shown the ability to invade agricultural fields, raising concerns about its potential impact on crop yields. Its known distribution has locations with a similar climates to Oregon.

Reference(s):

- Ask Extension - Knowledgebase (0). Wild Poinsettia - Euphorbia dentata - invasive? Should I pull them out of my Englewood garden?.
- Barina, Z., Shevera M., Sîrbu C., & Pinke G. (2013). Current distribution and spreading of Euphorbia davidii (E. dentata agg.) in Europe. Central European Journal of Biology. 8(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:

Several species within the Euphorbia genus, as well as closely related genera, are recognized as invasive in climates similar to the Pacific Northwest. In Oregon alone, there are 3 Euphorbia spp. that are listed on the state noxious weed list: Oblong spurge (Euphorbia oblongata), Mytle spurge (Euphorbia myrsinities), and Leafy spurge (Euphorbia esula).

Reference(s):

- Oregon Department of Agriculture (ODA) (0). Oregon Noxious Weed Profiles.

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

- 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:

The majority of toothed spurge occurrences are found predominately in climates that do not match Oregon's. Therefore, it has the ability to thrive in several different climate types.

Reference(s):

- GBIF—the Global Biodiversity Information Facility (0). Euphorbia dentata Michx..

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

Answer / Justification:

Toothed spurge has been observed to impact native plant communities in certain regions where it has been established. However, specific information regarding its ability to displace native plants and dominate plant communities is limited. Studies in China and Europe show that it has an invasive potential with a growing number of established populations, and encourages close monitoring, especially in agricultural settings.

Reference(s):

- Xu, C-S., & Liao Z-X. (2024). Dentatacid A: An Unprecedented 2, 3-Seco-arbor-2, 3-dioic Triterpenoid from the Invasive Plant Euphorbia dentata, with Cytotoxicity Effect on Colon Cancer. (Shao, Y-L., Li Q., & Wu H-W., Ed.).Plants.
- Barina, Z., Shevera M., Sîrbu C., & Pinke G. (2013). Current distribution and spreading of Euphorbia davidii (E. dentata agg.) in Europe. Central European Journal of Biology. 8(1),

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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:

?Currently, there is no specific evidence indicating that Euphorbia dentata (toothed spurge) promotes fire or alters fire regimes in areas where it has been established.

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:

The plant contains a milky sap that is toxic upon contact or ingestion. Exposure can lead to skin irritation, blisters, and dermatitis. If the sap comes into contact with the eyes, it may cause temporary blindness. The toxic sap can cause adverse effects in livestock, including cattle and horses, leading to symptoms such as vomiting, diarrhea, and mouth irritation.

Reference(s):

- Integrated Pest Management University of Missouri (0). Weed of the Month: Toothed Spurge (Euphorbia dentata).

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

- 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:

It generally grows between 8 to 24 inches high and does not form dense thickets. Therefore, it is unlikely to impede or slow the movement of animals, livestock, or humans in areas where it has been established.

Reference(s):

- SEINet Arizona - New Mexico Chapter (0). Euphorbia dentata.

Reproductive Strategies (Questions 11 - 17)

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

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

Answer / Justification:

?Euphorbia dentata (toothed spurge) reproduces exclusively by seed and does not spread vegetatively. This reproductive strategy involves the production of seeds following flowering, without the formation of bulbils or other vegetative structures for propagation.

Reference(s):

- Native Plant Trust - Go Botany (0). Euphorbia dentata — toothed spurge.

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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: **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:

Since toothed spurge does not reproduce vegetatively, it cannot spread via detached fragments.

Reference(s):

- [Anonymous] .

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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 **High** confidence in this answer based on the available literature.

Answer / Justification:

Euphorbia dentata (toothed spurge) commonly produces viable seeds. As an annual plant, it relies on seed production for reproduction and propagation. The seeds typically germinate when temperatures become warm, allowing the species to establish itself in suitable habitats.

Reference(s):

- Illinois Wildflowers (0). Toothed Spurge.

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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 **Very Low** confidence in this answer based on the available literature.

Answer / Justification:

I could not find any references that estimated seed production.

Reference(s):

- [Anonymous] .

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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 **Very Low** confidence in this answer based on the available literature.

Answer / Justification:

I could not find enough information to support a significant germination rate for Euphorbia dentata.

Reference(s):

- [Anonymous] .

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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 **Very High** confidence in this answer based on the available literature.

Answer / Justification:

It is an annual herbaceous species, meaning it completes its life cycle—including germination, growth, flowering, and seed production—within a single growing season. Since it does not persist beyond one year, it must produce viable seeds within its first year to ensure future generations.

Reference(s):

- Arkansas Native Plant Society (0). Know Your Natives – Toothed Spurge.
- Illinois Wildflowers (0). Toothed Spurge.

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

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

Answer / Justification:

Toothed spurge typically blooms in mid-summer, with the blooming period lasting about one month. This suggests that seed production occurs once per year during this blooming period and does not extend continuously for more than three months.

Reference(s):

- Integrated Pest Management University of Missouri (0). Weed of the Month: Toothed Spurge (Euphorbia dentata).

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 **Low** confidence in this answer based on the available literature.

Answer / Justification:

Toothed spurge primarily disperses its seeds through explosive dehiscence, a mechanism where mature fruiting capsules forcibly eject seeds to nearby areas. This method typically results in seed dispersal over relatively short distances.? There is no evidence to suggest that its seeds are frequently dispersed over long distances by mammals, birds, or domestic animals.

Reference(s):

- Arkansas Native Plant Society (0). Know Your Natives – Toothed Spurge.

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

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

Answer / Justification:

There is no evidence to suggest that E. dentata seeds are adapted for long-distance dispersal by wind or water. Therefore, it is unlikely that the plant's propagules are frequently dispersed over distances greater than 100 meters by these means.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

While specific studies on E. dentata are limited, these general dispersal mechanisms have been documented in related species. For instance, Euphorbia esula (leafy spurge) seeds are known to disperse via vehicles, equipment, and contaminated soil and can spread along roadways and into agricultural and natural areas. Therefore, it is plausible that E. dentata propagules can be dispersed over long distances through similar means, particularly when human activities inadvertently transport seeds attached to equipment, vehicles, or clothing.?

Reference(s):

- Minnesota Department of Agriculture (0). Leafy Spurge.

Total PRE Score

PRE Score: 12 -- Low Potential Risk
Confidence: 67 / 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: Cascade Pacific Resource Conservation & Development
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:

• Troy Abercrombie	April 17, 2025
• Jutta Burger	March 18, 2025
• Nicole Valentine	March 12, 2025

This evaluation has a total of 3 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 # 11131

Date Created: March 18, 2025 - 6:07pm
Date Updated: April 1, 2025 - 10:39am

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q15. 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?

Issue Description

Add at least a little text here describing where you looked for this information. If there are reports of large seed flushes, then there is some circumstantial evidence of >25% germination next season. - JB

Issue Resolution
No resolution has been entered for this issue.

Issue ID # 11130

Date Created: March 18, 2025 - 6:05pm
Date Updated: April 1, 2025 - 10:20am

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q14. Does this plant produce copious viable seeds each year (>1000)?

Issue Description

Write in that you couldn't find any references that estimated seed production. - Also, if you can roughly estimate what the number of seeds could be (e.g., each fruit holds max. 3 seed x estimation of number of fruits are on an average-sized plant). If that estimate is well below 1000, you're pretty safe saying "no" here w/ medium confidence. - JB

Issue Resolution (Screener's Response to Issue)

Changed the answer to "no" instead of leaving it blank.

Issue ID # 11129

Date Created: March 18, 2025 - 6:01pm
Date Updated: April 1, 2025 - 10:16am

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q12. If naturally detached fragments from this plant are capable of producing new plants, is this a common method of reproduction for the plant?

Issue Description

If the answer to #11 is no then the answer to 12 must also be no. You can use the same justification (if it does not reproduce vegetatively, it cannot spread that way). - JB

Issue Resolution (Screener's Response to Issue)

Reworded the answer to #12 and changed the confidence level to "high" based on #11's answer.

Issue ID # 11128

Date Created: March 18, 2025 - 5:55pm
Date Updated: April 1, 2025 - 10:13am

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q04. Is the species (or cultivar or variety) noted as being invasive in the US or world in a similar climate?

Issue Description

You'll want to specify that the locations you mention match, at least partially, the climate of Oregon. - JB

Issue Resolution (Screener's Response to Issue)

Added supplemental information about climate matching based on JB's suggestion.

Issue ID # 11127

Date Created: March 18, 2025 - 5:50pm
Date Updated: April 1, 2025 - 10:49am

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q02. Is the species (or cultivar or variety) noted as being naturalized elsewhere in the US or world in a similar climate?

Issue Description

It would be helpful to add evidence not just of occurrence, but also of naturalization to as part of this

answer. - JB

Issue Resolution (Screener's Response to Issue)

Added supplemental information related to the Climate Matching Map.

Issue ID # 11086

Date Created: March 12, 2025 - 6:48pm
Date Updated: April 1, 2025 - 9:58am

Submitted by: Nicole Valentine

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

Issue Description

Because the answer has "Very low" confidence, the answer defaults to "No." This isn't an automated feature, so you will have to update answer to "No." -NV

Issue Resolution (Screener's Response to Issue)

Changed the answer to "no" since there is insufficient information about the species dispersal.

Issue ID # 11085

Date Created: March 12, 2025 - 6:41pm
Date Updated: April 1, 2025 - 9:55am

Submitted by: Nicole Valentine

Status: Fixed
Type: Suggestion
Severity: Major
Scope: Q07. Does this plant displace native plants and dominate the plant community in areas where it has been established?

Issue Description

If an answer has "Low" confidence or less, the answer defaults to "No." Unfortunately this isn't an automated feature, so you will have to update answer to "No." -NV

Issue Resolution (Screener's Response to Issue)

Changed the answer to "no" due to a lack of available information.

Issue ID # 11084

Date Created: March 12, 2025 - 6:35pm
Date Updated: April 1, 2025 - 10:01am

Submitted by: Nicole Valentine

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

A more specific description of its native range could be useful. -NV

"Euphorbia dentata is native from northern Mexico and the south central United States north and east through the Ohio River Valley" Flora of North America
http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242321404

Issue Resolution (Screener's Response to Issue)

Added specifics to its native range description and the source that NV suggested.

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.

PRE beta funding was provided by Sustainable Conservation (https://www.suscon.org/) and a USDA Farm Bill grant. Additional funding has been provided by the Western Integrated Pest Management Center.