

# *Polanisia dodecandra* var. *dodecandra*

Clammy-weed

Cleomaceae



*Polanisia dodecandra* var. *dodecandra* by Pat Deacon, 2017

## *Polanisia dodecandra* var. *dodecandra* Rare Plant Profile

New Jersey Department of Environmental Protection  
State Parks, Forests & Historic Sites  
Forests & Natural Lands  
Office of Natural Lands Management  
New Jersey Natural Heritage Program

501 E. State St.  
PO Box 420  
Trenton, NJ 08625-0420

Prepared by:  
Jill S. Dodds  
jsdodds@biostarassociates.com

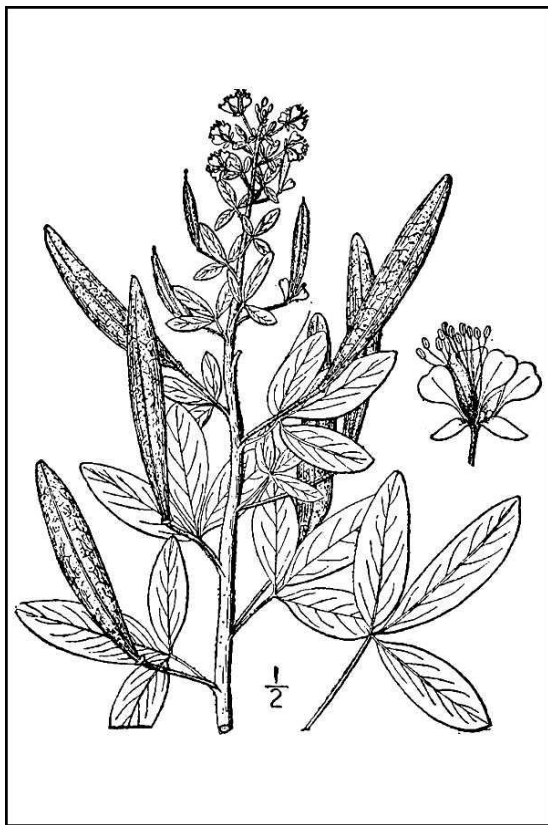
December, 2025

For:  
New Jersey Department of Environmental Protection  
Office of Natural Lands Management  
New Jersey Natural Heritage Program  
natlands@dep.nj.gov

This report should be cited as follows: Dodds, Jill S. 2025. *Polanisia dodecandra* var. *dodecandra* Rare Plant Profile. New Jersey Department of Environmental Protection, State Parks, Forests & Historic Sites, Forests & Natural Lands, Office of Natural Lands Management, New Jersey Natural Heritage Program, Trenton, NJ. 17 pp.

## Life History

*Polanisia dodecandra* var. *dodecandra* is frequently identified as a subspecies rather than a variety (see Synonyms and Taxonomy section). None of the other subtaxa occur in New Jersey, although ssp. *trachysperma* is adventive in some adjacent states (Kartesz 2015). *Polanisia* was traditionally placed in the caper family, and after the Capparaceae was found to be paraphyletic it was briefly merged into the Brassicaceae (APG 1998). Based on studies of chloroplast DNA by Hall et al. (2002) the caper family was reinstated but the spider-flowers were segregated into the newly-established Cleomaceae (APG III 2009). *Polanisia dodecandra* is the only member of the family that appears to be indigenous in New Jersey: Two allochthonous species (*Tarenaya hassleriana* and *Arivela viscosa*) occasionally become established in the state but they seldom persist (Van Clef 2009, Kartesz 2015). There is a commercially available cultivar of *P. dodecandra* var. *dodecandra* (Tucker 2020), so that might also be encountered.



Left: Britton and Brown 1913, courtesy USDA NRCS 2025a. Right: Andy Fyon, 2022.

*Polanisia dodecandra* var. *dodecandra* is an annual herb that seldom exceeds 6 dm in height. The stems may be simple or branched. Sticky, glandular hairs are characteristic of the genus, and those of *P. dodecandra* are noted for their unpleasant odor. The stalked leaves are alternate and palmately divided into three elliptic leaflets. The inflorescence is a terminal raceme that continues to expand in length as the fruits develop. The bilaterally symmetrical flowers of *P. dodecandra* var. *dodecandra* have 4 small (3–6 mm) deciduous purple sepals and 4 white (sometimes pinkish) petals that are typically 5–7 mm long. The petals are narrow at the base and lobed at the outer tips. Each flower has 8–20<sup>+</sup> purple stamens of varying lengths and the longest

ones are roughly equal to or only slightly longer than the petals. The fruits are erect, inflated capsules that are 4–7 cm long and 5–9 mm wide. (See Britton and Brown 1913, Fernald 1950, Iltis 1958, Gleason and Cronquist 1991, Tucker 2020). The other two subspecies of *P. dodecandra* have larger petals (8–14 mm) and their longest stamens may be twice the length of the petals (Tucker 2020). The subtaxa can also be distinguished by the structure of their seed coats, as illustrated by Beth Brehmer (see Iltis 1969).

Although *Polanisia dodecandra* usually has an annual life cycle perennial individuals have occasionally been documented (Iltis 1958, Tucker 2020). *P. dodecandra* var. *dodecandra* blooms and develops fruit during the summer and early fall (Rhoads and Block 2007, Tucker 2020, Weakley et al. 2024). Hough (1983) gave a range of early July to October for New Jersey. During recent years plants in the state have been seen blooming in late July and bearing both flowers and fruit during mid-late August (NJNHP 2024). A Clammy-weed population may flower over a period of about two months, with individual flowers lasting for approximately a week. The plants vary considerably in size and productivity. A single *P. dodecandra* plant can have 1–27 inflorescences, each bearing 1–51 flowers, and the number of fruits can range from 1–103 (Higuera 2018).

*Polanisia dodecandra* has been identified as an andromonoecious species, meaning that some of the flowers on an individual plant have both male and female organs but others are entirely staminate (Higuera-Díaz et al. 2015, Schlessman et al. 2020). Studies of ssp. *trachysperma* and ssp. *riograndensis* suggested that the production of staminate flowers was initiated after some bisexual flowers set fruit (Schlessman et al. 2020, Schlessman and Mezic 2022) but that might not be the case for var. *dodecandra*. Alberta populations of *Polanisia dodecandra* developed staminate flowers early in the season then switched to bisexual flowers later on (Higuera-Díaz et al. 2015, Higuera 2018). No variety or subspecies was noted in the Alberta research but Schlessman et al. (2020) pointed out that the results raised the possibility that var. *dodecandra* exhibits a different pattern of sex expression.

## **Pollinator Dynamics**

The stigma of a bisexual *Polanisia dodecandra* flower becomes receptive about four days before the petals expand but the anthers do not begin to shed pollen until the flowers are open. The stamens with the longest filaments release their pollen first and the shortest are last (Higuera 2018, Schlessman et al. 2020, Zenchyzen 2023). *P. dodecandra* flowers initially unfold their petals at night (Higuera et al. 2015, Higuera 2018). A concave nectary at the base of the stamens secretes a drop of bright orange nectar with an average volume of 2.78  $\mu$ L that persists for about two days (Higuera 2018, Zenchyzen et al. 2023). The nectar drops and veins of the petals in Clammy-weed flowers fluoresce bright blue under ultraviolet light (Zenchyzen 2023). It has been suggested that fluorescent nectar could have role in pollinator attraction but definitive evidence of that is still lacking (Wester and Brühn 2024, Zenchyzen et al. 2024, Magner et al. 2025).

A wide variety of insects are attracted to *Polanisia dodecandra* flowers including bees, wasps, flies, butterflies, moths, and beetles (Higuera et al. 2015, Higuera 2018). Higuera (2018) noted

that bees and wasps were the most frequent visitors one year while flies were prevalent the next. Over 98% of the insects visiting *P. dodecandra* plants observed by Brown (2018) were solitary bees or honey bees. Pollinator visitation rates were significantly higher in large populations of Clammy-weed, while smaller populations benefited from the proximity of other simultaneously-blooming species that were highly attractive to insects. When Partridge Pea (*Chamaecrista fasciculata*) was experimentally employed as a "pollinator magnet" seed set increased in co-occurring *P. dodecandra* plants (Brown 2018, Brown and Gilbert 2020).

*Polanisia dodecandra* is self-compatible so it is not entirely reliant on insects to produce fruit. The species has a mixed mating system and it has often been described as a facultative outcrosser (Wiens 1984, Cruden and Lyon 1985, Higuera et al. 2015, Higuera 2018, Schlessman et al. 2020). Seed set in *P. dodecandra* tends to be high: 87.6% was reported by Wiens (1984). However, outcrossing may result in more vigorous offspring. A study of *P. dodecandra* ssp. *riograndensis* found that fruits of self-fertilized flowers weighed less than those that developed from cross-pollinated blooms (Schlessman and Mezic 2022).

### **Seed Dispersal and Establishment**

When the fruiting capsules of *Polanisia dodecandra* are ripe they split open at the top, allowing the seeds to be shaken out by the wind (Iltis 1958). *Polanisia* seeds are also consumed by a variety of game birds (Smith et al. 2010), which might result in some longer-distance dispersal. Humans appear to have played a significant part in distributing Clammy-weed throughout its range. It has frequently been found growing along transportation routes, particularly in rail corridors (Nieuwland 1915, Hehre 1966, Hough 1983, Anderson 1989, Weakley et al. 2024). According to Hilty (2020), *P. dodecandra* var. *dodecandra* is more common along railroads than anywhere else in Illinois.

*Polanisia dodecandra* has the annual life cycle and large investment in seed production that are characteristic of a ruderal strategy, and such species often form a persistent seed bank (Grime 1977). However, no reports of seed banking in *P. dodecandra* were found. Smith et al. (2010) noted that the species establishes easily from seed. Germination is promoted by a period of cold, moist stratification, and those requirements are met naturally when seeds are sown outside in the fall (Gomez Raboteaux and Anderson 2010, Prairie Moon Nursery 2025). Seedling emergence is probably triggered by the wide daily temperature oscillations that typically occur in the spring (Deno 1993, 1996). Gomez Raboteaux and Anderson (2010) also found that germination of *P. dodecandra* was significantly higher when the seeds were buried.

### **Habitat**

*Polanisia dodecandra* var. *dodecandra* can be found in an assortment of disturbed habitats at elevations ranging from 0–1,100 meters above sea level (Tucker 2020). The species prefers full sun and dry soil (Hilty 2020, Weakley et al. 2024, Prairie Moon Nursery 2025). Hilty noted that the plants can grow in moister, richer conditions but they develop a more sprawling form. The substrate at sites utilized by Clammy-weed is usually sandy or gravelly.

Natural habitats include river banks and gravel bars, lake shores, and dunes but—as previously noted—*P. dodecandra* has an affinity for disturbed sites so it is equally likely to be found on weedy roadsides, along railroads, and in other barren waste areas (Nieuwland 1915, Iltis 1958, Hehre 1966, Kral 1973, Snyder and Vivian 1981, Ramsey et al. 1993, Rhoads and Block 2007, Angelo and Boufford 2011, Hilty 2020, Tucker 2020, NJNHP 2024, Weakley et al. 2024). In a Vermont Lake Shale Beach community, Indian Hemp (*Apocynum cannabinum*) was noted as a typical associated herb (Parren et al. 2021).

### **Wetland Indicator Status**

The U. S. Army Corps of Engineers divided the country into a number of regions for use with the National Wetlands Plant List and portions of New Jersey fall into three different regions (Figure 1). *Polanisia dodecandra* has more than one wetland indicator status within the state. In the Northcentral and Northeast region, it is an upland species, meaning that it almost never occurs in wetlands. In the rest of the state *P. dodecandra* is a facultative upland species, meaning that it usually occurs in nonwetlands but may occur in wetlands (U. S. Army Corps of Engineers 2022).

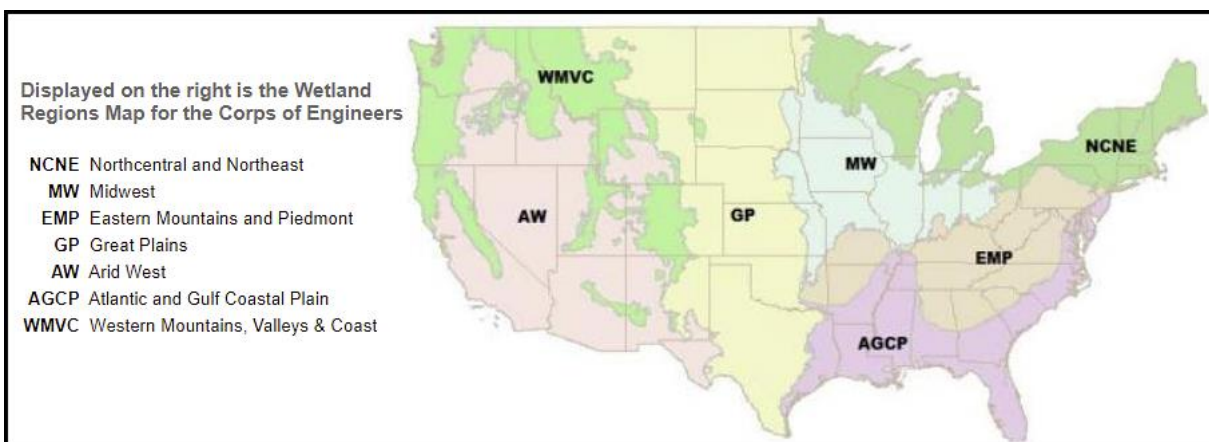


Figure 1. Mainland U. S. wetland regions, adapted from U. S. Army Corps of Engineers (2022).

### **USDA Plants Code (USDA, NRCS 2025b)**

PODOD is the USDA code for *Polanisia dodecandra* ssp. *dodecandra*. The agency does not list a code for *P. dodecandra* var. *dodecandra*.

### **Coefficient of Conservancy (Walz et al. 2020)**

CoC = 3. Criteria for a value of 3 to 5: Native with an intermediate range of ecological tolerances and may typify a stable native community, but may also persist under some anthropogenic disturbance (Faber-Langendoen 2018).

## Distribution and Range

The native range of *Polanisia dodecandra* var. *dodecandra* extends from Canada to Mexico. The species is introduced in Germany and eastern Russia (POWO 2025). The map in Figure 2 depicts the extent of the variety in the United States and Canada.

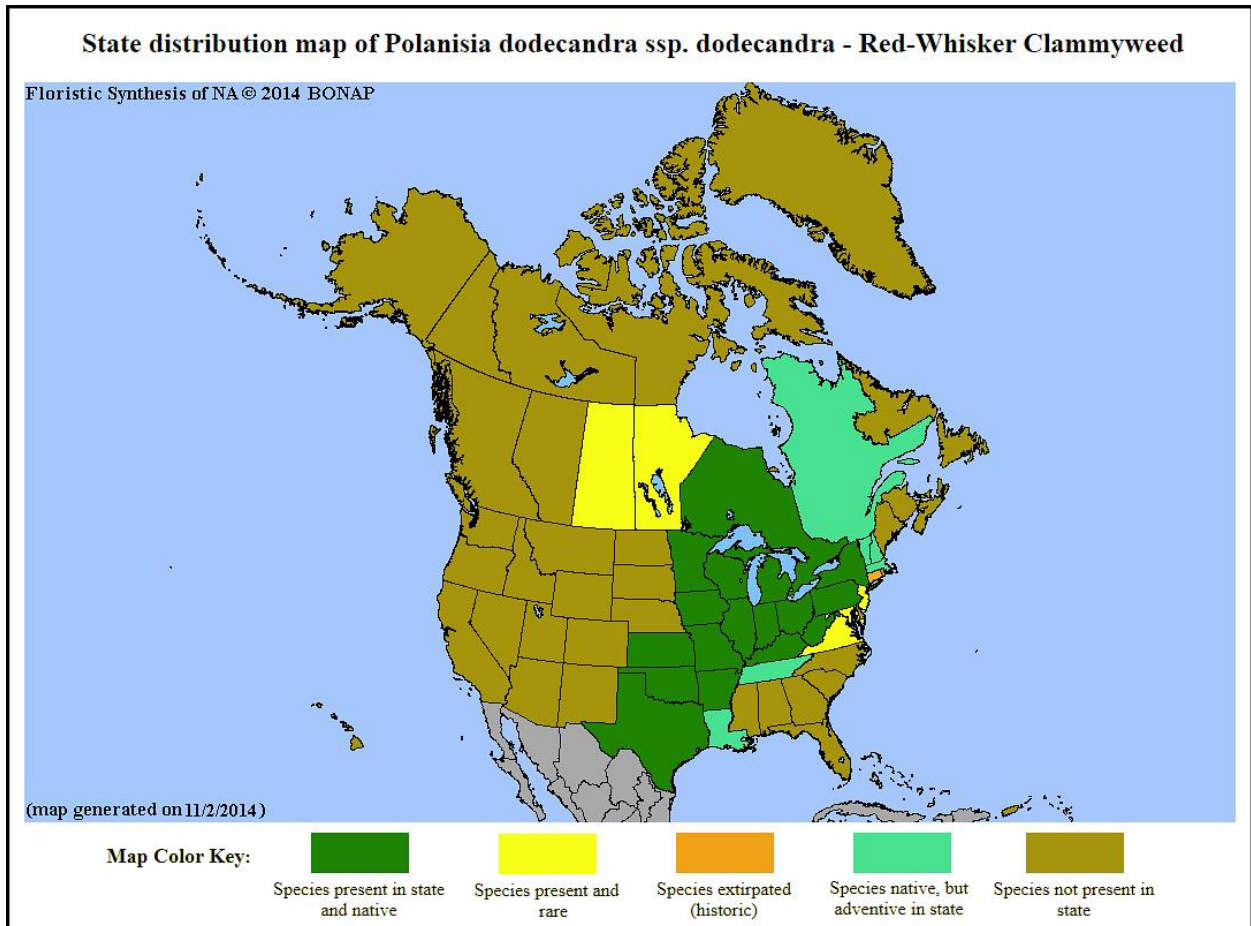


Figure 2. Distribution of *P. dodecandra* var. *dodecandra* in the United States and Canada, adapted from BONAP (Kartesz 2015).

The USDA PLANTS Database (2025b) shows records of *Polanisia dodecandra* var. *dodecandra* in four New Jersey counties: Bergen, Burlington, Mercer, and Monmouth (Figure 3 below). There are also records from Camden and Hudson counties (Mid-Atlantic Herbaria 2025). The data include historic observations and do not reflect the current distribution of the species.

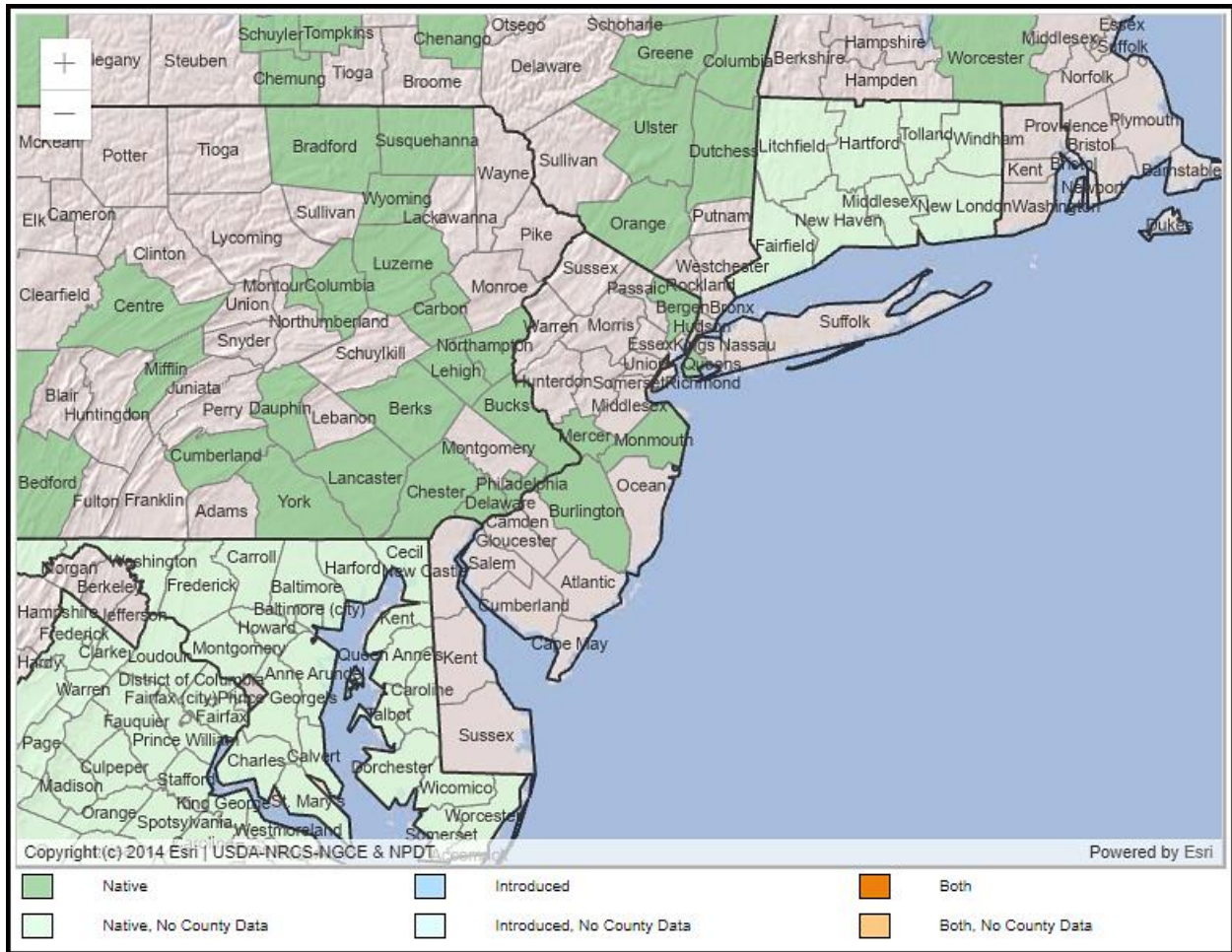


Figure 3. County records of *P. dodecandra* var. *dodecandra* in New Jersey and vicinity (USDA NRCS 2025b).

### Conservation Status

*Polanisia dodecandra* var. *dodecandra* is considered globally secure. The G5T5 rank means the variety has a very low risk of extinction or collapse due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats (NatureServe 2025). The map below (Figure 4) illustrates the conservation status of *P. dodecandra* var. *dodecandra* in the United States and Canada. The variety is unranked in most of the states where it occurs and in five states it is not viewed as a native species. It is listed as imperiled (high risk of extinction) in one state and critically imperiled (very high risk of extinction) in three states and three provinces.

New Jersey is one of the states where *Polanisia dodecandra* var. *dodecandra* is critically imperiled (NJNHP 2024). The S1 rank signifies five or fewer occurrences in the state. A species with an S1 rank is typically either restricted to specialized habitats, geographically limited to a small area of the state, or significantly reduced in number from its previous status.

Clammy-weed has also been assigned a regional status code of HL, signifying that the plant is eligible for protection under the jurisdiction of the Highlands Preservation Area (NJNHP 2010).

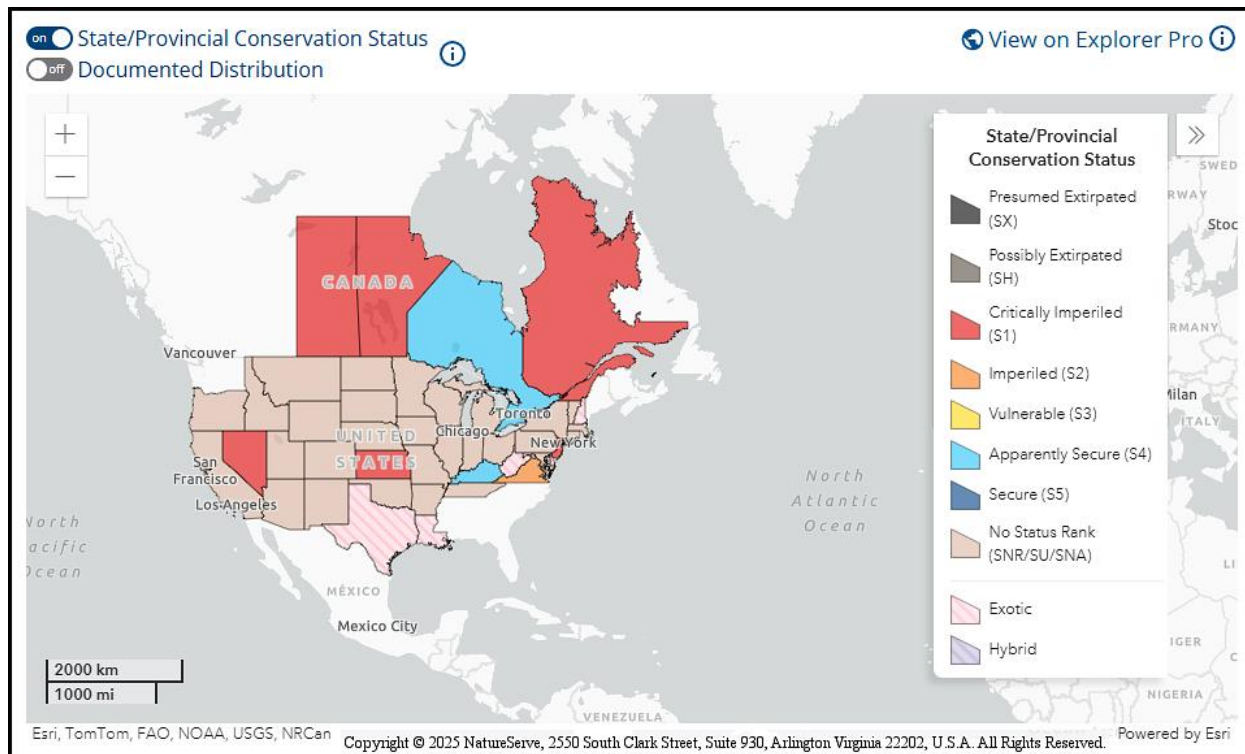


Figure 4. Conservation status of *P. dodecandra* var. *dodecandra* in the United States and Canada (NatureServe 2025).

*Polanisia dodecandra* var. *dodecandra* has always been rare in New Jersey. It was first collected in Camden County during the mid-1800s (Seal 1852) and subsequently found in Monmouth and Bergen counties (Willis 1877, Britton 1889). In the early 1900s Taylor (1915) noted that the species had not recently been collected. During the 1960s Vincent Abraitys discovered a population in Burlington County (Snyder and Vivian 1981), and Hough (1983) indicated that it had also been seen in Mercer County. Anderson (1989) documented *P. dodecandra* in Hudson County in 1988. Abraitys' Burlington County population is the only occurrence tracked by the Natural Heritage Program. The species was abundant there at the start of the current century but experienced a precipitous decline after the site was disturbed. At one point it appeared that the population had been completely eliminated but two plants were found in 2022 (NJNHP 2024).

The presence of *Polanisia dodecandra* in predominantly anthropogenic habitats, along with its rare appearance in New Jersey, has raised some questions as to whether the species occurs naturally in the state (Stone 1911, Snyder and Vivian 1981, Anderson 1989). In Delaware it is considered non-native (McAvoy 2024) but it is accepted as native in other states adjacent to New Jersey, and records from New York City also date back to the 1800s (Atha and Matarazzo 2025). It seems reasonable to continue viewing *P. dodecandra* as an indigenous species that is infrequent on the periphery of its range.

## **Threats**

Because *Polanisia dodecandra* var. *dodecandra* is highly tolerant of disturbance it does not appear to face significant threats anywhere in its range (Johnson 2024). Herbivores are likely to be deterred by the plant's sticky hairs and foul odor (Hilty 2020, Prairie Moon Nursery). Local populations may sometimes be eliminated by habitat destruction, as seen in New Jersey. When Anderson (1989) found the Hudson County population he noted that it was threatened by a proposed development project, and that has since been implemented. Another large occurrence in the state was obliterated during the remediation of a superfund site, but a few plants were found in the vicinity several years later (NJNHP 2024) so there may have been some surviving seeds in the soil.

## **Climate Change Vulnerability**

Information from the references cited in this profile was used to evaluate the vulnerability of New Jersey's *Polanisia dodecandra* var. *dodecandra* populations to climate change. The species was assigned a rank from NatureServe's Climate Change Vulnerability Index using the associated tool (Version 3.02) to estimate its exposure, sensitivity, and adaptive capacity to changing climatic conditions in accordance with the guidelines described by Young et al. (2016) and the state climatic computations by Ring et al. (2013). Based on available data *P. dodecandra* was assessed as Less Vulnerable, meaning that climate change is not expected to have a notable detrimental impact on its extent in New Jersey by 2050.

Some of the effects of changing climatic conditions in New Jersey include higher temperatures, shifting precipitation patterns that increase the frequency and intensity of both droughts and floods, and rising sea levels along the coast (Hill et al. 2020). *Polanisia dodecandra* is not currently known to occur at any locations in the state that are likely to be affected by sea level rise in the near future. The species is able to grow in all of the plant hardiness zones on the continental United States (USDA Plant Hardiness Zone Maps 2023, Prairie Moon Nursery 2025) and it is known to be highly drought-tolerant (Hilty 2020).

## **Management Summary and Recommendations**

Ruderal species like *Polanisia dodecandra* typically require little in the way of active management because they can readily colonize new locations as old sites become unsuitable. Since *P. dodecandra* often utilizes relatively ephemeral habitats it does not make sense to invest a lot of effort into tracking down sites where it was historically documented. The species has made periodic appearances in New Jersey over the years and greater public awareness might result in more documented observations. As Anderson (1989) remarked, botanists often overlook disturbed environments such as those utilized by Clammy-weed.

A better understanding of the species' long-distance dispersal mechanisms (other than those attributable to humans) and seed-banking capacity would be valuable. Another worthwhile

research objective would be identification of the factors that determine whether the flowers produced by a *P. dodecandra* var. *dodecandra* plant will be staminate or bisexual.

### **Synonyms and Taxonomy**

The New Jersey accepted botanical name of the species is *Polanisia dodecandra* L. DC var. *dodecandra*. Most current sources treat it as a subspecies (Kartesz 2015, Tucker 2020, Weakley et al. 2024, ITIS 2025, NatureServe 2025, POWO 2025, USDA NRCS 2025b). POWO (2025) identifies the species as *Cleome dodecandra* L. and does not recognize subtaxa. The application of Linnaeus' name to the North American *P. dodecandra* has been a matter of some controversy over the years (e.g. Britton 1893, Iltis 1954 & 1966, Ernst 1963) and recent genetic analyses concluded that *Polanisia* was distinct from *Cleome* and that the latter genus was polyphyletic (Patchell et al. 2014). Some orthographic variants, synonyms, and common names are listed below.

#### **Botanical Synonyms**

*Polanisia dodecandra* (L.) DC. ssp. *dodecandra*  
*Polanisia graveolens* Raf.  
*Cleome dodecandra* L.  
*Cleome epilobioides* Jan ex Schult. & Schult.  
*Cleome graveolens* Raf.  
*Cleome lusitanica* Mill.  
*Gynandropsis viscosa* Walp.  
*Jacksonia dodecandra* (L.) MacMill.  
*Jacksonia trifoliata* Raf.  
*Lagansa alba* Raf.  
*Micambe violacea* Medik.  
*Sinapistrum decandrum* Moench  
*Sinapistrum violaceum* Moench

#### **Common Names**

Clammy-weed  
Redwhisker Clammyweed

### **References**

- Anderson, Karl. 1989. Plants of Liberty State Park, New Jersey. *Bartonia* 55: 47–52.
- Angelo, Ray and David E. Boufford. 2011. Atlas of the flora of New England: Salicaceae to Brassicaceae. *Phytoneuron* 12: 1–16.
- APG (Angiosperm Phylogeny Group). 1998. An ordinal classification for the families of flowering plants. *Annals of the Missouri Botanical Garden* 85: 531–553.
- APG (Angiosperm Phylogeny Group) III. 2009. An update of the angiosperm phylogeny group classification for the orders and families of flowering plants: APG III. *Botanical Journal of the Linnean Society* 161: 105–121.

Atha, Daniel and Raymond Matarazzo. 2025. The native vascular plant flora of New York City. *Journal of the Torrey Botanical Society* 152(2): 250–299.

Britton, N. L. 1889. Catalogue of plants found in New Jersey. Geological Survey of New Jersey, Final Report of the State Geologist 2: 27–642.

Britton, N. L. 1893. New or noteworthy North American phanerogams - VII. *Bulletin of the Torrey Botanical Club* 20(7): 277–282.

Britton, N. L. and A. Brown. 1913. *An Illustrated Flora of the Northern United States and Canada in three volumes: Volume II (Amaranth to Polypremum)*. Second Edition. Reissued (unabridged and unaltered) in 1970 by Dover Publications, New York, NY. 735 pp.

Brown, Kaitlyn Sarah. 2018. *The Role of Trophic Interactions in Shaping Species Persistence and Coexistence Outcomes*. Master's Thesis, University of Toronto, Ontario. 71 pp.

Brown, Kaitlyn S. and Benjamin Gilbert. 2020. Population- and community-level rarity have opposing effects on pollinator visitation and seed set. *Journal of Ecology* 108: 1835–1844.

Cruden, Robert William and David L. Lyon. 1985. Patterns of biomass allocation to male and female functions in plants with different mating systems. *Oecologia* 66(2): 299–306.

Deacon, Pat. 2017. Cover photo of *Polanisia dodecandra ssp. dodecandra* from Ontario. Shared via iNaturalist at <https://www.inaturalist.org/observations/7038202>, licensed by <https://creativecommons.org/licenses/by-nc/4.0/>

Deno, Norman C. 1993. *Seed Germination Theory and Practice*. Second Edition. Pennsylvania State University, State College, PA. 242 pp.

Deno, Norman C. 1996. *First Supplement to the Second Edition of Seed Germination Theory and Practice*. Self-published and distributed by the author, State College, PA. 107 pp.

Ernst, Wallace R. 1963. The genera of Capparaceae and Moringaceae in the southeastern United States. *Journal of the Arnold Arboretum* 44(1): 81–95.

Faber-Langendoen, D. 2018. *Northeast Regional Floristic Quality Assessment Tools for Wetland Assessments*. NatureServe, Arlington, VA. 52 pp.

Fernald, M. L. 1950. *Gray's Manual of Botany*. Dioscorides Press, Portland, OR. 1632 pp.

Fyon, Andy. 2022. Photo of *Polanisia dodecandra ssp. dodecandra* from Ontario. Shared via iNaturalist at <https://www.inaturalist.org/observations/143721063>, licensed by <https://creativecommons.org/licenses/by-nc/4.0/>

Gleason, H. A. and A. Cronquist. 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. Second Edition. The New York Botanical Garden, Bronx, NY. 910 pp.

Gomez Raboteaux, Nadilia N. and Neil O. Anderson. 2010. Germination of *Cleome hassleriana* and *Polanisia dodecandra* seed lots in response to light, temperature and stratification. Research Journal of Seed Science 3(1): 1–17.

Grime, J. P. 1977. Evidence for the existence of three primary strategies in plants and its relevance to ecological and evolutionary theory. The American Naturalist 111(982): 1169–1194.

Hall, Jocelyn C., Kenneth J. Sytsma, and Hugh H. Iltis. 2002. Phylogeny of Capparaceae and Brassicaceae based on chloroplast sequence data. American Journal of Botany 89: 1826–1842.

Hehre, Edward J. 1966. *Polanisia dodecandra* in New Hampshire. Rhodora 68: 48.

Higuera, Monica Paola. 2018. Pollination Biology and Transcriptomics of Cleomaceae Species Exhibiting Different Pollination Systems. Doctoral Dissertation, University of Alberta, Edmonton, AB. 279 pp.

Higuera-Díaz, Mónica, Jessamyn S. Manson, and Jocelyn C. Hall. 2015. Pollination biology of *Cleomella serrulata* and *Polanisia dodecandra* in a protected natural prairie in southern Alberta, Canada. Botany 93(11): 745–757.

Hill, Rebecca, Megan M. Rutkowski, Lori A. Lester, Heather Genievich, and Nicholas A. Procopio (eds.). 2020. New Jersey Scientific Report on Climate Change, Version 1.0. New Jersey Department of Environmental Protection, Trenton, NJ. 184 pp.

Hilty, John. 2020. *Polanisia dodecandra dodecandra*. Illinois Wildflowers. Accessed December 9, 2025 at <https://www.illinoiswildflowers.info/weeds/plants/clammyweed.htm>

Hough, Mary Y. 1983. New Jersey Wild Plants. Harmony Press, Harmony, NJ. 414 pp.

Iltis, Hugh H. 1954. Studies in the Capparidaceae I. *Polanisia dodecandra* (L.) DC., the correct name for *Polanisia graveolens* Rafinesque. Rhodora 56(664): 65–70.

Iltis, Hugh H. 1958. Studies in the Capparidaceae IV. *Polanisia* Raf. Brittonia 10(2): 33–58.

Iltis, Hugh H. 1966. Studies in the Capparidaceae VIII. *Polanisia dodecandra* (L.) DC. Rhodora 68(773): 41–47.

Iltis, Hugh H. 1969. Studies in the Capparidaceae XII: *Polanisia dodecandra riograndensis* ssp. nov. The Southwestern Naturalist 14(1): 115–121.

ITIS (Integrated Taxonomic Information System). Accessed February 6, 2025 at <http://www.itis.gov>

- Johnson, J. 2024. *Polanisia dodecandra* ssp. *dodecandra* conservation status factors. NatureServe, Arlington, VA. Accessed December 5, 2025 at [https://explorer.natureserve.org/Taxon/ELEMENT\\_GLOBAL.2.146745/Polanisia\\_dodecandra\\_ssp\\_dodecandra](https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.146745/Polanisia_dodecandra_ssp_dodecandra)
- Kartesz, J. T. 2015. The Biota of North America Program (BONAP). Taxonomic Data Center. (<http://www.bonap.net/tdc>). Chapel Hill, NC. [Maps generated from Kartesz, J. T. 2015. Floristic Synthesis of North America, Version 1.0. Biota of North America Program (BONAP) (in press)].
- Kral, Robert. 1973. Some notes on the flora of the southern states, particularly Alabama and middle Tennessee. *Rhodora* 75(803): 366–410.
- Magner, Evin T., Rahul Roy, Adrian D. Hegeman, and Clay J. Carter. 2025. In the nectar, there are answers: Exploring the intersection of colored nectars and reactive oxygen species in manipulating pollinator behavior. *New Phytologist* 246: 901–910.
- McAvoy, William A. 2024. Non-native Plants of Delaware. Delaware Department of Natural Resources and Environmental Control, Division of Fish and Wildlife, Smyrna, DE. 30 pp.
- Mid-Atlantic Herbaria. 2025. Accessed at <https://midatlanticherbaria.org/portal/index.php> on December 5, 2025.
- NatureServe. 2025. NatureServe Explorer [web application]. NatureServe, Arlington, VA. Accessed December 5, 2025 at <https://explorer.natureserve.org/>
- Nieuwland, J. A. 1915. Notes on our local plants. XI. *The American Midland Naturalist* 4(3): 53–71.
- NJNHP (New Jersey Natural Heritage Program). 2010. Explanation of Codes Used in Natural Heritage Reports. Updated March 2010. Available at [https://nj.gov/dep/parksandforests/natural/docs/nhpcodes\\_2010.pdf](https://nj.gov/dep/parksandforests/natural/docs/nhpcodes_2010.pdf)
- NJNHP (New Jersey Natural Heritage Program). 2024. Biotics 5 Database. NatureServe, Arlington, VA. Accessed March 15, 2024.
- Parren, Steven G., Molly K. Parren, and Katherina D. Gieder. 2021. Nest counts and hatchling emergence timing for the Spiny Softshell (*Apalone spinifera*) and associated turtle species at managed sites in Vermont, USA. *Herpetological Conservation and Biology* 16(1): 194–202.
- Patchell, Melanie J., Eric H. Roalson, and Jocelyn C. Hall. 2014. Resolved phylogeny of Cleomaceae based on all three genomes. *Taxon* 63(2): 315–328.
- POWO. 2025. Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Accessed December 5, 2025 at <http://www.plantsoftheworldonline.org/>

Prairie Moon Nursery. 2025. *Polanisia dodecandra*. Seed germination and growing tips accessed December 9, 2025 at <https://www.prairiemoon.com/polanisia-dodecandra-clammy-weed>

Ramsey, Gwynn W., Charles H. Leys, Robert A. S. Wright, Douglas A. Coleman, Aubrey O. Neas, and Charles E. Stevens. 1993. Vascular flora of the James River Gorge watersheds in the central Blue Ridge Mountains of Virginia. *Castanea* 58(4): 260–300.

Rhoads, Ann Fowler and Timothy A. Block. 2007. *The Plants of Pennsylvania*. University of Pennsylvania Press, Philadelphia, PA. 1042 pp.

Ring, Richard M., Elizabeth A. Spencer, and Kathleen Strakosch Walz. 2013. Vulnerability of 70 Plant Species of Greatest Conservation Need to Climate Change in New Jersey. New York Natural Heritage Program, Albany, NY and New Jersey Natural Heritage Program, Department of Environmental Protection, Office of Natural Lands Management, Trenton, NJ, for NatureServe #DDCF-0F-001a, Arlington, VA. 38 pp.

Schlessman, Mark A. and Matea Mezic. 2022. Fruit set, mating, and andromonoecy in *Polanisia dodecandra* subsp. *riograndensis* (Cleomaceae). *Southwestern Naturalist* 67(1): 52–58.

Schlessman, Mark, Kevin Lee, Carrie Perkins, and Margaret Harrington. 2020. Effects of fruit set, mineral nutrition, mating, and herbivory on male flower production in andromonoecious *Polanisia dodecandra* subsp. *trachysperma* (Cleomaceae). *The Journal of the Torrey Botanical Society* 147(4): 338–350.

Seal, Thomas F. 1852. Biodiversity occurrence data published by the Academy of Natural Sciences of Drexel University. Accessed through Mid-Atlantic Herbarium Consortium at <https://midatlanticherbaria.org/portal/index.php> on December 5, 2025.

Smith, Forrest S., Paula D. Maywald, John Lloyd-Reilley, Shelly D. Maher, Keith A. Pawelek, Andrew W. Scott Jr., and Juan Garza. 2010. Notice of release of Zapata Germplasm Rio Grande Clammyweed: Selected class of natural germplasm. *Native Plants Journal* 11(3): 269–272.

Snyder, David B. and V. Eugene Vivian. 1981. *Rare and Endangered Vascular Plant Species in New Jersey*. U. S. Fish and Wildlife Service, Washington, D.C. 98 pp.

Stone, Witmer. 1911. *The Plants of Southern New Jersey*. Quarterman Publications, Boston, MA. 828 pp.

Taylor, Norman. 1915. Flora of the vicinity of New York - A contribution to plant geography. *Memoirs of the New York Botanical Garden* 5: 1–683.

Tucker, Gordon C. Page updated November 5, 2020. *Polanisia dodecandra* subsp. *dodecandra*. In: *Flora of North America* Editorial Committee, eds. 1993+. *Flora of North America North of*

Mexico [Online]. 22+ vols. New York and Oxford. Accessed December 5, 2025 at [https://floranorthamerica.org/Polanisia\\_dodecandra\\_subsp.\\_dodecandra](https://floranorthamerica.org/Polanisia_dodecandra_subsp._dodecandra)

U. S. Army Corps of Engineers. 2022. National Wetland Plant List, version 3.6. <https://nwpl.sec.usace.army.mil/> U. S. Army Corps of Engineers Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH.

USDA, NRCS (U. S. Dept. of Agriculture, Natural Resources Conservation Service). 2025a. *Polanisia dodecandra* illustration from Britton, N. L. and A. Brown, 1913, An illustrated flora of the northern United States, Canada and the British Possessions, 3 vols., Kentucky Native Plant Society, New York, Scanned By Omnitek Inc. Image courtesy of The PLANTS Database (<http://plants.usda.gov>). National Plant Data Team, Greensboro, NC.

USDA, NRCS (U. S. Dept. of Agriculture, Natural Resources Conservation Service). 2025b. PLANTS profile for *Polanisia dodecandra* ssp. *dodecandra* (Redwhisker Clammyweed). The PLANTS Database, National Plant Data Team, Greensboro, NC. Accessed December 5, 2025 at <http://plants.usda.gov>

USDA Plant Hardiness Zone Maps, 2023. Agricultural Research Service, U. S. Department of Agriculture. Retrieved on August 19, 2025 at <https://planthardiness.ars.usda.gov/>

Van Clef, Michael. 2009. New Jersey Strategic Management Plan for Invasive Species: The Recommendations of the New Jersey Invasive Species Council to Governor Jon S. Corzine, Pursuant to New Jersey Executive Order #97. 220 pp. Appendix II, Prioritized Listing of New Jersey's Nonindigenous Plant Species, prepared by David Snyder.

Walz, Kathleen S., Jason L. Hafstad, Linda Kelly, and Karl Anderson. 2020. Floristic Quality Assessment Index for Vascular Plants of New Jersey: Coefficient of Conservancy (CoC) Values for Species and Genera (update to 2017 list). New Jersey Department of Environmental Protection, New Jersey Forest Service, Office of Natural Lands Management, Trenton, NJ.

Weakley, A. S. and Southeastern Flora Team. 2024. Flora of the Southeastern United States. Edition of March 4, 2024. University of North Carolina Herbarium, North Carolina Botanical Garden, Chapel Hill, NC. 2203 pp.

Wester, Petra and Patricia Brühn. 2024. Fluorescent nectar in non-flying mammal-pollinated plants – observations and considerations in some Asparagaceae. *Plant Ecology and Evolution* 157(3): 327–335.

Wiens, Delbert. 1984. Ovule survivorship, brood size, life history, breeding systems, and reproductive success in plants. *Oecologia* 64(1): 47–53.

Willis, Oliver R. 1877. Flora of New Jersey. Revised Edition. A. S. Barnes and Company, New York, NY. 88 pp.

Young, Bruce E., Elizabeth Byers, Geoff Hammerson, Anne Frances, Leah Oliver, and Amanda Treher. 2016. Guidelines for Using the NatureServe Climate Change Vulnerability Index, Release 3.02, 1 June 2016. NatureServe, Arlington, VA. 65 pp.

Zenchyzen, Brandi. 2023. Elucidating the Basis of Poorly Understood Floral Traits Associated With Pollination Biology. Doctoral Dissertation, University of Alberta, Edmonton, AB. 153 pp.

Zenchyzen, Brandi, Stacie Weissner, Jaymie Martin, Ainsley Lopushinsky, Ida John, Ishnoor Nahal, and Jocelyn C. Hall. 2023. Comparative nectary morphology across Cleomaceae (Brassicales). *Plants* 12: 1263.

Zenchyzen, Brandi, John H. Acorn, Kian Merkosky, and Jocelyn C. Hall. 2024. Shining a light on UV-fluorescent floral nectar after 50 years. *Scientific Reports* 14: 11992.