

# *Cornus canadensis*

**Bunchberry**

**Cornaceae**



*Cornus canadensis* by J. S. Dodds, 2023

## ***Cornus canadensis* 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

July, 2025

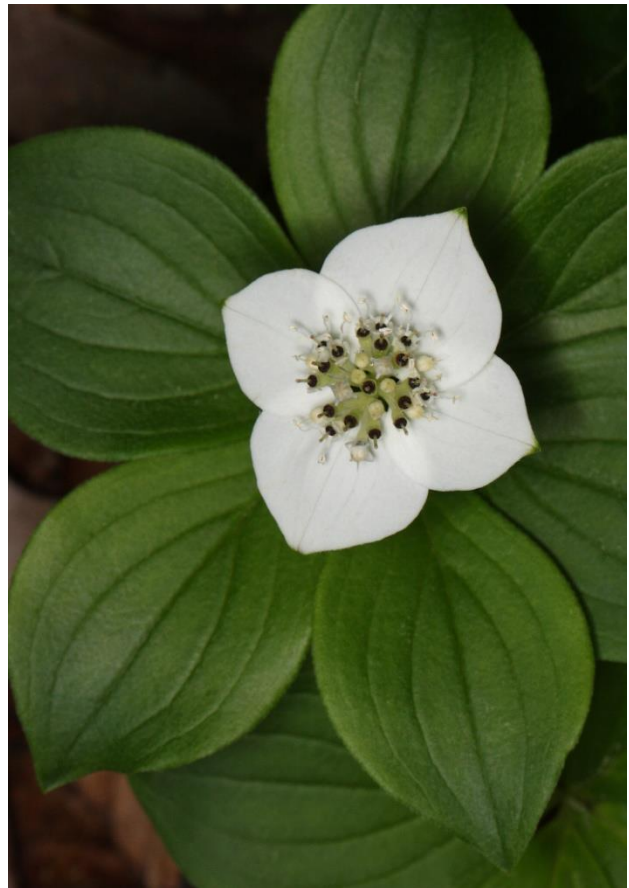
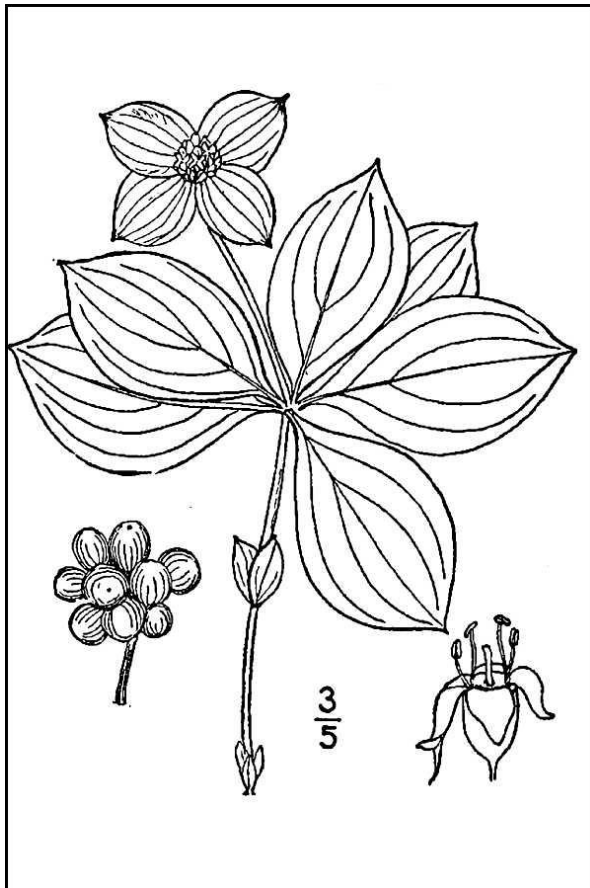
For:  
New Jersey Department of Environmental Protection  
Office of Natural Lands Management  
New Jersey Natural Heritage Program  
natlands@dep.nj.gov

This report should be cited as follows: Dodds, Jill S. 2025. *Cornus canadensis* 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. 20 pp.

*Spoiler Alert: This species currently holds the record for the fastest movement known in a plant.*

### **Life History**

*Cornus canadensis* (Bunchberry) plants have woody, rhizomatous bases but the stems are herbaceous. All other members of the dogwood family that occur in New Jersey are shrubs or small trees. *C. canadensis* is a long-lived species that can form large clonal patches via thin (0.5 mm diameter), horizontal, branching rhizomes which may elongate by as much as 30 cm in a single year (Bain 1977, Hall and Sibley 1976, Flinn and Pringle 1983, Del Tredici 1985). An illustration of its forking rhizomatous growth was provided by Feng et al. (2009). The aboveground shoots are erect and 5–25 cm tall with a whorl of 4–6 short-petioled green leaves at the top. Lau (2009) found that the thickness of *C. canadensis* leaves can vary according to habitat conditions. One or more pairs of smaller, achlorophyllous leaves are present lower on the stem. The most noticeable components of the inflorescence are the four subtending bracts, which are 5–15 mm long and equally wide. The bracts are usually white, although their pointed outer tips may be green or red. The actual flowers, which occur in clusters of 12–40, are tiny and have four reflexed, cream-colored petals. The berrylike fruits of *C. canadensis* are 6–9 mm in diameter and turn bright red at maturity. As the common name suggests, they usually occur in clusters of 5–15. (See Britton and Brown 1913, Fernald 1950, Hall and Sibley 1976, Gleason and Cronquist 1991, Murrell and Poindexter 2020).



Left: Britton and Brown 1913, courtesy USDA NRCS 2025a. Right: J. S. Dodds, 2016.

*Cornus canadensis* can flower from May through July. The fruits usually ripen during July and August but they can remain on the plants throughout the fall (Hall and Sibley 1976, Hough 1983, Rhoads and Block 2007, Murrell and Poindexter 2020, Weakley et al. 2024). The most recently noted flowering dates in New Jersey were recorded during late May or early June (NJNHP 2024, pers. obs.). Knowlton (1915) saw the species in both flower and fruit during the last week of July in Maine. In the fall, Bunchberry leaves can display various shades of red and purple (Leopold 2005). However, *C. canadensis* plants are tolerant of low temperatures so photosynthetic activity continues—albeit at lower rates—from the first frost until snow cover. The leaves often emerge intact following snowmelt and typically senesce after the spring frosts, when they are replaced by new growth (Landhäuser et al. 1997).

*Cornus canadensis* has a long history of human usage. In western Canada the berries were eaten fresh with sugar and fish oil or made into jam (Kuhnlein 1989). Various parts of the plants were also used medicinally to treat sores, fevers, or pain. Recent investigations have confirmed that some compounds extracted from *C. canadensis* have moderate antibacterial or antiviral properties (Hassan et al. 2014, Lavoie et al. 2017).

### **Pollinator Dynamics**

A study in eastern Canada found that the flowering period of *Cornus canadensis* lasted for 18–26 days, with individual flowers having a life span of 8–10 days (Helenurm and Barrett 1987). The species is self-incompatible so cross-fertilization is required for the production of viable fruit (Bain 1977, Hall and Sibley 1976, Barrett and Helenurm 1987, Wheelwright et al. 2006). *C. canadensis* flowers are visited by a wide array of bees, wasps, ants, sawflies, flies, butterflies, and beetles (Edwards et al. 2015, Hilty 2020). Bumblebees, solitary bees, bee flies, and syrphid flies are probably the most effective pollinators (Hall and Sibley 1976, Thompson et al. 1985, Barrett and Helenurm 1987).

Bain (1977) observed that the floral buds of *Cornus canadensis* were tipped with awn-like projections, and that contact with a projection caused the associated bud to spring open while the anthers simultaneously dehisced, releasing a cloud of pollen. Subsequent studies have shown that the anthers actually dehisce while still in bud but their position assures that pollen is held in place by a neighboring anther until the triggering mechanism is activated. The filaments are initially bent at right angles and turgor pressure causes them to straighten rapidly as the buds fly open. The entire process takes place in a fraction of a second, and it is the speediest movement recorded in a plant species to date (see stamen illustrations in Whitaker et al. 2007 and video clip from Acosta et al. 2017).

Large, fast-moving insects are required to set the process in motion and the visitors are showered with pollen as the flowers open. The initial force of the burst is sufficient to propel the pollen high into the air, which is thought to facilitate the use of wind as a secondary pollination mechanism (Edwards et al. 2005, Whitaker et al. 2007, Mitchell et al. 2022).

## **Seed Dispersal and Establishment**

*Cornus canadensis* seeds are dispersed by animals (Helenurm and Barrett 1987). The berrylike fruits are consumed by birds and mammals that subsequently excrete the seeds. The low-quality fruits are removed slowly over a fairly long period of time, and both migrant and resident birds are known to make use of them (Hall and Sibley 1976, Stiles 1980, Burger 1987, Suring et al. 2008). *Cornus* fruits are widely utilized by bears, raccoons, martens, and skunks (Willson 1993). Burger (1987) noted the consumption of *C. canadensis* fruits by hares and squirrels. The seeds of *C. canadensis* are smaller than those of other *Cornus* species and Stiles (1980) suggested that could exemplify an evolutionary adaptation to promote dispersal by mice.

*Cornus canadensis* seeds can remain viable for several years (Gould and Smreciu 2013). The propagules are dormant at the time of dispersal and require some exposure to low temperatures before they can germinate (Nichols 1934). Baskin and Baskin (2002) indicated that 71–112 days of cold moist stratification was sufficient but other sources recommend a short period (1–2 months) of warm stratification followed by a longer period (4–5 months) of cold stratification (Hall and Sibley 1976, Flessner and Trindle 2003, Leopold 2005). *C. canadensis* seeds germinate better at the surface than beneath it (Tappeiner and Alaback 1989). Once the seeds have sprouted the young plants develop quickly. The first true leaves appear within 15–20 days and extensive rhizome growth and shoot bud development takes place during the first season (Del Tredici 1985, Luna et al. 2008). *C. canadensis* appears to be facultatively mycorrhizal: Slightly less than half of the Bunchberry plants examined by Malloch and Malloch (1981) had ectomycorrhizae but the rest were lacking.

## **Habitat**

*Cornus canadensis* can grow at elevations ranging from 0–3,400 meters above sea level (Murrell and Poindexter 2020). It is usually associated with cool northern forests that have moist or dry acidic substrates. The canopy may be dominated by evergreen or deciduous trees or a mixture of both (Harshberger 1905, Fables 1956, Flinn and Pringle 1983, Hough 1983, Leopold 2005, Rhoads and Block 2007, Lau 2009). Typical canopy components include coniferous trees such as *Abies*, *Picea*, *Pinus*, or *Tsuga* species and deciduous *Betula* or *Populus* species (Knowlton 1915, Blais 1958, Stevens 1968, Brown 1967, Smith 1974, Stocker et al. 1977, Tappeiner and Alaback 1989, Zodaleski and Maycock 1990, Breden et al. 2001, Strong and Redburn 2009, Gould and Smreciu 2013, Weakley et al. 2024). *C. canadensis* is often one of the most prominent members of the herb layer in such settings, frequently sharing the habitat with *Anemone quinquefolia*, *Aralia nudicaulis*, *Clintonia borealis*, *Coptis trifolia*, *Gaultheria hispidula*, *Linnaea borealis*, *Maianthemum canadense*, *Medeola virginiana*, *Mitchella repens*, *Oclemena acuminata*, *Streptopus lanceolatus*, and assorted ferns (Smith 1974, Stocker et al. 1977, Zodaleski and Maycock 1990, Breden et al. 2001). In the northeastern United States, Bunchberry has sometimes been found in alpine environments (Harshberger 1905, Berend et al. 2022).

*Cornus canadensis* can thrive in a broad range of light conditions from deep shade to sun so it may be found in stands of any successional stage (Moola and Vasseur 2004, Leopold 2005,

Boisvert et al. 2021, Weakley et al. 2024). The species tends to produce long, meandering rhizomes in shady sites but it forms more compact clones when growing out in the open (Tappeiner and Alaback 1989). *C. canadensis* is a strong competitor in open habitats and may spread rapidly in areas where the overstory has been thinned or removed (Penhallow 1909, Smith 1974, Hall and Sibley 1976, Yarborough and Bhowmik 1993, Strong and Redburn 2009, Chávez and MacDonald 2010). Sexual reproduction is also stimulated by an increase in available light (Martin 2001). The species appears to achieve its greatest density in stands of moderate age with about 50% canopy cover (Moola and Vasseur 2004, Suring et al. 2008). Anthropogenic sites where Bunchberry has been recorded include parks, campgrounds, former homesteads, pastures, old fields, and roadbanks (Knowlton 1915, Scotter 1965, Hall and Sibley 1976, Murrell and Poindexter 2020).

**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). *Cornus canadensis* has more than one wetland indicator status within the state. In the Atlantic and Gulf Coastal Plain region it is a facultative upland species, meaning that it usually occurs in nonwetlands but may occur in wetlands. In other parts of the state it is facultative, meaning that it occurs in both wetlands and nonwetlands (U. S. Army Corps of Engineers 2022).

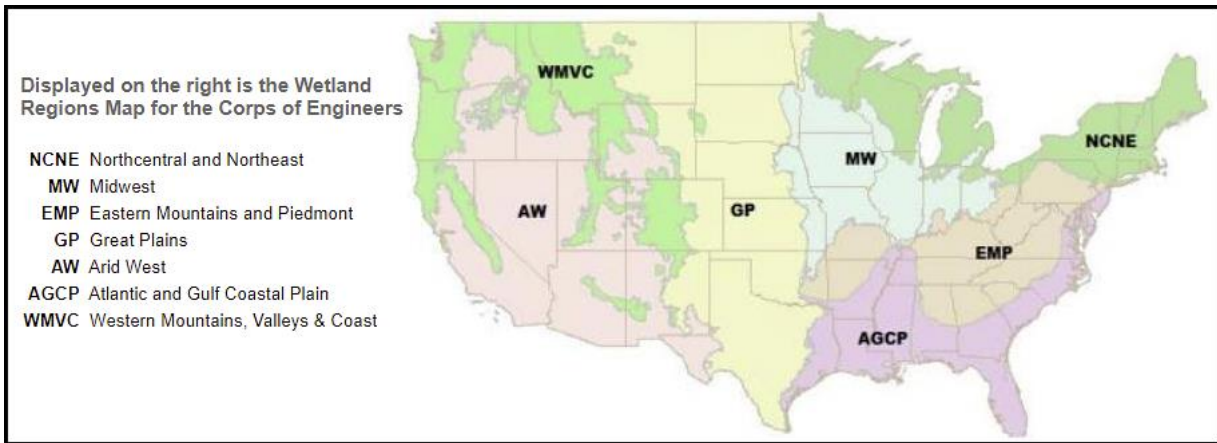


Figure 1. Mainland U. S. wetland regions, adapted from U. S. Army Corps of Engineers (2022).

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

COCA13

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

CoC = 10. Criteria for a value of 9 to 10: Native with a narrow range of ecological tolerances, high fidelity to particular habitat conditions, and sensitive to anthropogenic disturbance (Faber-Langendoen 2018).

## Distribution and Range

The native range of *Cornus canadensis* extends throughout much of North American and parts of eastern Asia. It is introduced in Germany and Great Britain (POWO 2025). The map in Figure 2 depicts the distribution of the species in North America. Wherry (1934) suggested that warmer soil temperatures prevented *C. canadensis* from becoming established farther south.

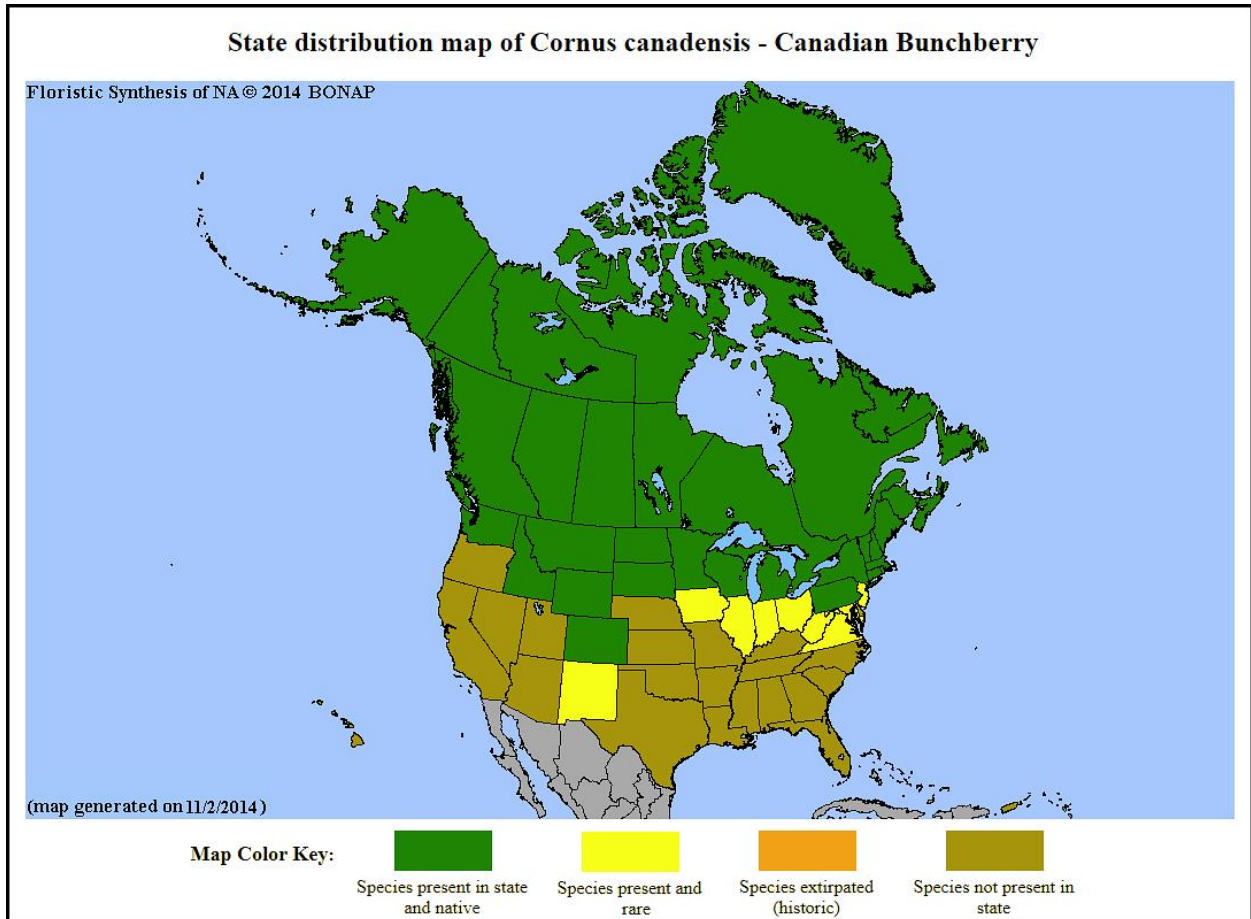


Figure 2. Distribution of *C. canadensis* in North America, adapted from BONAP (Kartesz 2015).

The USDA PLANTS Database (2025b) shows records of *Cornus canadensis* in seven New Jersey counties: Bergen, Hudson, Mercer, Morris, Passaic, Sussex, and Warren (Figure 3 below). The data include historic observations do not reflect the current distribution of the species.



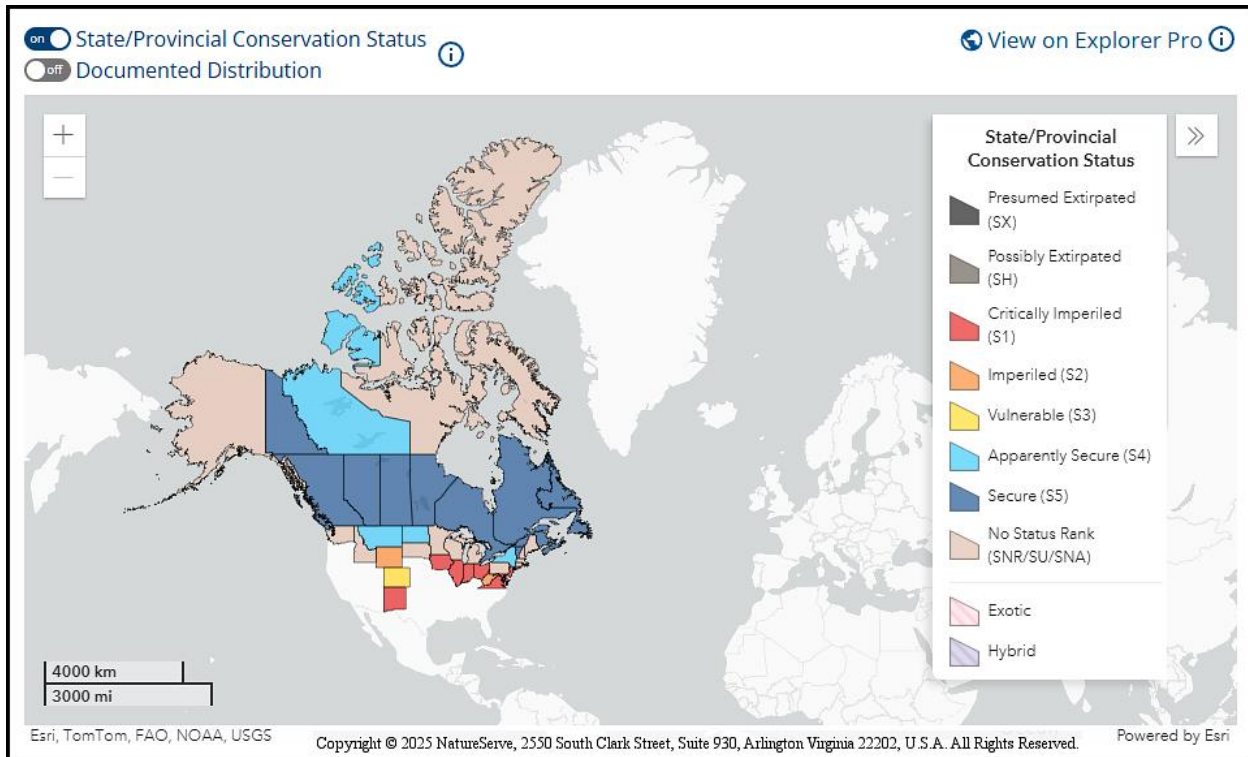


Figure 4. Conservation status of *C. canadensis* in the United States and Canada (NatureServe 2025).

Willis (1874) noted that *Cornus canadensis* had been observed in Camden County but that report was never substantiated. The species was first documented in Hudson County during the early 1800s and the southernmost collection in the state was made in Mercer County in 1879 (Britton 1889). Taylor (1915) indicated that there were no recent records from any New Jersey counties other than Sussex but it was later found in Morris and Warren (Wherry 1934, Fables 1956). By the early 1980s *C. canadensis* was only extant in Sussex and Warren counties (Snyder and Vivian 1981) and that continues to be the case. Bunchberry was initially listed as an S2 species in New Jersey but the status was subsequently revised to S1 as only three populations are believed to remain (NJONLM 1992, NJNHP 2024).

### **Threats**

New Jersey's extant populations of *Cornus canadensis* are all relatively small (NJNHP 2024). No particular threats to the occurrences were noted during monitoring visits, but herbivory might be difficult to detect in the low-growing species because grazing could remove all identifiable parts of a plant. Ungulates such as caribou and deer feed extensively on persistent leaves of *C. canadensis* during the fall and early winter until the plants are concealed by snow (Edwards and Ritcey 1960, Crawford 1982). Its early spring growth is also browsed by deer, and they continue to forage on the foliage throughout the summer. In fact, the abundance of *C. canadensis* has been noted as a reliable indicator of habitat usage by White-tailed Deer (*Odocoileus virginianus*) in both summer and winter (Rose 1982, Baribeau et al. 2022). Deer herbivory has likely contributed to the decline of midwestern Bunchberry populations

(Wiegmann and Waller 2006), and the species benefitted from exclosures that protected it from Black-tailed Deer (*Odocoileus hemionus sitchensis*) in British Columbia (Chollett et al. 2021). The overabundance of White-tailed Deer is well-documented in New Jersey (Kelly 2019, NJDSR 2019) and it probably poses a significant threat to the remaining *C. canadensis* occurrences in the state.

Some *Cornus canadensis* fruits may be destroyed by slugs or microbes (Burger 1987) but Tappeiner and Alaback (1989) found no evidence of significant predation on overwintering seeds. Hall and Sibley (1976) indicated that insects and fungi had little to no effect on Bunchberry populations. *C. canadensis* plants may be infected by a number of leaf spot fungi (Gould and Smreciu 2013) but the species is apparently resistant to the dogwood anthracnose disease that caused widespread losses of *Cornus florida* (Richardson et al. 2001, Thurn and Eshenaur 2015). There is an emerging threat from a fruit fly (*Drosophila suzukii*) that was introduced to North America in 2008 and now utilizes *Cornus canadensis* as one of its primary larval hosts (Guay et al. 2023), potentially limiting seed production and dispersal.

*Cornus canadensis* can tolerate some human-instigated environmental changes that are generally detrimental to native flora, including acid rain and contamination from nearby mining (Gaber and Hutchinson 1988, Boisvert et al. 2021). However, certain management practices that are implemented for the benefit of economically valuable plants may be harmful to *Cornus canadensis*. A subset of the insects that pollinate Bunchberry flowers (solitary bees and syrphid flies) are vulnerable to insecticides that are used to control spruce budworm (*Choristoneura fumiferana*), although bumblebees seem to be somewhat resistant and Thompson et al. (1985) did not detect a reduction in *C. canadensis* productivity as a result of spraying. *Cornus canadensis* is sometimes deliberately eradicated in places where it is perceived as an impediment to blueberry horticulture. A threat to blueberry production was initially inferred from the bunchberry's strong competitive abilities in open habitats (Yarborough and Bhowmik 1993) and the concern has recently been exacerbated by its role as a larval host for *Drosophila suzukii*, which also damages *Vaccinium* fruits (Guay et al. 2023).

*Cornus canadensis* is moderately resistant to fire. The plants readily resprout following light burns, which may even stimulate additional shoot growth. Intense burns that penetrate deeper into the root zone can destroy the rhizomes and eliminate the plants (Flinn and Pringle 1983, Gucker 2012).

### **Climate Change Vulnerability**

Information from the references cited in this profile was used to evaluate the vulnerability of New Jersey's *Cornus canadensis* 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 climactic conditions in accordance with the guidelines described by Young et al. (2016) and the state climactic computations by Ring et al. (2013). Based on available data *C. canadensis* was assessed as Highly Vulnerable, meaning that it is likely to experience a significant decrease in abundance or range extent throughout New Jersey by 2050.

As the climate continues to warm, New Jersey is experiencing higher temperatures—particularly during the winter months—and a longer growing season. Shifting precipitation patterns have also increased the frequency and intensity of droughts (Hill et al. 2020). As temperatures rise, *Cornus canadensis* has some capacity to adapt by emerging and flowering earlier in the season (Helenurm and Barrett 1987, Delbart et al. 2015). However, the species might not persist in places where maximum soil temperatures during the growing season exceed 18° C (Wherry 1934). Warmer winters may also reduce snow cover, increasing the plants' exposure to herbivory, frost damage, or desiccation (Berend et al. 2022). Spring or summer droughts are likely to inhibit sexual reproduction: Pollination cannot take place if the flowers become dehydrated because they rely on turgor pressure to open (Edwards et al. 2005), and Flessner and Trindle (2003) observed that *C. canadensis* plants did not fruit during hot, dry years. Models predict a northward range shift for *C. canadensis* and, although they do not agree about the timing, it appears that New Jersey will no longer be suitable for the species within a few decades (Natural Resources Canada 2020).

### **Management Summary and Recommendations**

A recent search at the site of one New Jersey *Cornus canadensis* occurrence failed to turn up any plants, although some scattered individuals may still be present in that location. The other two extant populations are in need of monitoring (NJNHP 2024). Since Bunchberry is susceptible to grazing by deer year-round, the use of small protective enclosures should be considered at sites where the species has persisted. Reduction of shrub cover in the immediate vicinity of *C. canadensis* plants might stimulate clonal and sexual reproduction. Although canopy removal has been shown to benefit the species at other sites it is recommended that clearing be done by hand on a small scale as the use of machinery can damage the rare plants (Martin 2001). Several of the state's former *C. canadensis* populations are presumed extirpated, but there are still at least a half dozen historical locations that have not been searched so there is a chance that the long-living species could be rediscovered in some of those places.

The re-establishment of *Cornus canadensis* in places where it has disappeared seems to be feasible, although that is probably not an appropriate strategy for this species in New Jersey (see Olson 2021). Bunchberry is easy to propagate by dividing established clumps (Leopold 2005) and some success has also been reported with tissue culture (Feng et al. 2009). Geng et al. (2016) recently developed a heat-tolerant strain of *C. canadensis* by introducing a gene from *Pyrococcus furiosus*, a bacteria-like organism that is adapted to extremely hot environments, and the modified plants could be more resilient to climate change. While the potential applications of such research are intriguing, there are ethical considerations around the introduction of transgenic species that are well beyond the scope of this profile.

### **Synonyms and Taxonomy**

The accepted botanical name of the species is *Cornus canadensis* L. Orthographic variants, synonyms, and common names are listed below (ITIS 2025, POWO 2025, USDA NRCS 2025b).

Numerous forms and varieties of *C. canadensis* have also been described based on minor differences in color, leaf arrangement, or inflorescence structure (Fernald and Wiegand 1911, Fernald 1941, Lakela 1947, POWO 2025). Teeri (1968) observed that some seemingly different forms of *C. canadensis* could be found emanating from the same rhizomes as typical plants and they simply reflected natural variability within the species.

*Cornus canadensis* and the other *Cornus* species with an herbaceous habit are usually segregated into Subgenus *Arctocrania* or placed in a separate genus (*Chamaepericlymenum*) (Ferguson 1966, Murrell and Poindexter 2020, Weakley et al. 2024). Three species in the group are present in North America and a fourth is apparently known only from Myanmar (Wahlsteen et al. 2021). These plants hybridize readily in places where their ranges overlap and there are a lot of occurrences with intermediate characteristics (Murrell 1994). Bain (1977) found reduced pollen viability in some forms that resulted from hybridization between *C. canadensis* and *C. suecica*. Sun et al. (2025) have recently proposed both the segregation of a new species (*C. orientalis*) and the splitting of *C. canadensis* into two subspecies (ssp. *canadensis* and ssp. *pristina*). If their suggestions are adopted the New Jersey plants will be included in subspecies *canadensis*.

### Botanical Synonyms

*Chamaepericlymenum canadense* (L.) Asch. & Graebn.  
*Arctocrania canadensis* (L.) Nakai  
*Cornella canadensis* (L.) Rydb.  
*Cornus canadensis* var. *dutillyi* (Lepage) B. Boivin  
*Cornus cyananthus* Raf.  
*Cornus fauriei* H. Lév.  
*Cornus herbacea* var. *canadensis* (L.) Pall.  
*Cornus suffruticosa* Raf.  
*Cynoxylon canadense* (L.) J. H. Schaffn.  
*Eukrania canadensis* (L.) Merr.  
*Mesomora canadensis* (L.) Lunell  
*Eukrania cyananthus* (Raf.) Merr.

### Common Names

Bunchberry  
Dwarf Cornel  
Bunchberry Dogwood

### References

Acosta, Alejandro, J. Edwards, Marta Laskowski, and D. Whitaker. 2017. Science News: Watch a bunchberry dogwood plant in action. Available at <https://www.youtube.com/watch?v=kDbHMDIYKzw>

Bain, John F. 1977. A Systematic Study of Herbaceous *Cornus* L. in Northwestern North America. Master's Thesis, University of Alberta, Edmonton. 108 pp.

Baribeau, Aimie, Jean-Pierre Tremblay, and Steeve D. Côté. 2022. Occupancy modeling of habitat use by White-tailed Deer after more than a decade of exclusion in the boreal forest. *Wildlife Biology* 6: e01049.

- Barrett, Spencer C. H. and Kaius Helenurm. 1987. The reproductive biology of boreal forest herbs. I. Breeding systems and pollination. *Canadian Journal of Botany* 65(10): 2036–2046.
- Baskin, Jerry M. and Carol C. Baskin. 2002. Propagation protocol for production of container (plug) *Cornus canadensis* L. plants; University of Kentucky Lexington, Kentucky. USDA Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. Accessed July 12, 2025 at <https://NativePlantNetwork.org>
- Berend, Kevin, Kathryn L. Amatangelo, Doug Weihrauch, Christopher Norment, and Matthew Penberthy. 2022. Plant traits and community metrics across a snowmelt gradient at alpine snowbank sites on Mt. Washington, New Hampshire. *Rhodora* 122(992): 290–320.
- Blais, J. R. 1958. The vulnerability of Balsam Fir to Spruce Budworm attack in northwestern Ontario, with special reference to the physiological age of the tree. *Forestry Chronicle* 34(4): 405–422.
- Boisvert, Rémi, Xiangbo Yin, and Nicole J. Fenton. 2021. Offsite effects of mining on the frequency and abundance of five understory plant species in western Québec (Canada). *Botany* 99(7): 449–455.
- Breden, Thomas F., Yvette R. Alger, Kathleen Strakosch Walz, and Andrew G. Windisch. 2001. Classification of Vegetation Communities of New Jersey: Second iteration. Association for Biodiversity Information and New Jersey Natural Heritage Program, Office of Natural Lands Management, Division of Parks and Forestry, NJ Department of Environmental Protection, Trenton, NJ. 230 pp.
- 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. 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, Robert Thorson. 1967. Influence of naturally occurring compounds on germination and growth of Jack Pine. *Ecology* 48(4): 542–546.
- Burger, Alan E. 1987. Fruiting and frugivory of *Cornus canadensis* in boreal forest in Newfoundland. *Oikos* 49(1): 3–10.
- Chávez, Virginia and S. Ellen MacDonald. 2010. Understory species interactions in mature boreal mixedwood forests. *Botany* 88: 912–922.
- Chollet, Simon, Christophe Baltzinger, Morgane Maillard, and Jean-Louis Martin. 2021. Deer exclusion unveils abiotic filtering in forest understory plant assemblages. *Annals of Botany* 128(3): 371–381.

- Crawford, Hewlette S. 1982. Seasonal food selection and digestibility by tame White-tailed Deer in central Maine. *Journal of Wildlife Management* 46: 974–982.
- Del Tredici, Peter. 1985. The layered look. *Arnoldia* 45(1): 19–22.
- Delbart, Nicolas, Elisabeth Beaubien, Laurent Kergoat, and Thuy Le Toan. 2015. Comparing land surface phenology with leafing and flowering observations from the PlantWatch citizen network. *Remote Sensing of Environment* 160: 273–280.
- Edwards, R. Yorke and Ralph W. Ritcey. 1960. Foods of caribou in Wells Gray Park, British Columbia. *The Canadian Field-Naturalist* 74: 3–7.
- Edwards, Joan, Dwight Whitaker, Sarah Klionsky, and Marta J. Laskowski. 2005. A recordbreaking pollen catapult. *Nature* 435(7039): 164.
- Edwards, Joan, Gordon P. Smith, and Molly H. F. McEntee. 2015. Long-term time-lapse video provides near complete records of floral pollination. *Journal of Pollination Ecology* 16(13): 91–100.
- Faber-Langendoen, D. 2018. Northeast Regional Floristic Quality Assessment Tools for Wetland Assessments. NatureServe, Arlington, VA. 52 pp.
- Fables, David Jr. 1956. Caesarian flora and fauna, Number 1. Published posthumously in *Bartonia* 31(1961): 3–11.
- Feng, Chun-Miao, Rongda Qu, Li-Li Zhou, De-Yu Xie, and Qiu-Yun (Jenny) Xiang. 2009. Shoot regeneration of dwarf dogwood (*Cornus canadensis* L.) and morphological characterization of the regenerated plants. *Plant Cell Tissue Organ Culture* 97: 27–37.
- Ferguson, I. K. 1966. Notes on the nomenclature of *Cornus*. *Journal of the Arnold Arboretum* 47(2): 100–105.
- Fernald, M. L. and K. M. Wiegand. 1911. *Cornus canadensis*, var. *intermedia* in eastern America. *Rhodora* 13(150): 107–108.
- Fernald, M. L. 1941. *Cornus canadensis* L. forma *rosea*. *Rhodora* 43: 20.
- Fernald, M. L. 1950. *Gray's Manual of Botany*. Dioscorides Press, Portland, OR. 1632 pp.
- Flessner, Theresa R. and Joan D. C. Trindle. 2003. Propagation protocol for production of container (plug) *Cornus canadensis* L. plants 1-year plugs; USDA NRCS - Corvallis Plant Materials Center Corvallis, Oregon. USDA Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. Accessed July 12, 2025 at <https://NativePlantNetwork.org>
- Flinn, Marguerite A. and Joan K. Pringle. 1983. Heat tolerance of rhizomes of several understory species. *Canadian Journal of Botany* 61(2): 452–457.

- Gaber, B. A. and T. C. Hutchinson. 1988. The neutralisation of acid rain by the leaves of four boreal forest species. *Canadian Journal of Botany* 66(9): 1877–1882.
- Geng, Xing-Min, Xiang Liu, Mikyoung Ji, William A. Hoffman, Amy Grunden, and Qiu-Yun J. Xiang. 2016. Enhancing heat tolerance of the Little Dogwood *Cornus canadensis* L. f. with introduction of a superoxide reductase gene from the hyperthermophilic archaeon *Pyrococcus furiosus*. *Frontiers in Plant Science* 7: Article 26.
- 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.
- Gould, K., S. Wood, and A. Smreciu. 2013. Species profile for *Cornus canadensis*. Revegetation profile prepared for OSRIN (Oil Sands Research and Information Network). Available at <https://era.library.ualberta.ca/items/e39a601a-fe02-4a4d-a3ba-d1eb8f7b83fe>
- Guay, Jean-Frédéric, William Champagne-Cauchon, Valérie Fournier, and Conrad Cloutier. 2023. Wild host fruit–niche diversity of *Drosophila suzukii* in lowbush blueberry agro-ecosystems in Saguenay-Lac-Saint-Jean, Québec, Canada. *The Canadian Entomologist* 155: e2.
- Gucker, Corey L. 2012. *Cornus canadensis*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available at <https://www.fs.usda.gov/database/feis/plants/forb/corcan/all.html>
- Hall, Ivan V. and Jack D. Sibley. 1976. The biology of Canadian weeds. 20. *Cornus canadensis*. *Canadian Journal of Plant Science* 56: 885–892.
- Harshberger, John W. 1905. The plant formations of the Adirondack Mountains. *Torreyia* 5(11): 187–194.
- Hassan, Haider M., Zi-Hua Jiang, Christina Asmussen, Emma McDonald, and Wensheng Qin. 2014. Antibacterial activity of northern Ontario medicinal plant extracts. *Canadian Journal of Plant Science* 94: 417–424.
- Helenurm, Kaius and Spencer C. H. Barrett. 1987. The reproductive biology of boreal forest herbs. II. Phenology of flowering and fruiting. *Canadian Journal of Botany* 65(10): 1969–1988.
- 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. Flower-visiting insects of Bunchberry. *Illinois Wildflowers*. Accessed July 17, 2025 at [https://www.illinoiswildflowers.info/flower\\_insects/plants/bunchberry.htm](https://www.illinoiswildflowers.info/flower_insects/plants/bunchberry.htm)
- Hough, Mary Y. 1983. *New Jersey Wild Plants*. Harmony Press, Harmony, NJ. 414 pp.

ITIS (Integrated Taxonomic Information System). Accessed January 31, 2025 at <http://www.itis.gov>

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)].

Kelly, Jay F. 2019. Regional changes to forest understories since the mid-Twentieth Century: Effects of overabundant deer and other factors in northern New Jersey. *Forest Ecology and Management* 444: 151–162.

Knowlton, Clarence H. 1915. Plants and plant societies at Roque Bluffs, Maine. *Rhodora* 17(200): 145–155.

Kuhnlein, Harriet V. 1989. Nutrient values in indigenous wild berries used by the Nuxalk People of Bella Coola, British Columbia. *Journal of Food Composition and Analysis* 2: 28–36.

Lakela, Olga. 1947. Forms of *Cornus canadensis* in Minnesota. *Rhodora* 50(600): 304–306.

Landhäuser, Simon M., Kenneth J. Stadt, and Victor J. Lieffers. 1997. Photosynthetic strategies of summergreen and evergreen understory herbs of the boreal mixedwood forest. *Oecologia* 112: 173–178.

Lau, Jennifer H. T. 2009. Phenotypic and Genotypic Differentiation of Plant Populations Between Coastal Barrens and Forests in Nova Scotia, Canada. Master's Thesis, Saint Mary's University, Halifax, Nova Scotia. 85 pp.

Lavoie, Serge, Isabelle Côté, André Pichette, Charles Gauthier, Michaël Ouellet, Francine Nagau-Lavoie, Vakhtang Mshvildadze, and Jean Legault. 2017. Chemical composition and anti-herpes simplex virus type 1 (HSV-1) activity of extracts from *Cornus canadensis*. *Complementary and Alternative Medicine* 17: Article 123.

Leopold, Donald J. 2005. *Native Plants of the Northeast: A Guide for Gardening and Conservation*. Timber Press, Portland, OR. 308 pp.

Luna, Tara, Jeff Evans, Dale Wick, and Joy Hosokawa. 2008. Propagation protocol for production of container (plug) *Cornus canadensis* L. plants 160 ml container; USDI NPS - Glacier National Park West Glacier, Montana. USDA Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. Accessed July 12, 2025 at <https://NativePlantNetwork.org>

Malloch, D. and B. Malloch. 1981. The mycorrhizal status of boreal plants: Species from northeastern Ontario. *Canadian Journal of Botany* 59(11): 2167–2172.

Martin, René Adrienne. 2001. Bunchberry (*Cornus canadensis*) Growth and Reproductive Responses to Disturbance in a Managed Boreal Forest. Master's Thesis, University of British Columbia, Vancouver, BC. 62 pp.

Mitchell, Nora, Nancy P. Piatczyc, Darren D. Wang, and Joan Edwards. 2022. High-speed video and plant ultrastructure define mechanisms of gametophyte dispersal. *Applications in Plant Sciences* 10(2): e11463.

Moola, F. M., and L. Vasseur. 2004. Recovery of late-seral vascular plants in a chronosequence of post-clearcut forest stands in coastal Nova Scotia, Canada. *Plant Ecology* 172: 183–197.

Murrell, Zack E. 1994. Dwarf dogwoods: Intermediacy and the morphological landscape. *Systematic Botany* 19(4): 539–556.

Murrell, Zack E. and Derick B. Poindexter. Page updated November 5, 2020. *Cornus canadensis* Linnaeus. In: Flora of North America Editorial Committee, eds. 1993+. *Flora of North America North of Mexico* [Online]. 22+ vols. New York and Oxford. Accessed July 15, 2025 at [https://floranorthamerica.org/Cornus canadensis](https://floranorthamerica.org/Cornus_canadensis)

Natural Resources Canada. 2020. Canada's Plant Hardiness Site. Accessed July 22, 2025 at <https://www.planthardiness.gc.ca/?m=23&lang=e>

NatureServe. 2025. NatureServe Explorer [web application]. NatureServe, Arlington, VA. Accessed July 11, 2025 at <https://explorer.natureserve.org/>

Nichols, G. E. 1934. The influence of exposure to winter temperatures upon seed germination in various native American plants. *Ecology* 15(4): 364–373.

NJDSR (New Jersey Division of Science and Research). 2019. Wildlife Populations: White-tailed deer. Environmental Trends Report, N. J. Department of Environmental Protection, available at <https://www.nj.gov/dep/dsr/trends/wildlife-whitetail.pdf>

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.

NJONLM (New Jersey Office of Natural Lands Management). 1992. *Special Plants of New Jersey*. New Jersey Department of Environmental Protection, Division of Parks and Forestry, Trenton, NJ. 22 pp.

Olson, Elizabeth K. 2021. *Rare Plant Propagation and Reintroduction: Questions and Considerations for Natural and Historic Resources Lands in New Jersey*. New Jersey

Department of Environmental Protection, Division of Parks and Forestry, Office of Natural Lands Management, Trenton, NJ. 77 pp.

Penhallow, D. P. 1909. An account of certain noteworthy features in the habitat of *Rhodora*. *Rhodora* 11(129): 173–177.

POWO. 2025. Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Accessed July 11, 2025 at <http://www.plantsoftheworldonline.org/>

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

Richardson, Andrew D., Ellen G. Denny, Jocelyn A. Forbush, Thomas G. Siccama, and Kimberley S. Hunter. 2001. Differential aluminum and calcium concentrations in the tissues of ten *Cornus* species. *The Journal of the Torrey Botanical Society* 128(2): 120–127.

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.

Rose, Cathy Lynn. 1982. *Deer Response to Forest Succession on Annette Island, Southeast Alaska*. Master's Thesis, University of Alaska, Fairbanks, AK. 56 pp.

Scotter, George W. 1965. A plant collection from the Cochrane River region of northwestern Manitoba. *The Blue Jay* 23(2): 96–100.

Smith, Richard T. 1974. *A Phytosociological Study of Fir and Spruce Forests on the Plateau of Cape Breton Island, Nova Scotia*. Master's Thesis, University of British Columbia, Vancouver, BC. 165 pp.

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.

Stevens, Charles E. 1968. A remarkable disjunct occurrence of *Cornus canadensis* in the Virginia Blue Ridge. *Castanea* 33(3): 247–248.

Stiles, Edmund W. 1980. Patterns of fruit presentation and seed dispersal in bird-disseminated woody plants in the eastern deciduous forest. *The American Naturalist* 116(5): 670–688.

Stocker, M., F. F. Gilbert, and D. W. Smith. 1977. Vegetation and deer habitat relations in southern Ontario: Classification of habitat types. *Journal of Applied Ecology* 14(2): 419–432.

Strong, W. L. and M. J. Redburn. 2009. Latitude-related variation in understory vegetation of boreal *Populus tremuloides* stands in Alberta, Canada. *Community Ecology* 10(1): 35–44.

Sun, Yanxia, Winbin Zhou, and Qiu-Yun (Jenny) Xiang. 2025. Letter to the Editor: Genomic data uncover complex hybridization and evolutionary history of the bunchberry species complex (*Cornus* L., Cornaceae). *Horticulture Research* 12: uhaf026.

Suring, Lowell H., Michael I. Goldstein, Susan M. Howell, and Christopher S. Nations. 2008. Response of the cover of berry-producing species to ecological factors on the Kenai Peninsula, Alaska, USA. *Canadian Journal of Forest Research* 38: 1244–1259.

Tappeiner, J. C. II and P. B. Alaback. 1989. Early establishment and vegetative growth of understory species in the Western Hemlock-Sitka Spruce forests of southeast Alaska. *Canadian Journal of Botany* 67(2): 318–326.

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.

Teeri, James A. 1968. Developmental variability of *Cornus canadensis* in northern New England. *Rhodora* 70(782): 278–282.

Thompson, James D., R. C. Plowright, and G. R. Thaler. 1985. Matacil insecticide spraying, pollinator mortality, and plant fecundity in New Brunswick forests. *Canadian Journal of Botany* 63: 2056–2061.

Thurn, Mary, Elizabeth Lamb, and Brian Eshenaur. 2018. Disease and Insect Resistant Ornamental Plants. *Cornus*. New York State Integrated Pest Management Program, Cornell Cooperative Extension. 10 pp.

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. *Cornus canadensis* 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 *Cornus canadensis* (Bunchberry Dogwood). The PLANTS Database, National Plant Data Team, Greensboro, NC. Accessed February 6, 2025 at <http://plants.usda.gov>

Wahlsteen, Eric, Wenbin Zhou, Qiuyun Xiang, and Keith Rushforth. 2021. Rediscovery of the lost little dogwood *Cornus wardiana* (Cornaceae)—Its phylogenetic and morphological distinction and implication in the origin of the Arctic-Sino-Himalayan disjunction. *Journal of Systematics and Evolution* 59(2): 405–416.

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.

Wheelwright, Nathaniel T., Erin E. Dukeshire, Joseph B. Fontaine, Stefan H. Gutow, David A. Moeller, Justin G. Schuetz, Timothy M. Smith, Sarah L. Rogers, and Andrew G. Zink. 2006. Pollinator limitation, autogamy and minimal inbreeding depression in insect-pollinated plants on a boreal island. *American Midland Naturalist* 155: 19–38.

Wherry, Edgar T. 1934. Temperature relations of the Bunchberry, *Cornus Canadensis* L. *Ecology* 15(4): 440–443.

Whitaker, D. L., L. A. Webster, and J. Edwards. 2007. The biomechanics of *Cornus canadensis* stamens are ideal for catapulting pollen vertically. *Functional Ecology* 21: 219–225.

Wiegmann, S. M. and D. M. Waller. 2006. Fifty years of change in northern upland forest understories: Identity and traits of “winner” and “loser” plant species. *Biological Conservation* 129(1): 109–123.

Willis, O. 1874. Catalogue of Plants Growing in the State of New Jersey. J. W. Schermerhorn, New York, NY. 92 pp.

Willson, Mary F. 1993. Mammals as seed-dispersal mutualists in North America. *Oikos* 67(1): 159–176.

Yarborough, David E. and Prasanta C. Bhowmik. 1993. Lowbush Blueberry - Bunchberry competition. *Journal of the American Society for Horticultural Science* 118(1): 54–62.

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.

Zodaleski, Christopher A. and Paul F. Maycock. 1990. Dynamics of the boreal forest in northwestern Ontario. *The American Midland Naturalist* 124(2): 289–300.