Ribes cynosbati

Prickly Gooseberry

Grossulariaceae

Ribes cynosbati by Peter M. Dziuk, 2013

***Ribes cynosbati* 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

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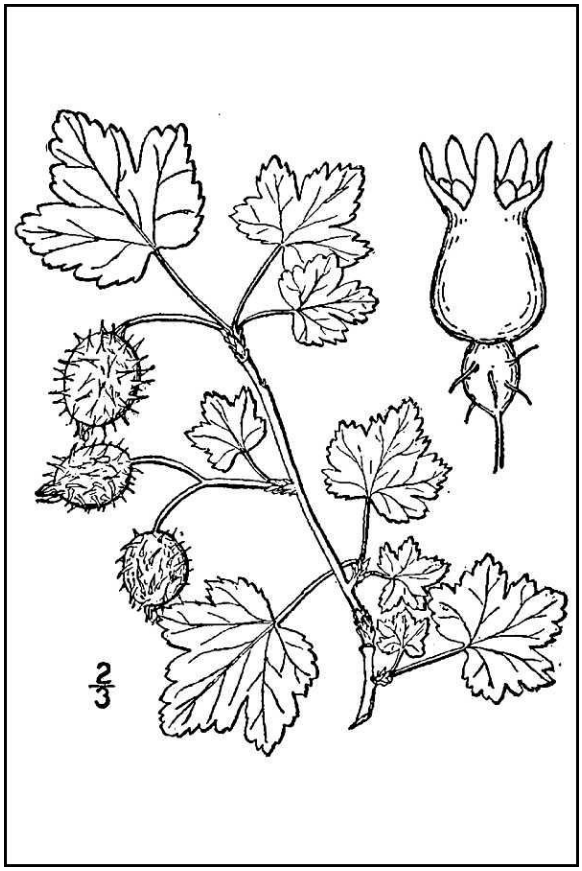
Life History

Prickly Gooseberry (*Ribes cynosbati*) is a perennial woody shrub in the Gooseberry Family (Grossulariaceae). It is low-growing and deciduous, with straggly stems reaching 1.5 m in height. The stems are quite variable. They can be smooth or pubescent, with or without one to three 5–15 mm spines at the nodes, and may have prickles at the internodes (LBJWC 2023; MDC 2024; Morin 2020; Native Plant Trust 2024; Northern Ontario Plant Database 2024). The outer stem bark is a papery grayish brown in color. Young twigs are light brown and hairy, becoming grayish black and smooth with age (MDC 2024; Northern Ontario Plant Database 2024).

Leaves are simple, alternate, and palmately lobed. They are 2–5 cm long and wide with a short hairy slender petiole 2.5–4 cm long. The leaf bases are truncate to cordate, and the lobes have slightly rounded tips with coarsely toothed margins. Leaves are hairy with the lower leaf more pubescent and lighter green in color. Some references describe glandular hairs along the leaf veins, although the leaf surfaces lack resin dots (Northern Ontario Plant Database 2024). While deciduous, leaves sometimes remain hanging on the plant after they dry up (Gleason and Cronquist 1991; LBJWC 2023; Native Plant Trust 2024; Northern Ontario Plant Database 2024).



Left: Britton and Brown 1913, courtesy USDA NRCS, 2024a. Right: Peter M. Dziuk, 2013.

The flowers of Prickly Gooseberry range from yellowish green to pale yellow to greenish white and grow singly or in small axillary clusters of two to four on glandular stalks. Bell shaped (6–9

mm) and dangling, the bloom has five short petals, with five stamens slightly longer than the petals. The five calyx lobes are much shorter than the tube, sometimes spreading but usually reflexed, and the inferior ovary is spiny. Flowering occurs from April through June, earlier in the more southern part of the range (Gleason and Cronquist 1991; Minnesota Wildflowers 2024; MDC 2024; Pfister and Sloan 2008; Strausbaugh and Core 1978).

The fruit of Prickly Gooseberry is a globose berry 8–12 mm in diameter covered with stiff prickles that develop from the hairs (described as stalked glands per Gleason and Cronquist 1991) on the ovary of the flower. Each berry contains 10 to 20 dark brown seeds. Berries are edible, maturing to a light purplish to pale red in color from late July to September, depending on location (Gleason and Cronquist 1991; MDC 2024; Minnesota Wildflowers 2024; Morin 2020; Pfister and Sloan 2008). Gooseberries are distinguished from currants by having some stems with spines and/or thorny prickles and one to four flowers per cluster (vs. the smooth stems and racemes with six or more flowers of currants).

Peter M. Dziuk, 2013.

Peter M. Dziuk, 2012.

Pollinator Dynamics

Most *Ribes* species, including Prickly Gooseberry, are pollinated by insects, mainly bees. The flowers are also visited by wasps, syrphid flies, ants, and other insects (Hilty 2020) with flies being especially important for early spring flowering species (Xerces Society 2024). Fruit growers note that without sufficient pollination, gooseberry plants will often abort the flowers or fruits. Some *Ribes* species (e.g., *R. uva-crispa* and *R. rubrum*) and their hybrids are self-fertile and can self-pollinate (University of Minnesota Extension 2024); however, it is not clear whether Prickly Gooseberry is one of those species.

Seed Dispersal

Spiny Gooseberries typically ripen from July through September, depending on location. Each fruit is covered with prickles and contains 10 to 20 dark brown seeds. Stiles (1980) classified the fruits as summer small-seeded fruits, characterized by having small seeds, being low in lipids,

high in sugars, and with low retention on the plant. Those are the fruits available to residential summer birds and their fledglings as most berries are produced prior to the main migratory season. They are consumed by songbirds such as Gray Catbird (*Dumetella carolinensis*), Cedar Waxwing (*Bombycilla cedrorum*), American Robin (*Turdus migratorius*) as well as gamebirds (Hilty 2020; Martin et al. 1951). Seeds usually move quickly through a bird's digestive tract such that most of the seeds are not widely disseminated (Stiles 1980).

Stiles (1980) reported that fruits such as gooseberries have higher concentrations of mono- and disaccharides and are sweeter than most bird disseminated fruits, making them particularly attractive to mammals. Despite the prickles, berries (and seeds) of *Ribes* spp. are consumed by the White-footed Mouse (*Peromyscus leucopus*), Deer Mouse (*P. maniculatus*), Red Squirrel (*Sciurus vulgaris*), Striped Skunk (*Mephitis mephitis*), Raccoon (*Procyon lotor*), Red Fox (*Vulpes vulpes*), American Black Bear (*Ursus americanus*), and other small mammals (Hilty 2020; Martin et al. 1951; Noyce and Coy 1990).

Cultivated gooseberries generally take one to three years before they begin producing fruit (University of Minnesota Extension 2024). To collect seeds, fruits are macerated and seeds extracted and dried (see Pfister and Sloan 2008 for detailed instructions). Air dried *R. cynosbati* seeds stored at room temperature (21° C/70° F) were reported to have 8% seed viability after seven years. In the wild, the seeds of most *Ribes* species overwinter in the soil, requiring at least one "fairly long" period of cold stratification before germinating in the spring; however, some seeds can remain dormant for years. Fire and other disturbances may play a role in stimulating *Ribes* seed germination in some habitats. *Ribes* species also can be propagated from tip layering or from cuttings taken in the fall (Pfister and Sloan 2008).

Habitat

Prickly Gooseberry can be found in average to moist, rich or rocky soil, in hardwood or mixed forests, on boulder slopes, talus grassy or heath balds at medium to high elevation (Native Plant Trust 2024; Soper and Heimburger 1982; Weakley et al. 2024) and even in thickets, floodplains, and swamps (Minnesota Wildflowers 2024). According to the Lady Bird Johnson Wildflower Center (LBJWC 2023) Prickly Gooseberry does best in slightly acidic soils with a pH<6.8. Range wide it has been found growing between 100–2100 m (328–6890 ft) in elevation (Morin 2020).

In New Jersey, one Prickly Gooseberry population is growing in moist rocky soil under a canopy of *Acer saccharum, Acer rubra,* and *Quercus alba* along a roadside near a small streamlet. The other population is in a rocky hickory-ash-red cedar woodland over traprock on a south-southeast-facing slope. Associated species there include *Fraxinus americana, Carya glabra, Juniperus virginiana, Rosa carolina, Rubus alleghaniensis, Danthonia spicata, Eupatorium rugosum, Dicanthelium boscii, Muhlenbergia sobolifera,* and *Agrostis perennans* (NJNHP 2024).

Prickly Gooseberry has a heliophily rating of 5, meaning that it has a "broad ability to grow and reproduce in both sunny and shady environments" (Weakley et al. 2024) with partial sun optimal. Hilty (2020) noted that in dense shade plants produce few, if any, flowers and fruits.

Most flowering plants exhibit associations with mycorrhizal fungi to assist with nutrient uptake. A literature review by Wang and Qiu (2006) found that five species of *Ribes* had an association with arbuscular mycorrhizae (*R. magellanicum*, *R. nigrum*, *R. rubrum*, *R. uva-crispa*, and *R. alpinum*, with *R. alpinum* also having populations that were ectomycorrhizal and some that were nonmycorrhizal. While not specifically mentioned in the review, *R. cynosbati* likely has mycorrhizal populations.

Wetland Indicator Status

Ribes cynosbati is a facultative wetland species, meaning that it usually occurs in wetlands but may occur in nonwetlands (U. S. Army Corps of Engineers 2020).

USDA Plants Code (USDA, NRCS 2024b)

RICY

Coefficient of Conservancy (Walz et al. 2020)

CoC = 5. 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 global distribution of *Ribes cynosbati* is restricted to the eastern and central United States and Canada (POWO 2024). The map in Figure 1 depicts the extent of the species in North America.

The USDA PLANTS Database (2024b) shows records of *Ribes cynosbati* in nine New Jersey counties: Bergen, Burlington, Hudson, Hunterdon, Middlesex, Monmouth, Passaic, Union, and Warren (Figure 2). The gooseberry has also been documented in Sussex County (NJNHP 2024). The data include historic observations and do not reflect the current distribution of the species. Snyder (1984) noted that many of the old reports of *R. cynosbati* in New Jersey were questionable.

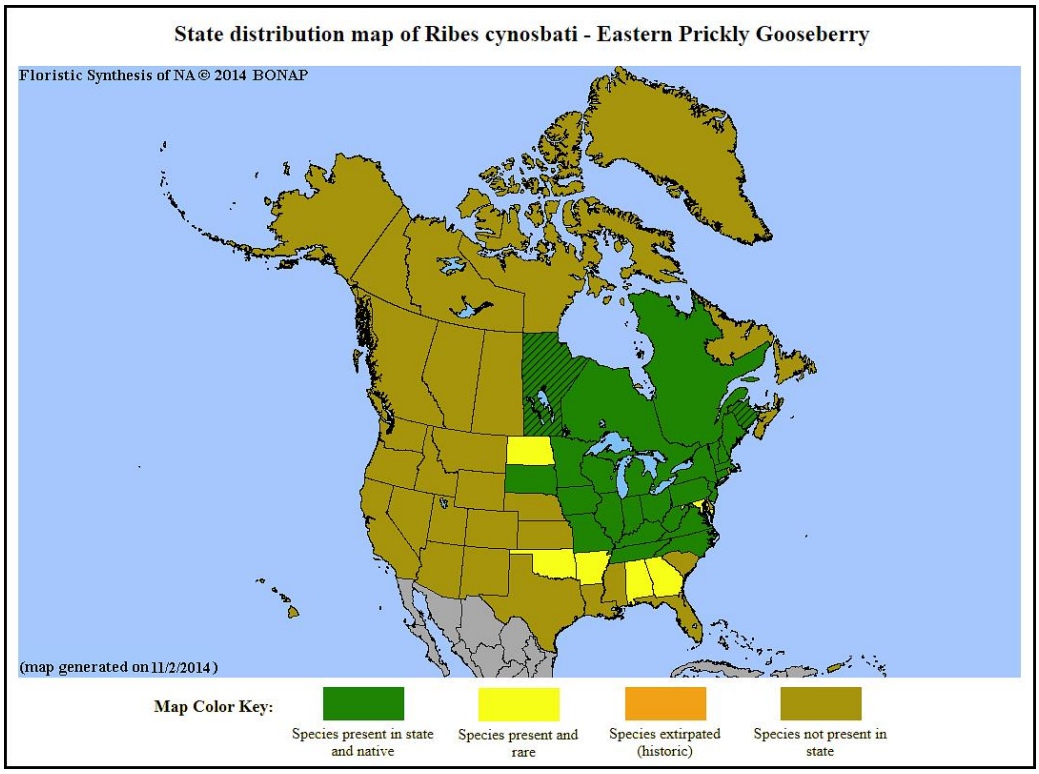


Figure 1. Distribution of R. cynosbati in North America, adapted from BONAP (Kartesz 2015). Cross hatching /// indicates a questionable presence.

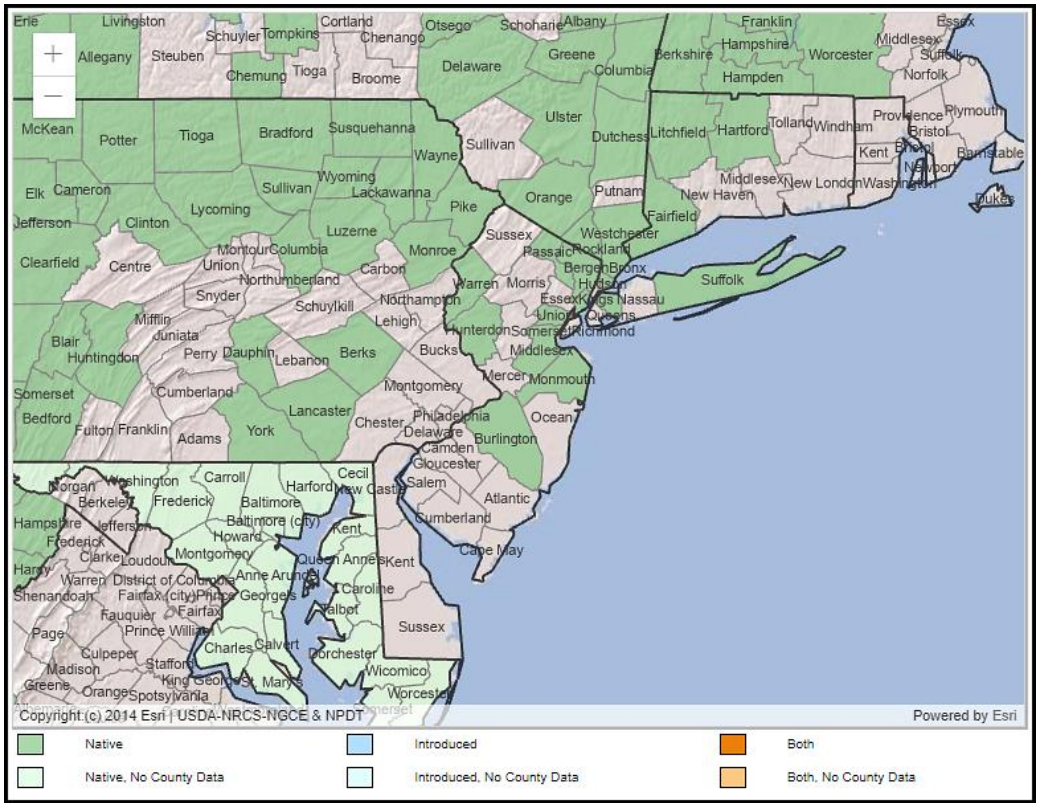


Figure 2. County records of R. cynosbati in New Jersey and vicinity (USDA NRCS 2024b).

Conservation Status

Ribes cynosbati is considered globally secure. The G5 rank means the species 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 2024). The map below (Figure 3) illustrates the conservation status of *R. cynosbati* throughout its range. Prickly Gooseberry is vulnerable (moderate risk of extinction) in four states, imperiled (high risk of extinction) in two states, and critically imperiled (very high risk of extinction) in two states and one province. In other places where it occurs the species is secure, apparently secure, or unranked. Prickly Gooseberry is most vulnerable or imperiled at the western, southern, and eastern edges of its range. It has not been reported above the 47° N latitude (Soper and Heimburger 1982).

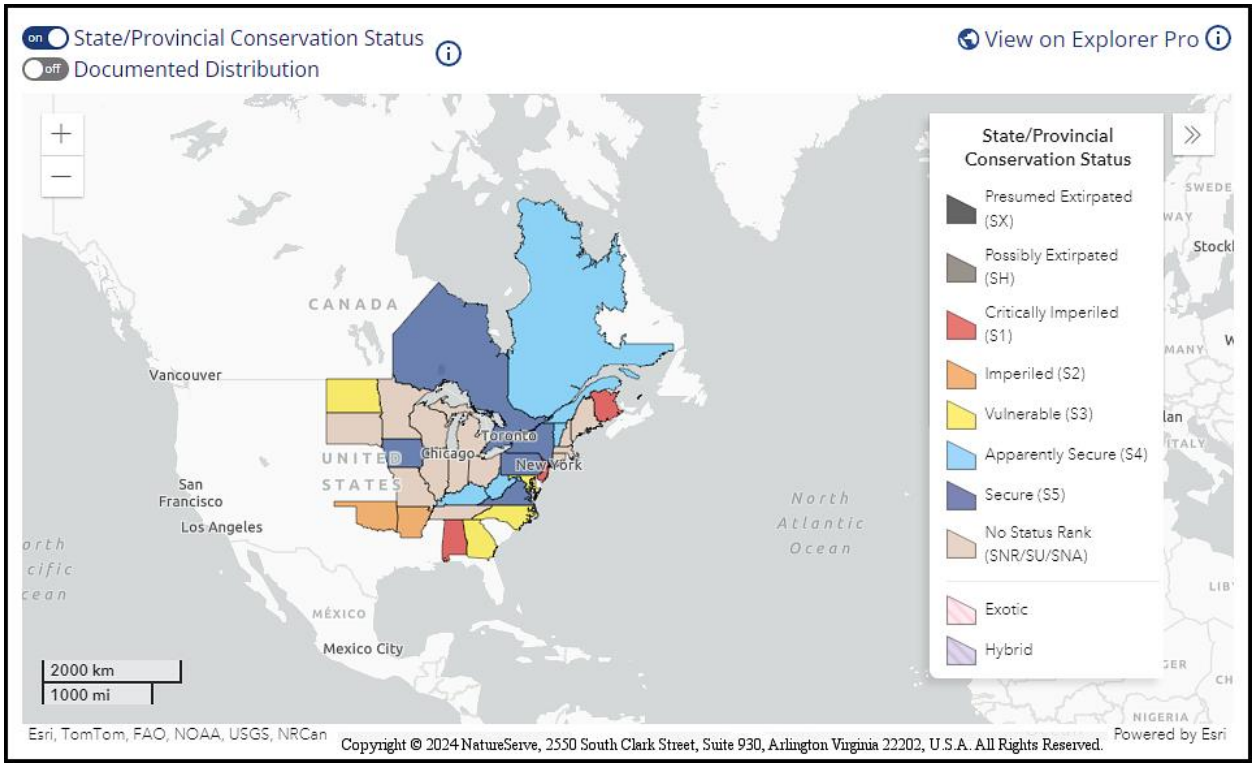


Figure 3. Conservation status of R. cynosbati in North America (NatureServe 2024).

New Jersey is one of the states where *Ribes cynosbati* 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. *R. cynosbati* has also been assigned a regional status code of HL, signifying that the species is eligible for protection under the jurisdiction of the Highlands Preservation Area (NJNHP 2010). There are currently five occurrences tracked in the New Jersey Natural Heritage Program database from Sussex, Bergen, Burlington, and Middlesex counties. Only the two northern populations have been observed in recent years, one in 1995 and the other in 2023. The other three records are from herbarium specimens dated 1890, 1917, and 1920 (NJNHP 2024).

Threats

Prickly Gooseberry is widespread, and most literature sources do not mention any significant general threats. In some locations, herbivores, particularly insects, may be a minor issue. Gooseberries, including *Ribes cynosbati*, are the main foodplant for larvae of the Green Comma (*Polygonia faunus*) and Gray Comma (*P. progne*) as well as of geometer moths and eye-cap moths (Opostegidae) (Hilty 2020). Hilty (2020) also has reported evidence of some browsing by White-tailed Deer (*Odocoileus virginiana*) at Illinois locations despite the spiny nature of the shrubs.

However, past forest management for the Eastern White Pine (*Pinus alba*) and other five-needle pines may have removed Prickly Gooseberry and other *Ribes* spp. populations that are alternate hosts for the non-native White Pine Blister Rust (*Cronartium ribicola*). The rust is native to Asia and was introduced into North America around 1900. Both the pine and the *Ribes* are needed for the rust to complete its life cycle. To protect the White Pine and other susceptible trees, efforts to eradicate *Ribes* species were implemented in certain areas of the country from 1916–1967. While ultimately deemed unsuccessful overall, those efforts were much more effective in the eastern United States (Kinloch 2003; Maloy 2001; Zambino 2010).

A number of native *Ribes* species including Prickly Gooseberry are quite susceptible to the rust and were targeted for eradication. In the early years of the outbreak in the northeastern United States, *R. cynosbati* and two other *Ribes* species were reported to be widespread in open areas such as pastures and orchards, producing more fruit than in woodland habitats but becoming more heavily infected (Cooper 1922). In response to infection, *R. cynosbati* shrubs shed their leaves, which may result in shrub death after two consecutive years of defoliation (Zambino 2010). It is not clear to what extent the blister rust and past eradication efforts contributed to the decline of the species in eastern locations and affected its distribution in New Jersey.

To minimize the likelihood of infection by blister rust, foresters use best management practices when planting five-needle pines. Those include using *Ribes* and/or pine cultivars resistant to the rust as well as pruning to remove diseased pine branches. In some locations, pine plantings are spaced more widely apart to increase air flow, reducing the humidity levels preferred by the rust, although this technique may not work in all locations. In many areas, general management recommendations for blister rust control still include herbicide treatment or removal of gooseberries or currants within a certain distance of five-needle pines and/or treatment with fungicides (Gould 2015; Maloy 2001; Wisconsin Horticulture Division of Extension 2024). However, this may not be sufficient as asexual blister rust aeciospores (which infect *Ribes* spp.) and basidiospores (which infect five-needle pines) are wind dispersed and can readily establish distant new colonies of disease when conditions are right (Geils et al. 2010; Gould 2015; Kinloch 2003).

The State of New Jersey currently regulates all *Ribes* and *Grossularia* species, with the import and movement of *R. nigrum* and its cultivars allowed only under special permit. The movement of all other species of *Ribes* or *Grossularia* are not permitted into extreme northern New Jersey (i.e., Montague, Sandyston, Walpack, and Vernon Townships in Sussex County; West Milford, Ringwood Borough, and Wanaque Township in Passaic County; and Jefferson Township in

Morris County) (New Jersey Administrative Code 2018, Section 2:20-2.2). Only one New Jersey occurrence is found in this restricted area (NJNHP 2024).

Non-native invasive plant species also threaten some Prickly Gooseberry populations. In New Jersey, one *R. cynosbati* occurrence was described as "overrun" by Multiflora Rose (*Rosa multiflora*) with some Japanese Barberry (*Berberis thunbergii*) and a report describing another occurrence cautioned about the potential spread of invasive species from the surrounding forest (NJNHP 2024). No other threats such as population isolation or habitat loss were mentioned in the New Jersey database or in the literature.

Climate Change Vulnerability

Information from the references cited in this profile was used to evaluate the vulnerability of New Jersey's *Ribes cynosbati* 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 historical state climactic computations by Ring et al. (2013). Based on available data *R. cynosbati* 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. This conclusion was reached with very high confidence; however, gaps in information regarding the species' ecological requirements remain.

Shifting climactic conditions in New Jersey are resulting in higher temperatures, more frequent and intense precipitation events, and lengthier periods of drought. The greatest seasonal temperature increases are occurring during the winter months (Hill et al. 2020). As previously discussed, cold seed stratification is required by Prickly Gooseberry for germination and unusually warm winter temperatures might interfere with this process.

Non-native invasive plant species were noted as a threat at two New Jersey occurrences (NJNHP 2024). As the climate continues to warm, the spread of such species into New Jersey is likely to increase. Salva and Bradley (2023) identified more than a dozen new range-shifting species that could have significant detrimental impacts on New Jersey's plant communities by 2050. Bellard et al. (2013) identified the northeastern United States as a probable hotspot for new invasions by non-native flora, and other evaluations have projected that some exotic plants that have already gained a foothold in the region are likely to become more abundant (Dukes et al. 2009; Coville et al. 2021; O'Uhuru 2022).

Management Summary and Recommendations

Visits to the five known element occurrences in New Jersey are warranted to better assess their viability and current site conditions. In addition, surveys of questionable populations would be useful to reconfirm identification as to whether those plants are Prickly Gooseberry or a different species. Once a new baseline is established for each site, regular monitoring of known occurrences would help to identify and address current threats. Invasive species encroachment at

two occurrences has been identified as a concern and management to remove non-native shrubs to retain a more open canopy should be considered. Checking for herbivory damage during monitoring visits would also be worthwhile, as the extent of threat from deer browse is currently unclear.

White Pine Blister Rust remains a serious widespread disease of five-needle pine species and there is ongoing research into the best ways to control and manage it through forest husbandry, which may include the pruning of infected branches, planting regimes that incorporate rust-resistant *Pinus* and *Ribes* species, and herbicide applications, among other measures. The threat of new, more virulent genotypes arriving from Asia is ever present (Kinloch 2003); therefore, it would be prudent to keep abreast of the situation to monitor disease impact on *Ribes* spp. and in case future control of *Ribes* spp., particularly Prickly Gooseberry is recommended for implementation in northern New Jersey. (Note: A new more virulent race of White Pine Blister Rust has been found in Connecticut and New Hampshire, which may be able to overcome existing immunity in *Ribes* cultivars used commercially in the region (Cornell University 2022).

Regarding research, it would be helpful to know whether Prickly Gooseberry is self-compatible or not, and to what extent. It would also be good to know more about optimal habitat factors and why population numbers are so low at the eastern edge of range. Is it primarily a result of prior eradication efforts? Or are other factors at play? Is there a role for the periodic application of fire or other disturbances to New Jersey Prickly Gooseberry habitats to maintain a more open canopy or stimulate seed germination? Lastly, given the relatively limited dispersal distance of its fruits/seeds, what is the capacity for population migration in light of ongoing climate change?

Synonyms

The accepted botanical name of the species is *Ribes cynosbati* L. Orthographic variants, synonyms, and common names are listed below (ITIS 2024; MDC 2024; Minnesota Wildflowers 2024; Pfister and Sloan 2008; POWO 2024; USDA NRCS 2024b).

Botanical Synonyms	Common Names
Grossularia cynosbati (L.) Mill.	Prickly Gooseberry
Ribes cynosbati var. *atrox* Fernald	Eastern Prickly Gooseberry
Ribes cynosbati var. *glabratum* Fernald	Dogberry
Ribes cynosbati var. *inerme* (Rehder) L. H. Bailey	Wild Gooseberry
Ribes gracile Torr.	Pasture Gooseberry
Ribes huronense Rydb.	

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