

**Recommendation for the Designation of
Harperella**
Harperella nodosa Rose
as a Virginia Species of Greatest Conservation Need

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The Virginia Department of Wildlife Resources, with support from the Virginia Department of Conservation and Recreation-Division of Natural Heritage, recommends the addition of *Harperella* (*Harperella nodosa* Rose) to Virginia's list of Species of Greatest Conservation Need as a tier I-C species (Appendix 1).

Justification

Species Summary

Harperella nodosa (= *Ptilimnium nodosum*, *Harperella*; G2/S1, Fed LE/State LE) (Appendix 2) was listed as Federally Endangered by the U.S. Fish and Wildlife Service in September 1988 (USFWS, 1988). In addition to its federal status, *Harperella nodosa* is ranked G2 (imperiled) by NatureServe and the Natural Heritage Network, meaning that it is a high conservation priority on a global scale (NatureServe, 2022). Virginia has a single known population of *Harperella* (VA DCR, 2022). This diminutive herb in the carrot family (Apiaceae) is found in the southeastern United States where it occurs in several disjunct population clusters (Van Alstine, 2015). Some taxonomists treat this rare plant as comprising three separate taxa. If this taxonomic concept were followed, each entity would be even rarer than the current G2 rank indicates. The habitat associated with this species in Virginia and adjacent states is rocky or gravelly shoals of clear, swift-flowing streams or rivers (Van Alstine, 2015). The plant is threatened due to its limited number of occurrences, small population sizes, hydrologic impacts, and degraded water quality.

Trends

Only one population of *Harperella nodosa* is known in Virginia but many additional populations are documented across seven southern states (NatureServe, 2022). The Virginia population was discovered in 2002 along a tributary of the Potomac River in the Aquia Creek watershed. This population is extremely small, both in extent and number of individuals. Multi-year surveys by the Virginia Department of Conservation and Recreation, Division of Natural Heritage (DCR-

DNH) confirmed that large areas of suitable habitat exist in Virginia, but no new populations have been found (Van Alstine, 2015). Multiple revisits to the known population indicate no obvious decline in numbers or decrease in vigor, despite impacts from siltation. Many other sites across the range of the species have been lost or have seen steep declines, however (Douglas 2008; NatureServe, 2022). Intensive monitoring methods such as the use of photo points or tagging have not been conducted in the Virginia population and may be needed to assess trends more accurately.

Conservation Action

Conservation Actions recommended for *Harperella nodosa* include continued survey efforts and protection of known or potential habitat, including watershed-level management.

Inventory work for Harperella has not resulted in the discovery of new populations, but this effort is incomplete. Numerous waterways in the Ridge and Valley region appear suitable for Harperella based on observations of habitat in adjacent states. Can surveys miss the species due to yearly hydrological differences? Is it easy to miss?

Hydrologic manipulation and deterioration of water quality are major threats to Harperella. The former includes any activities that would alter the widely fluctuating hydrologic regime to which the species is adapted. The latter includes siltation, stream acidification from acid deposition, and stream eutrophication from sewage or other nitrate deposition (Maddox and Bartgis 1990; Van Alstine, 2015). The single known Virginia population is in a creek bordering protected federal property, but this waterway is vulnerable to threats from upstream impacts which includes land use practices on private property, as well as hydrologic impacts. Additional lands in the Aquia Creek watershed should be managed for watershed protection.

Summary

Harperella nodosa (Harperella) is proposed for inclusion in the Virginia State Wildlife Action Plan as a tier I-C species due to the very low number of plants and significant threats to its riparian habitat. Despite occurring on the border of protected federal land, essentially no protection exists for the single Virginia population since management actions must take place at a watershed scale. Additional survey efforts of other watersheds are necessary, and conservation actions related to water quality and integrity of flood cycles are imperative.

This species occurs only in the George Washington Regional Commission area.

References

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