

**Project Title:** The inconspicuous *Ludwigia*: Quantitative habitat characterization of critically imperiled *Ludwigia ravenii* (Onagraceae)

**Grant recipient:** Merry Conlin

**Research summary:**

Raven’s Seedbox or *Ludwigia ravenii* is a perennial species in Onagraceae. It is extremely rare, considered globally critically imperiled, and under review for federal listing due to limited populations (USFWS 2011). Many aspects of the primary ecology and habitat of this species are poorly understood, limiting our ability to both detect and conserve it. Current populations of *L. ravenii* are strongly associated with Coastal Plain roadside ditches and it has not been found in a habitat unaltered by human earth movement for many decades. My principal aim with this research was to quantitatively assess the habitat for *Ludwigia ravenii* to allow for a better understanding of its niche and provide information for use in its recovery.



*Ludwigia ravenii* in flower, September 2022 Photo by: Merry Conlin

**Key results:**

I conducted my field work in the summers of 2021–2022, when I crisscrossed the Coastal Plain looking for *Ludwigia ravenii* and congeners. I expanded my study to include two related species *Ludwigia pilosa* (hairy seedbox) and *Ludwigia alternifolia* (alternate-leaved seedbox) which allowed for direct comparison of ditch habitat features. I was particularly interested in comparing the microhabitats directly around stems of the species to practically separate out habitat features. While surveying, I discovered three new populations of *L. ravenii* and collected data on 108 total plots of *Ludwigia*.

Roadside ditches seem to be providing some diverse wetland habitat for *L. ravenii* with many of the associated species only shared at unique sites and not across the entire species range. Those few species that were most frequently associated (in 39 % of plots) with *L. ravenii* included *Ludwigia linearis* (narrowleaf seedbox) and *Panicum verrucosum* (warty panicgrass). Interestingly, plots of *L. pilosa* were weighted with the strongest wetland habitat, based on the frequency and abundance of wetland species found within these plots. This result suggests possible differences in water dynamics within these ditches, a pattern that requires more direct study as I was not able to sample *L. pilosa* at the same intensity as *L. ravenii*.



Habitat sampling at field site, September 2022.  
Photo by: August Conlin

Ditch plots containing *L. ravenii* were found to be more acidic than congener plots, with a higher frequency and cover of bryophytes compared to my sampling of congener plots. Stems of *L. ravenii* are tolerant of some shading as populations were occasionally found under more closed canopies, and overall found at 65% average canopy openness. Observational evidence of recent mowing on these roadsides suggests that these stems are tolerant of that regular disturbance, particularly if the physical ditch dimensions themselves prevent mowers from completely removing stems. This tolerance, and the discovery of new populations, is encouraging. I hope this means that there are more undiscovered populations across the many miles of Coastal Plain roadside as there is still much to learn about, and from, this species.

The full results from this study are available in my M.S. thesis, completed at NC State University in July 2023. I am grateful for the Native Plant Society's funding which assisted me in my effort to sample the full geographic range of this species.

### References:

United States Fish And Wildlife Service (USFWS). 2011. Endangered and Threatened Wildlife and Plants; Partial 90-Day Finding on a Petition To List 404 Species in the Southeastern United States as Endangered or Threatened With Critical Habitat; Proposed Rule. Federal Register 76: 59836.