

## NOTES ON THE DISTRIBUTION OF *ENEMION BITERNATUM* (RANUNCULACEAE) IN TEXAS

### MATT BUCKINGHAM

Environmental Affairs Division  
Texas Department of Transportation  
Lufkin, Texas 75901  
matt.buckingham@txdot.gov

### JASON R. SINGHURST

Nongame and Rare Species Program  
Texas Parks and Wildlife Department  
Austin, Texas 78744  
jason.singhurst@tpwd.texas.gov

### CAROLINA PAEZ

1325 Crooked Creek Drive  
Lufkin, Texas 75904

### ABSTRACT

Collections *Enemion biternatum* in Sabine and San Augustine counties of eastern Texas extend its known range by approximately 260 kilometers. It was previously known in Texas from a single population in Red River County.

Prior to 1998, *Enemion biternatum* Raf. (*Isopyrum biternatum* (Raf.) Torrey & Gray) was included in various floras of Texas including Correll & Johnston (1970), Hatch et al. (1990), and Jones et al. (1997). The inclusion by Correll and Johnston was based on a specimen collected by Charles Wright. They estimated the distribution as “possibly in n.e. Texas,” which was the closest area within the state to existing populations in southeastern Oklahoma and southwestern Arkansas. Singhurst et al. (1998) speculated that the specimen was more likely from southeast Texas. All available accounts of Wright’s travels through the region indicate that he would have entered the state via the El Camino Real (in Sabine County) and travelled to either San Augustine or Nacogdoches. From there he appears to have traveled to Angelina, Tyler, Jasper, and Newton counties, where he worked as a land surveyor from 1837 to 1845 (Geiser 1948). He was said to have spent time around Town Bluff in Tyler County and Zavalla in Angelina County. In Geiser’s review of Wright’s correspondence with Asa Gray there is no mention of time spent in northeast Texas.

In 1998 a population of *Enemion biternatum* was discovered in Red River County (Singhurst et al. 1998), occurring on Roebuck clay soils (Thomas 1977) in a hardwood forest near the base of a steep bluff. It was growing under a canopy of *Carya illinoensis*, *Quercus macrocarpa*, *Q. muhlenbergii*, *Q. shumardii*, and *Populus deltoides*. Associated herbaceous species included *Carex* spp., *Erythronium albidum*, *Polygonatum biflorum*, *Impatiens capensis*, *Podophyllum peltatum*, *Parietaria pennsylvanica*, *Polygonum virginianum*, *Ranunculus* sp., *Sanicula canadensis*, *Smallanthus uvedalia*, and *Verbesina virginica*.

A second population was discovered in 2016 by Matt Buckingham and Carolina Paez while surveying a rich calcareous hardwood forest in Sabine County. This population was visited by Buckingham and Jason Singhurst in 2017 and a collection of *E. biternatum* was made. Buckingham and Paez subsequently discovered a third population in 2020 in a floodplain forest in San Augustine County. These sites extend the known range of *Enemion biternatum* in Texas by approximately 260 kilometers.

**Vouchers. Texas. Sabine Co.:** Ca. 0.85 mi E of the intersection with SH 87 and Reeves Road on a moderately steep (5-15%) calcareous slope above Reeves Creek and Toledo Bend Reservoir, 6 Mar 2017, *Singhurst & Buckingham 22295* (BAYLU). **San Augustine Co.:** Floodplain forest on E side of Ayish Bayou and N side of SH 103, 0.54 mi E of the intersection of SH 103 and FM 705, 16 Feb 2020, *Buckingham & Paez s.n.* (BAYLU). Figures 1-4.

The Sabine County population occurs on a moderately steep slope in a rich hardwood forest on Eastwood very fine sandy loam soils (Griffith 2006). The canopy is dominated by *Fraxinus americana*, *Liquidambar styraciflua*, *Quercus pagoda*, *Q. shumardii*, and *Q. nigra*. Subcanopy woody plants include *Cercis canadensis*, *Acer leucoderme*, *Ostrya virginiana*, and *Crataegus* spp. Associated herbaceous species include *Carex albicans*, *Luzula echinata*, *Asplenium platyneuron*, *Claytonia virginica*, *Galium* spp., and *Podophyllum peltatum*. At this site, *E. biternatum* occurs with several other species of spring ephemeral forbs that are rare in the region including *Erythronium rostratum*, *Trillium gracile*, *Cardamine concompacta*, and *Phlox divaricata*. Adjacent slopes contain additional rare and noteworthy species including *Sanguinaria canadensis*, *Polygonatum biflorum*, *Spigelia marilandica*, *Fragaria virginiana*, *Lilium michauxii*, *Tipularia discolor*, and *Silene stellata*.

The location of the San Augustine County population contains a markedly different plant community. There the species occurs in a flat floodplain forest on the Mattex-Iulus soil complex, which consist of loams associated with areas of frequent flooding (Griffith 2006). The overstory contains a mix of typical floodplain hardwoods including *Quercus phellos*, *Q. lyrata*, *Ulmus rubra*, and *Celtis laevigata*. In some instances, *Enemion biternatum* was observed growing within close proximity to *Taxodium distichum*. Associated herbaceous species at this site include *Arundinaria gigantea*, *Carex* spp., *Packeria glabella*, *Viola sororia*, *Ranunculus* sp., and *Cardamine bulbosa*.

The discovery of these populations helps confirm the belief that the Wright collection was not made in northeast Texas (although it is now known to occur there, i.e., Red River Co.), but rather further south in the Pineywoods (Singhurst et al. 1998). Considering that Wright entered Texas on the El Camino Real and subsequently traveled south and west to Angelina and Tyler counties, it is likely that his route would have crossed Ayish Bayou and other area streams that likely contained suitable habitat for *Enemion biternatum*. It is expected that the species is present in other areas in far east Texas that contain remnant mature hardwood forests over calcareous substrates.

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Figure 1. *Enemion biternatum* (Ranunculaceae) in Sabine County. Photo by Matt Buckingham.



Figure 2. *Enemion biternatum* in San Augustine County. Photo by Matt Buckingham.



Figure 3. Rich calcareous slope forest in Sabine County, with *Enemion biternatum*, *Erythronium rostratum*, and *Cardamine concompacta*. Photo by Matt Buckingham.



Figure 4. Floodplain forest in San Augustine County, with *Enemion biternatum*, *Cardamine bulbosa*, and *Ranunculus* spp. Photo by Matt Buckingham.