

## NOTEWORTHY COLLECTIONS

THE REDISCOVERY OF *APHYLLON RIPARIUM* (L.T. COLLINS)  
A.C. SCHNEID. (OROBANCHACEAE) IN  
TIPPECANOE COUNTY, INDIANA, USA

Zachary Poynter

Ramboll

8845 Governor's Hill Drive, Suite 205

Cincinnati, Ohio 45249

zpoynter@ramboll.com

**Significance of the Report.** The 2019 rediscovery of *Aphyllon riparium* (L.T. Collins) A.C. Schneid. in Tippecanoe County, Indiana represents the most recent observation of the species in the county in twenty five years and its northernmost known occurrence in Indiana and the Midwest.

**Previous Knowledge.** *Aphyllon riparium* (L.T. Collins) A.C. Schneid. (Orobanchaceae) (river broomrape) was described in 2009 (as *Orobanche riparia*) as distinct from *A. ludovicianum* (Nutt) A. Gray (Collins et al. 2009). The type specimen was collected by Charles Deam in Gibson County, Indiana in 1931 (Collins et al. 2009). The New World taxa formerly included in the nearly cosmopolitan genus *Orobanche* were recently segregated into the genus *Aphyllon* (Schneider 2016), although some authorities (e.g., Weakley et al. 2017) refer some of the species, including *A. riparium*, to the genus *Myzorrhiza*, in which case the species treated here would be called *Myzorrhiza riparia* (L.T. Collins) Weakley. The name *Aphyllon riparium* is used here, however, to be consistent with recently published literature on this species (Collins et al. 2023).

*Aphyllon riparium* exhibits a wide distribution that ranges from east of the Appalachian Mountains in Virginia westward to Arizona (Collins et al. 2023), with a notable concentrated distribution in the Ohio and Wabash River Valleys (Collins et al. 2009). In *Flora of Indiana* (Deam 1940), Charles Deam indicates that it has a localized distribution in Indiana, being reported from only four counties. An observation recorded as *Orobanche ludoviciana* was made in 1939 in Tippecanoe County, Indiana (Guard and Silver 1941). It can be assumed that this is indeed *Aphyllon riparium* due to notes describing the habitat and the plants parasitizing *Ambrosia trifida* and *Xanthium strumarium*. John McCain included *Orobanche ludoviciana* Nutt. var. *ludoviciana* in his checklist of the plants of Tippecanoe County, Indiana in a 1994 report for the Sycamore Audubon Society, but no specimen exists. It is assumed that his observation was *Aphyllon riparium* due to its geographic location and the note that it was parasitizing *Ambrosia trifida*. Before the observation and collection noted in this paper, there was only one extant site known in Indiana, in Harrison County



FIGURE 1. Extant (circles) and historic (triangles) distribution of *Aphyllon riparium* in Indiana. Source of base map: GISGeography.com.

(Scott Namestnik pers. comm.). There has since been one additional observation along the White River in Morgan County, Indiana in 2022, although there is no voucher, bringing the extant distribution known in Indiana to include Harrison, Morgan, and Tippecanoe counties (Scott Namestnik, personal communication, June 2024). The historical and current distribution in Indiana thus includes Gibson, Harrison, Jefferson, Knox, Morgan, Posey, Sullivan, Tippecanoe, Warrick, and Vanderburgh counties (Figure 1).

**Discussion.** In August of 2019, Heidi Klotz Etter discovered an unidentified *Aphyllon* in a dense stand of *Ambrosia trifida* in the floodplain of the Wabash River in Prophetstown State Park in Tippecanoe County, Indiana. The author identified it as *Aphyllon riparium* in the field and notified Indiana Department of Natural Resources in addition to documenting the occurrence with iNaturalist (Figure 2) (Poynter 2021). Indiana state botanist, Scott Namestnik, visited the site in 2019 and collected a specimen that is now housed at Indiana University's herbarium (citation below). When Scott visited to make the collection, more than 25 individuals were observed at the location with at least 50 individuals observed throughout the larger floodplain site.

The site is approximately 185 km from the nearest vouchered location in Knox County and the furthest upstream occurrence along the Wabash River. The



FIGURE 2. Flowering stems of *Aphyllon riparium* within a dense stand of giant ragweed (*Ambrosia trifida*). Photo by Zachary Poynter.

site is on well drained silty alluvium located immediately downstream from the confluence of the Tippecanoe River and the Wabash River (Figure 3). The area has been monitored by Cardno (now Stantec) from 2015 to 2023 as part of a mitigation project that includes floodplain restoration via tree/shrub planting and native seeding. The dominant cover at the site has been *Ambrosia trifida* throughout vegetation monitoring (Ryan Mendenhall, personal communication, May 2024). This site is often inundated in the early spring due to floodwaters from the Wabash River.

Since the initial 2019 observation and collection, *Aphyllon riparium* has been observed at the site in 2021 and 2022 during vegetation monitoring by Ryan Mendenhall (personal communication, May 2024). The site has had annual monitoring since 2015, but *Aphyllon riparium* was not documented until 2019. Since *A. riparium* is an annual species, it is likely that populations do not establish and flower every year. However, the plant is also relatively difficult to find in its habitat, especially if the ground layer is not observable due to vegetation being pushed down by floodwaters.



FIGURE 3. Photo showing the habitat of the specimen of *Aphyllon riparium* documented here, adjacent to a maintained walking path. Photo by Zachary Poynter.

Given the abundance of floodplain habitat that is dominated by *Ambrosia trifida* and the lack of botanists surveying such areas, this species may be overlooked. This northern observation in the Midwest suggests that this species may be found outside of its current documented range. Continued survey efforts during the flowering season should be conducted in appropriate habitats.

**Diagnostic Characters.** *Aphyllon riparium* differs from *A. ludovicianum* in its triangular pointed corolla lobes in contrast to the rounded corolla lobes of the latter. *Aphyllon riparium* also strictly inhabits bottomlands along major rivers in either sand or silt in addition to parasitizing annual species including *Ambrosia trifida* L. and *Xanthium strumarium* L. In contrast, *Aphyllon ludovicianum* inhabits uplands while parasitizing perennial species such as *Grindelia squarrosa* (Pursh) Dunal, *Heterotheca* spp., *Artemisia* spp., and occasionally plants in other genera. The two species also flower at different times, with *A. ludovicianum* flowering from April to August, whereas *A. riparium* flowers from August to October.

**Specimen Citation.** INDIANA: Tippecanoe County: Prophetstown State Park, Along Trail 3, in *Ambrosia trifida*-dominated floodplain of Wabash River in clay soil. More than 25 individuals at this location, at least 50 individuals on the site. Associates include *Acer saccharinum*, *Ambrosia trifida*, *Humulus japonicus*, *Lonicera maackii*, *Persicaria longiseta*, *Phalaris arundinacea*, *Rudbeckia laciniata*, *Symphyotrichum lanceolatum*, *Urtica dioica*, and *Viola sororia*. September 30, 2019, Scott Namestnik 4114 (IND) 0157531 [158532].

### ACKNOWLEDGMENTS

Thanks to Heidi Klotz Etter for her keen eye resulting in finding this population. Thanks also to Benjamin Hess who identified the area as potential habitat and who has surveyed for the species at the site previously. Ryan Mendenhall also provided general site information and history regarding the monitoring of the area. Scott Namestnik visited the population, collected the specimen referenced here, provided information on the status of the species in Indiana, and reviewed the manuscript.

### LITERATURE CITED

- Collins, L. T., A. E. L. Colwell, and G. Yatskievych. (2009). *Orobanche riparia* (Orobanchaceae), a new species from the American Midwest. *Journal of the Botanical Research Institute of Texas* 3: 3–11.
- Collins, L. T., A. C. Schneider, F. S. Coburn, and D. Von Gausig. (2023). *Aphyllon riparium* (Orobanchaceae) in Arizona. *Phytoneuron* 2023-54: 1–5.
- Deam, C. C. (1940). *Flora of Indiana*. State of Indiana Department of Conservation, Division of Forestry, Indianapolis.
- Guard, A. T. and W. H. Silver. (1942). A new station for *Orobanche ludoviciana*. *Indiana Academy of Science*. 51: 116–117. Available online at <https://journals.indianapolis.iu.edu/index.php/ias/article/view/4867/4711>
- Poynter, Z. P. (2021). iNaturalist observation: <https://www.inaturalist.org/observations/70231467>. (Accessed on May 8, 2024).
- Schneider, A. C. (2016). Resurrection of the genus *Aphyllon* for New World broomrapes (*Orobanche* s.l., Orobanchaceae). *PhytoKeys*. 75: 107–118. <https://doi.org/10.3897/phytokeys.75.10473>.
- Weakley, A. S., D. B. Poindexter, R. J. LeBlond, B. A. Sorrie, C. H. Karlsson, P. J. Williams, E. L. Bridges, et al. (2017). New combinations, rank changes, and nomenclatural and taxonomic comments in the vascular flora of the southeastern United States. II. *Journal of the Botanical Research Institute of Texas*. 11: 291–325.