

## ***PISTIA STRATIOTES* (ARACEAE) NATURALIZED IN THE ARKANSAS FLORA**

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### **ABSTRACT**

*Pistia stratiotes* is reported here for a first occurrence in the Arkansas flora from Garland and Washington counties. In Garland County, multiple plants were observed escaped along a highly disturbed drainage within the city of Hot Springs. Escaped plants had arisen from a large, cultivated population of *P. stratiotes* that itself had spread asexually to cover a several square meter area at one end of the drainage. The escaped plants were stoloniferous offsets that had washed down the drainage. These plants also were increasing via offsets. The Washington County plants were from two separate locations, both within the city of Fayetteville. One population, from Gulley Park, consisted of numerous plants/clones presumably established via stoloniferous offsets from plants intentionally introduced at the site. Photographs of *P. stratiotes* in habitat and notes on its potential for establishment in the state are provided.

*Pistia stratiotes* L. (water-lettuce; water-cabbage) is reported here for a first naturalized occurrence in Arkansas from highly disturbed habitats in Garland and Washington counties, within the cities of Hot Springs and Fayetteville, respectively. This species previously has not been reported for the state (Thompson 2000; Arkansas Vascular Flora Committee 2006; Gentry et al. 2013; Kartesz 2015; USDA, NRCS 2022; Weakley 2022). The Garland County plants occurred as numerous, scattered groups of asexually produced plants/stoloniferous offsets and isolated individual plants distributed along many tens of meters of a drainage ditch in a highly disturbed habitat (Figs. 1–4). The source of the escaped plants was a large, cultivated population of *P. stratiotes* that had increased via stoloniferous offsets to cover several square meters at one end of the drainage. The escaped plants likely were offsets that had washed down the drainage and subsequently established. The continued spread and establishment of the escaped plants also appeared to be primarily or exclusively via offsets. In the USA, apparently, seed production is limited (Haynes 1988) and population expansion primarily is through vegetative propagation (Dray & Center 2018, 1992).

In 2012 and 2019, escaped plants of *Pistia stratiotes* also were observed in Washington County at Lake Lucille and Gulley Park, respectively, within the city of Fayetteville. The Gulley Park plants occurred as an extensive escaped population produced via stoloniferous offsets (Figs. 5–6); however, the population did not persist through the following winter season (Jennifer Ogle, pers. comm., 2022). It is likely that both the 2012 and 2019 occurrences of *P. stratiotes* were a result of intentional introduction at those sites. Only four plants were observed at the Lake Lucille site, and all were subsequently removed (Jennifer Ogle, pers. comm., 2022).

Although there is evidence that *Pistia stratiotes* is native to Florida (Evans 2013), it likely is nonindigenous to the remainder of the southeastern USA. Outside its native range, *P. stratiotes* is considered invasive because it impedes waterways, and it is considered possibly one of the most invasive aquatic plants worldwide (Dray & Center 2018). Most instances of introduction and establishment likely stem from discarded horticultural material (Adebayo et al. 2011). In addition to the southeastern USA (Thompson 2000; Spaulding et al. 2019; Weakley 2022), *P. stratiotes* has been documented outside of cultivation from several northern and western states (Freeman 2000; Thompson 2000; Ladd & Thomas 2015; Atha et al. 2020; Weakley 2022), although its ability to persist during winter months in more northern areas is unlikely. Overall, *P. stratiotes* is pantropical in distribution (Adebayo et al. 2011), with its origin likely in South America (Center et al. 2002).



Figure 1. *Pistia stratiotes* — escaped plants in Garland County. Stolons and offsets can be seen originating from the center plant; some offsets also are stoloniferous. A smaller but separated stoloniferous offset is present at the bottom of the photograph — it likely was produced by one of the larger plants.



Figure 2. *Pistia stratiotes* — escaped plants in Garland County (from a different area of the drainage than the plants shown in Figure 1). Plants occurred both in the water and rooted into the soil of the bank — several similar but scattered groups of plants occurred along the drainage at multiple places.



Figure 3. *Pistia stratiotes* — larger, more extensive colony, different than the ones shown in Figures 1 and 2, but showing a similar pattern of establishment with stoloniferous offsets present in the water and along the bank. Notice that many of the smaller offsets are stoloniferous.



Figure 4. *Pistia stratiotes* — escaped plants from another location of the drainage distinct from those shown in Figures 1–3. Notice the repeated theme — small clusters of asexually produced plants/offsets in water and rooted into the adjacent bank.



Figure 5. *Pistia stratiotes* — escaped plants from Gulley Park in Washington County. Numerous plants/offsets can be seen covering a large portion of the pond. The population likely was established from plants that intentionally were deposited at the site. Photo credit: Jennifer Ogle, University of Arkansas.

**Voucher specimens. Arkansas. Garland Co.:** Hot Springs, W of Central Ave., immediately S of the intersection of Franklin St and Normandy St, dozens of escaped plants/offsets established along several tens of meters of a narrow drainage ditch and highly disturbed, urban greenbelt, spreading asexually via stoloniferous offsets from originally cultivated plants, 21 Jun 2022 *Serviss 8760* (HEND, ANHC). **Washington Co.:** Fayetteville, Lake Lucille, on Lakeridge Rd, just off North St, elev. 441 m, 36.078048, -94.149676, plants floating in lake near water's edge, on N end of lake, only 4 plants seen, all collected, 30 Aug 2012, *Ogle 12-151* (UARK).

While *Pistia stratiotes* has demonstrated the ability to escape and establish localized populations in Arkansas, it probably should be considered a waif in the state's flora, as the onset of freezing temperatures in fall and winter probably limit viability for long-term persistence. It is important to note, however, that during mild winters, plants of *P. stratiotes* can persist (Nelson 1993), and Pieterse et al. (1981) indicate that perennation through seeds in northern climates does sometimes occur. In Arkansas, this species sometimes is cultivated in aquaria, water gardens, and ponds; periodic opportunities for entry into the flora from such sources exist.



Figure 6. A–B. *Pistia stratiotes* — escaped plants from Gulley Park in Washington County (same location as Figure 5). Notice plants occur both floating on the water and rooted into the open shoreline. Most, if not all, spread and establishment likely is via stoloniferous offsets (numerous small offsets can be seen in 6A). While extensive over much of the pond, the population did not survive the following winter. Photo credit: Jennifer Ogle, University of Arkansas.

#### ACKNOWLEDGEMENTS

We are grateful to Ms. Kristen Benjamin and Guy Nesom for their helpful editorial suggestions regarding this paper. Also, many thanks to Jennifer Ogle, UARK, for providing occurrence data and photographs for *Pistia stratiotes* from Washington County.

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