

**HYDRANGEA MACROPHYLLA (HYDRANGEACEAE)
ADVENTIVE IN THE ARKANSAS FLORA**

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ABSTRACT

Hydrangea macrophylla (Thunb.) Ser. is here documented as adventive in the Arkansas flora. This record is significant as no occurrences of this species outside of cultivation are known previously from Arkansas and also it represents only the second documented occurrence of this species in the USA flora. In 2016, several plants of *H. macrophylla* were discovered growing from horticultural discards in a rubbish heap in Clark County, Arkansas. The source of the plants apparently was stem cuttings that previously had been dumped at the site. Although small, plants were well-rooted with new vegetative growth and flowers when discovered. Another spontaneous occurrence of *H. macrophylla* is documented from Garland County. The Garland County specimen was obtained from a single plant discovered in a disturbed natural area along Hot Springs Creek; no evidence of prior cultivation was observed at the site. Photographs of plants and specimens from both counties are provided.

In 2016, several plants of *Hydrangea macrophylla* were discovered growing in a rubbish heap in Clark County, Arkansas (Figs. 1–3). The source of the plants apparently was stem cuttings that had been previously dumped at the site as horticultural discards. Although small, plants were well-rooted with new vegetative growth and flowers when discovered. Another spontaneous occurrence of *H. macrophylla* in Arkansas was documented by Peck in 2006 from Garland County (Fig. 4 — Peck 06–326). The Garland County specimen was obtained from a single plant discovered growing in a disturbed natural area of a wooded ravine and drainage along Hot Springs Creek. The spontaneous plant may have been escaped or possibly long-persistent from intentional planting by the Civilian Conservation Corps, a federal organization that was active in Hot Springs in the 1930s; Dirr (2004) noted that *H. macrophylla* may persist for decades subsequent to cultivation practices. However, no evidence of prior cultivation was observed at the Garland County site, and the area is diverse with naturalized exotic plant species. Water dispersal of stem segments generated from horticultural waste is a plausible explanation for the presence of the spontaneous plant, as *H. macrophylla* is commonly cultivated in Hot Springs and periodic flooding occurs along Hot Springs Creek, which could have transported and deposited such propagules to the site, allowing for establishment of the plant.



Figure 1. Adventive plants of *Hydrangea macrophylla* from Clark County, Arkansas. Each stem represents a separate plant; several may be seen in the photograph. Plants apparently were establishing from horticultural discards that were previously dumped at the site. Several large heaps of horticultural discards and lawn waste were present.

Although widely cultivated in the southern USA, *H. macrophylla* apparently does not readily escape cultivation and naturalize, and our records of adventive and spontaneous plants of *H. macrophylla* appear to represent only the second documented occurrence of this species in the USA distinct from intentional cultivation (Kartesz 2015; Weakley 2015; Jaster et al. 2016; USDA, NRCS 2016). Even in some other countries where *H. macrophylla* has been documented outside of cultivation, such as the United Kingdom, the presence of escaped or naturalized plants is uncommon (Preston et al. 2002). This seemingly limited capacity of *H. macrophylla* to escape from cultivation may owe in part to the large number of sterile flowers produced in many modern cultivars, which undoubtedly limits seed production. In addition, the absence of asexual propagules such as stolons, rhizomes, bulbs, and creeping roots also probably contributes to its relative inability to naturalize. The stems of *Hydrangea*, however, do readily produce adventitious roots and propagation of many *Hydrangea* species is accomplished easily through stem cuttings and air layering — this attribute provides a clear mechanism for the presence of the adventive plants observed in Clark County. Additional occurrences of adventive/spontaneous plants of *H. macrophylla* might be expected elsewhere in the state in areas where horticultural discards are deposited; however, future naturalization as a regular component of the flora or development into an invasive is not likely and it should probably be considered a waif, as defined by Nesom (2000). Interestingly, spontaneous occurrences of other important ornamental species arising directly from horticultural discards have been observed in Arkansas by one of the authors [BES], to include *Clerodendrum trichotomum* Thunb. (harlequin glorybower), *Colocasia esculenta* (L.) Schott (elephant's-ear, taro), *Lagerstroemia indica* L. (crepe myrtle), *Liriope spicata* Lour. (creeping lilyturf), and *Mahonia bealei* (Fort.) Carr. (leatherleaf mahonia), all of which, with the exception of *C. trichotomum*, are naturalized in the state's flora.



Figure 2. Close-up view of two of the adventive *Hydrangea macrophylla* plants from those shown in Fig. 1. Notice the well-rooted stems with numerous adventitious roots present where stems were previously buried within litter and debris.



Figure 3. Representative specimens of adventive *Hydrangea macrophylla* from Clark County (A & B).



Figure 4. Specimen of spontaneous *Hydrangea macrophylla* from Garland County, Arkansas.

Hydrangea is a genus of perhaps 25–30 species of deciduous or evergreen trees, shrubs, and lianas distributed primarily over eastern Asia, with a few species also in North America (McClintock 1957; van Gelderen & van Gelderen 2004), although Krüssmann (1977) and Wei and Bartholomew (2001) recognize more than 70 species. Several species of *Hydrangea* are prized as ornamentals for their showy, colorful flowers. *Hydrangea macrophylla* (Thunb.) Ser. (big-leaf hydrangea, French hydrangea), arguably the most important ornamental species in the genus, is a deciduous shrub to 3 meters that is native to Japan (Bailey & Bailey 1976; Krüssmann 1977). It is commonly cultivated in the southern USA, including Arkansas, and hundreds of horticultural varieties of it have been developed (Krüssmann 1977; Dirr 2002; van Gelderen & van Gelderen 2004). Two principal groups

of *H. macrophylla* cultivars occur — the *hortensias* or “mopheads,” which have large, rounded inflorescences with tightly clustered flowers, nearly all of which are sterile, and the *lacecaps*, which have flattened inflorescences, where the outer flowers are showy and sterile and the centrally positioned flowers are small and fertile (Krüssmann 1977; Dirr 2004). Gradation between inflorescence types is observable across the range of cultivars (Dirr 2004).

Flowers range in color from almost red, to various shades of pink, blue, lilac, and purple, or occasionally white. In many cultivars, excluding most with red and white flowers, soil pH and the associated availability of aluminum, along with soil phosphorous levels may combine to affect flower color (Dirr 2004; Knox 2007); genetics of the particular cultivar or individual also contributes.

Hydrangea macrophylla may be distinguished from most other shrubs in the Arkansas flora by the combination of its large, coarsely toothed, thick-membranous, sometimes semi-fleshy leaves that are oppositely arranged, exfoliating bark, and large, showy pink, blue, purple, or occasionally white-colored flowers arranged in large, many-flowered, terminal inflorescences. It is most likely to be confused with the native *H. arborescens* L. (wild hydrangea); it may be distinguished from *H. arborescens* by its laminae that are cuneate at the base. In contrast, the lamina bases of *H. arborescens* are rounded to subcordate.

Voucher specimens. Arkansas. Clark Co.: Several plants adventive from rooted stem sections on rubbish heap, from horticultural discards, plants in flower, waste area at edge of ravine along 8th St. directly E of intersection of 8th St. and McNutt St., Arkadelphia, 16 Jun 2016, *Serviss 8346* (HEND). **Garland Co.:** One plant present in disturbed natural area of ravine and drainage along Hot Springs Creek, off Shady Grove Rd., Hot Springs, 10 Sep 2006, *Peck 06-326* (HEND).

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