

A Comparative Study of Joe-Pye Weeds (*Eutrochium* spp.) and Their Relatives

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Eutrochium trial in Lavin Plant Evaluation Garden

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Colossal, bodacious, and tough all fittingly describe Joe-Pye weeds (*Eutrochium* spp.). Bountiful late-season flowers, handsome foliage, and robust habits are admirable traits of these perennial titans; however, their large size often consigns them to big landscapes. Smaller species such as *Eupatorium hyssopifolium* and *Eutrochium dubium* give a similar effect without needing so much room; and moreover, the introduction of shorter cultivars such as 'Little Joe', 'Baby Joe', and 'Phantom' are reinvigorating the use of these fantastic native wildflowers in small garden spaces.

Eupatorium, a formerly large genus in the aster family (Asteraceae), has been split up in recent years resulting in species being reclassified under genera such as *Eutrochium*, *Conoclinium*, and *Ageratina*. Most of the commonly cultivated temperate species fall within these new genera, although some species remain in *Eupatorium*. A number of these species are wildflowers in the eastern United States, while others are found across a broad geographic range in North and South America, Europe, Africa, and Asia.

Joe-Pye weed, boneset, thoroughwort, and snakeroot are common names that refer to various species in this group. Common names can be colorful, folkloric, and often regional in nature, and may be misapplied to a whole group when they actually refer to one species. For example, referring to all of the species as Joe-Pye weed is inaccurate; and furthermore, Joe-Pye weed needs the appropriate descriptor attached, such as spotted, hollow, or sweet-scented, to ensure the right species is being referenced. There are multiple versions of how it got its name. One common story says that Joe-Pye was a Native American medicine man who used *Eutrochium purpureum* to treat a variety of ailments. Similarly, boneset got its name because it was used as an analgesic for bone pains related to various fevers.

Unlike relatives such as *Aster*, *Echinacea*, and *Rudbeckia* that have composite flowers consisting of showy ray florets and tubular disk florets, *Eutrochium* spp. and kin lack the prominent petal-like rays. Surprisingly, the lack of showy rays does not greatly diminish the floral display due to the notable

size of the airy inflorescences. The domed to flattened inflorescences are variable in size, depending on the species, but can be as large as 18 inches across. Tiny disk florets with conspicuously long styles are clustered in loose, many-flowered heads at the terminals of the stems. Flowers come in a range of colors from purple to lavender to pink and white, and the impressive floral show is effective from midsummer into fall. Fluffy seed heads provide a bit of texture but are generally not ornamental, especially as they age. While there is an obvious resemblance between many of the species, *Conoclinium coelestinum* (hardy ageratum) stands out for its azure blue flowers that are more akin to annual ageratum (*Ageratum houstonianum*) than to Joe-Pye weed.

Most *Eutrochium* species have dark green leaves with toothed margins arranged in whorls of three to seven leaves per node, while *Eupatorium* and other related genera have leaves paired oppositely on the stems. Leaf sizes range from several inches for *Ageratina altissima* and *Conoclinium coelestinum* to 10 inches or more for

Eutrochium fistulosum and *E. purpureum*. The large whorled leaves of Joe-Pye weeds give the plants a strong architectural aspect. The paired leaves of hemp agrimony (*Eupatorium cannabinum*) are deeply divided into segments, which give them a superficial resemblance to marijuana (*Cannabis sativa*). And the leaves of sweet-scented Joe-Pye weed (*Eutrochium purpureum*) are often described as vanilla-scented, although this trait can vary widely.

While most species have clumping habits, hardy ageratum (*Conoclinium coelestinum*) has a rhizomatous nature. Spotted Joe-Pye weed (*Eutrochium maculatum*) often grows in aggregates in native wetlands, thus giving the mistaken impression that it is rhizomatous. Plant sizes range from several feet to nearly 8 feet tall, with the largest species looking decidedly shrub-like. The towering stems of Joe-Pye weeds can be especially colorful, ranging from solid red-purple to pink-tinged to purple-spotted among the species and cultivars.

The hollow green stems of sweet-scented Joe-Pye weed (*E. purpureum*) are typically purple-mottled at the nodes only.

Joe-Pye weeds and their relatives are rather easy to grow in average garden conditions, considering they occur naturally in a variety of habitats including woodlands, open places, and near watery landscapes such as lakes, rivers, and swamps. In general, they prefer moist, average-to-rich soil in full sun or light shade. Given that many species, such as hemp agrimony, spotted Joe-Pye weed, and hollow Joe-Pye weed, grow naturally in damp or wet habitats, they may need additional water in the hottest periods of the summer to avoid wilting. While normally sturdy-stemmed, plants may bow a bit under the weight of the large flower heads, especially after overhead irrigation or a heavy rainfall. Deadheading not only keeps plants looking neat after flowering but also deters seedlings, which can be plentiful. Larger selections can be cut back to 2 feet or so in late spring or early summer

to reduce their ultimate size. Plants that are cut back typically bloom at or near the regular time but the flower heads are usually smaller. Division is necessary only when plants outgrow their location.

Joe-Pye weeds can be used formally or informally in perennial borders, wildflower gardens, or naturalized landscapes. Moisture-loving types are naturals near ponds, streams, and pools. The tallest species command the rear of the border and make handsome backdrops for other perennials; whereas, shorter selections are perfect in smaller gardens. They combine beautifully with coneflowers, garden phlox, sunflowers, daylilies, and grasses in a variety of garden settings. The white flowers of snakeroot (*Ageratina altissima*) brighten up shady woodlands in autumn, while the deep purple leaves of 'Chocolate' are at their showiest in full sun. Joe-Pye weeds are also prized for the variety of butterflies and bees that are drawn to their frothy flowers in late summer.



Carol Freeman

Eutrochium dubium 'Little Joe'

Jessie Vining Stevens

Ageratina altissima 'Chocolate'

Richard Hawke

Eutrochium fistulosum f. *albidum* 'Bartered Bride'

The Evaluation Study

The Chicago Botanic Garden (USDA Hardiness Zone 5b, American Horticultural Society Plant Heat-Zone 5) evaluated 26 taxa of *Eutrochium* spp. and related genera from 2001 through 2013. The study included *Eutrochium* spp., *Ageratina* spp., and *Conoclinium coelestinum*, which were all formerly classified as *Eupatorium* spp. (see Table 1), and several species of *Eupatorium*. The goal of the comparative trial was to identify outstanding Joe-Pye weeds for Upper Midwestern gardens.

Five plants of each taxon were grown in side-by-side plots for easy comparison of ornamental traits and landscape performance. The evaluation garden was openly exposed to wind in all directions and received approximately ten hours of full sun daily during the growing season, which averaged 169 days per year for the trial period (see Table 2). The clay-loam soil was amended with composted leaves and had a pH of 7.4 throughout the evaluation term. The site was normally well-drained, but at times the soil retained moisture for short periods in summer and winter. Every taxon was evaluated for a minimum of four years, although most remained in the trial for six years.

Maintenance practices were kept to a minimum, thereby allowing plants to thrive or fail under natural conditions. Water was provided via overhead irrigation as needed and a mulch of shredded leaves and wood chips helped with water conservation. Moreover, plants were not fertilized, winter mulched, or chemically treated for insect or disease problems. The test garden was surrounded by an electric fence to deter deer browsing in all years except 2011, 2012, and 2013.



Eutrochium maculatum 'Glutball'

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Eutrochium maculatum 'Phantom'

Jessie Vining Stevens

Table 1: Recent Nomenclatural Changes for *Eupatorium* spp.

Current Botanical Name	Synonyms/Former Botanical Names
<i>Ageratina altissima</i>	<i>Eupatorium rugosum</i>
<i>Ageratina aromatica</i>	<i>Eupatorium aromaticum</i>
<i>Conoclinium coelestinum</i>	<i>Eupatorium coelestinum</i>
<i>Eutrochium dubium</i>	<i>Eupatorium dubium</i> , <i>Eupatoriadelphus dubius</i>
<i>Eutrochium fistulosum</i>	<i>Eupatorium fistulosum</i> , <i>Eupatoriadelphus fistulosus</i>
<i>Eutrochium fistulosum</i> f. <i>albidum</i>	<i>Eupatorium fistulosum</i> f. <i>albidum</i> , <i>Eupatoriadelphus fistulosus</i> f. <i>albidus</i>
<i>Eutrochium maculatum</i>	<i>Eupatorium purpureum</i> ssp. <i>maculatum</i> , <i>Eupatoriadelphus maculatus</i>
<i>Eutrochium purpureum</i>	<i>Eupatorium purpureum</i> , <i>Eupatoriadelphus purpureus</i>

Performance Report

In the spring of 2001, 19 taxa were planted in the sun evaluation garden, with seven taxa added to the trial in subsequent years (2002, 2003, 2006, and 2010). All plants were evaluated for their cultural adaptability to the soil and environmental conditions of the test site; disease and pest problems; winter hardiness or survivability; and ornamental qualities associated with flowers, foliage, and plant habit. Final performance ratings are based on flower production, habit quality, plant health, and winter hardiness during the evaluation period. Plant traits and final performance ratings are shown in Table 3.

Four taxa received five-star excellent ratings for their overall performance, including *Ageratina altissima* 'Chocolate', *Eutrochium dubium* 'Little Joe', *E. fistulosum* 'Carin', and *E. fistulosum* f. *albidum* 'Bartered Bride'. Top-rated plants displayed superior flower production, consistently robust habits, strong disease resistance, and winter hardiness throughout the evaluation term. Additionally, six taxa received four-star good ratings for their strong performances.

In general, the majority of taxa were heavily floriferous with coverage of 80% to 100% observed in each year of the trial. Only

Eupatorium cannabinum 'Flore Pleno' and *Eutrochium dubium* exhibited low flower production levels. On average, bloom periods were six weeks long with some lasting up to eight or ten weeks. Peak floral displays were difficult to gauge because buds, open flowers, and senescing flowers were all present within an inflorescence by the second week of flowering. As the majority of flowers faded, the quality of the floral display often declined quickly, causing the plants to look shabby or unkempt by the end of the bloom period. The brown faded flowers were particularly unattractive mixed with fresh flowers on white-flowered cultivars. There was a short period when the fluffy seed heads were slightly decorative, but generally the fruit display was not ornamental.

Most taxa exhibited robust clump-forming habits with strong vertical stems. Although plants of *Eupatorium hyssopifolium* were healthy, they consistently had irregular to uneven habits due in part to competition for space from its more robust neighbors. Seedling variation was evident in the plot of *Eutrochium maculatum*, resulting in a mix of robust to weak plants. Hardy ageratum and its cultivars displayed rhizomatous habits, which quickly blurred the lines between taxa as the plants spread into each other.

For some taxa, the slow and somewhat spotty emergence of stems in the spring looked like crown damage before they eventually filled in. Foliage quality was generally good, with leaf color ranging from deep green to gray-green to yellowish green. Plants with purple coloration in their stems often had bronze- to purple-tinged terminal leaves early in the season.

Powdery mildew was observed in all years of the trial except 2002, 2007, and 2009, and mildew infection rates varied by year and by taxon. A high rate of mildew infection coincided with the greatest number of taxa in the trial; that is, 24 taxa under evaluation from 2003 to 2006. Rates were highest in 2003 with 65% of taxa infected. Infection rates declined in subsequent years: 43% of taxa infected in 2004; 26% of taxa infected in 2005; and 25% of taxa infected in 2006. Infection rates dropped dramatically after 2006 as many of the initial taxa were removed and fewer taxa remained in the trial. Japanese beetles were observed on the foliage of *Eutrochium fistulosum* f. *album* 'Bartered Bride' and *Eupatorium serotinum* in 2002 and 2003, but damage was insignificant. An unidentified caterpillar fed on several taxa in 2003 and 2004, causing minor to moderate cosmetic damage to the leaves.

Table 2: Weather Summary for 2001-2013

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Lowest temperature °F (°C)	-4(-20)	-5(-21)	-5(-21)	-9(-23)	-2(-19)	-8(-22)	-10(-23)	-6(-21)	-17(-27)	0(-18)	-7(-22)	2(-17)	-3(-19)
Lowest temperature date	1/1	3/4	3/4	1/30	12/7	2/18	3/5	1/20	1/16	1/3	2/10	1/21	1/22
Highest temperature °F (°C)	98(37)	101(38)	98(37)	93(34)	100(38)	100(38)	96(35)	93(34)	96(35)	97(36)	102(39)	105(41)	96(35)
Highest temperature date	6/29	7/21	8/22	6/6	6/24	7/31	7/9	7/17	8/9	7/23	7/20	7/5	7/18
Number of growing season days ^a	171	146	150	155	158	143	196	181	175	177	192	165	185
Number of days below 0°F (-18°C)	2	1	4	10	2	2	11	16	8	16	5	0	3
Number of days above 90°F (32°C)	19	30	15	5	24	15	20	6	7	6	22	40	15
Last frost date	4/19	5/21	5/4	5/3	5/4	5/7	4/16	4/30	4/18	4/28	4/21	4/24	4/20
First frost date	10/7	10/14	10/1	10/5	10/23	10/12	10/28	10/28	10/10	10/22	10/30	10/6	10/22
Annual rainfall in inches (cm) ^b	44.3(112.5)	33.6(85.3)	31.7(80.5)	35.5(90.2)	24.4(61.9)	42.5(107.9)	41.0(104.1)	49.5(125.7)	38.8(95.5)	35.6(92.5)	48.2(122.4)	31.1(78.9)	39.1(99.3)
Annual snowfall in inches (cm) ^c	10.9(27.7)	37.6(95.5)	15.6(39.6)	27.2(69.1)	44.4(112.7)	23.4(59.4)	38.5(97.8)	78.5(199.4)	28.8(75.2)	51.8(131.6)	35.3(89.7)	23.4(59.4)	40.3(102.4)

^a Normal growing season is 162 days

^b Average rainfall is 35.8 inches (90.9 cm)

^c Average snowfall is 38.1 inches (96.8 cm)

Data collected at Chicago Botanic Garden weather station

Latitude: 41°51'N. Longitude: 87°37'W. Altitude: 578.74 ft. (176.4m)

Cold hardiness was generally not an issue for the taxa during the trial period. Six taxa were significantly affected by crown injury or plant losses in one or more years. *Ageratina altissima* suffered plant losses over consecutive years, beginning in the third winter until all plants had died by the spring of 2006. All plants of *Eupatorium rotundifolium* were killed in the winter of 2003-2004, the third winter of its trial. And unexpectedly, crown injury was observed on plants of *Eutrochium maculatum* in the winters of 2001-2002 and 2004-2005 as well as several plant losses noted in 2003-2004. The crowns of all plants of *Conoclinium coelestinum*, *C. coelestinum* 'Album', and *C. coelestinum* 'Cori' were killed the first winter of 2001-2002, and the plots were repopulated with seedlings or from rhizomes the following spring. This cycle of crown loss and replenishing was noted in each subsequent year until the evaluation of the three taxa ended in 2005.

Taxa were generally adaptable to the growing conditions of the trials beds, with nearly half of them garnering good or excellent final performance ratings. Specific observations on cultural adaptability, performance, and ornamental traits for each taxon in the trial are noted in the following descriptions.

Ageratina altissima (white snakeroot) had small clusters of white flowers and green nettle-like leaves. Although it can get to 6 feet tall, it was only 26 inches in the trial. The species did not thrive in the sun evaluation garden; plants were generally weak in health and habit and sustained winter losses during all but one of the trial years. On the other hand, 'Chocolate' excelled in the same growing conditions and was one of the top performers. 'Chocolate' had deep purple leaves that eventually faded by late season to green with purple undersides. Strong uniform habits and heavy flower production were noted every year. Like the species, 'Chocolate' typically wilted on the hottest days of summer or when the soil was dry. Both the species and 'Chocolate' reseeded in the evaluation garden but not at a weedy level.

Ageratina aromatica (lesser snakeroot) was represented in the trial by 'Joicus Variegated', which was a fair performer with robust habits and strong flower



Eutrochium maculatum 'Phantom'

Richard Hawke

production. Small white flowers were borne in large heads up to 16 inches across. The variegation ranged from golden-yellow to yellow to creamy yellow and ultimately faded during the season. Some stems produced fully green leaves or weakly variegated leaves. Unfortunately, powdery mildew was a problem with 50% to 80% foliar infection observed in most years.

Hardy ageratum, *Conoclinium coelestinum*, is an anomaly because its flowers are more akin to floss flower (*Ageratum houstonianum*), a popular annual plant, than to Joe-Pye weed. The lavender-blue flowers were abundantly produced from late summer into autumn on compact rhizomatous plants with light green leaves and purplish stems. Despite a reputation for being an aggressive spreader, stems did not spread widely, mixing only along the common border between cultivars. Each spring it appeared that most or all plants had died over winter, with new plants arising from scattered rhizomes or seedlings in the spring. The plot was

patchy early but filled in so completely by mid to late June that it did not look like there had been any winter losses at all. 'Album' performed similarly to the species in most regards but differed in having green stems and a slightly lower flower production. 'Album' was the most vigorous of the cultivars and filled in completely by early June. 'Cori' is touted as having clearer sky blue flowers but showed no obvious differences in floral traits from the species.

Eupatorium cannabinum (hemp agrimony), the only non-native species we evaluated, was represented by 'Flore Pleno', a double-flowered form with tiny pink flowers held in loose sprays to 6 inches across. Although many buds were produced, only about 30% of the flowers were open at any time. The terminal leaves and stems were purplish and the palmately divided leaves resembled hemp or marijuana. Habits tended to be lax to floppy wherever the stems were not supported by neighboring plants.

White-flowered *Eupatorium hyssopifolium* (hyssop thoroughwort or boneset) is a fine-textured plant with narrow leaves arranged in whorls. Hyssop thoroughwort was a consistently strong bloomer, but the heavy flower heads often pulled the thin stems down. Plant habits were typically irregular to uneven in the trial due to competition from larger, more vigorous plants in adjacent plots.

Eupatorium rotundifolium (roundleaf thoroughwort) had small white flowers and gray-green leaves with light purple veins. Plants grew well for three years but severe powdery mildew in the summer of 2003 resulted in the dieback of all stems by late September. Subsequently, all plants died in the third winter of 2003–2004. Roundleaf

thoroughwort was a common seedling found in the evaluation garden, which was not unexpected since it is a weedy native plant on open disturbed sites, pastures, railroad banks, and shores of rivers and lakes in the Chicago region.

Eupatorium serotinum (late boneset or late-flowering thoroughwort) featured fragrant white flowers in loose clusters to 8 inches across and long, coarsely toothed leaves. In the trial, late boneset was 64 inches tall with sturdy, deep red-purple stems and a rhizomatous habit. Plants were generally robust but stem height was variable within the test plot. While a good performer, the overall ornamental quality of late boneset was not as impressive or attractive as the various Joe-Pye weeds.

Eutrochium dubium (coastal plain Joe-Pye weed) looks like a compact version of spotted Joe-Pye weed (*E. maculatum*) with smaller flower heads and a shorter, narrower habit. The yellowish green leaves were borne in whorls of three (or four) on purple stems to 5 feet or slightly taller, and the terminal leaves often showed some purple. Flower color ranged from pale pink to dark purple, and stem color varied from solid purple to purple-speckled. The variation in plant size, habit, and flower color among the trial plants was likely due to seedling variation. Unfortunately, moderate flower production in all years reduced its overall rating. Conversely, both dwarf selections were stronger performers; in fact, 'Little Joe' received a five-star excellent rating. At 60 inches tall, 'Little Joe' was about a foot

Table 3: Observed Plant Traits and Performance Ratings

Overall Rating	Botanical Name	Flower Color	Flower Size ¹	Bloom Period	Flower Production ²	Plant Height	Plant Width	Mildew Resistance ³	Leaf Arrangement
★★	<i>Ageratina altissima</i>	white	¼ in. /3 in.	late Sep-late Oct	good	26 in.	18 in.	excellent	opposite
★★★★★	<i>Ageratina altissima</i> 'Chocolate'	white	¼ in. /3 in.	early Sep-late Oct	excellent	36 in.	36 in.	excellent	opposite
★★★★	<i>Ageratina aromatica</i> 'Joicus Variegated'	white	⅜ in. /16 in.	early Sep-late Oct	excellent	69 in.	46 in.	poor	opposite
★★★★	<i>Conoclinium coelestinum</i>	lavender-blue	½ in. /2 in.	late Aug-mid Oct	excellent	17 in.	36 in.	excellent	opposite
★★★★	<i>Conoclinium coelestinum</i> 'Album'	white	½ in. /2 in.	late Aug-mid Oct	good	17 in.	36 in.	excellent	opposite
★★★★	<i>Conoclinium coelestinum</i> 'Cori'	lavender-blue	½ in. /2 in.	late Aug-mid Oct	good	17 in.	27 in.	excellent	opposite
★★★★	<i>Eupatorium cannabinum</i> 'Flore Pleno'	pink, double	¼ in. /6 in.	late Jul-late Sep	fair	52 in.	42 in.	excellent	opposite
★★★★	<i>Eupatorium hyssopifolium</i>	white	⅙ in. /9 in.	early Aug-mid Oct	excellent	30 in.	22 in.	excellent	whorled
★★	<i>Eupatorium rotundifolium</i>	white	¼ in.	late Jul-early Oct	good	27 in.	15 in.	fair	opposite
★★★★	<i>Eupatorium serotinum</i>	white	¼ in. /8 in.	early Sep-late Oct	excellent	64 in.	46 in.	excellent	opposite
★★★★	<i>Eutrochium dubium</i>	purple	⅜ in. /6 in.	early Aug-early Oct	fair	64 in.	46 in.	excellent	whorled
★★★★	<i>Eutrochium dubium</i> 'Baby Joe'	light purple	⅜ in. /6 in.	early Aug-early Sep	excellent	60 in.	54 in.	good	whorled
★★★★★	<i>Eutrochium dubium</i> 'Little Joe'	purple	¼ in. /5 in.	early Aug-mid Sep	excellent	60 in.	36 in.	excellent	whorled
★★★★★	<i>Eutrochium fistulosum</i> 'Carin'	pale pink	½ in. /9 in.	early Aug-early Sep	excellent	85 in.	42 in.	good	whorled
★★★★	<i>Eutrochium fistulosum</i> 'Selection'	purple	½ in. /15 in.	early Aug-mid Sep	excellent	76 in.	48 in.	poor	whorled
★★★★★	<i>Eutrochium fistulosum</i> f. <i>albida</i> 'Bartered Bride'	white	½ in. /9 in.	late Jul-early Sep	excellent	90 in.	43 in.	good	whorled
★★★★	<i>Eutrochium fistulosum</i> f. <i>albida</i> 'Ivory Tower'	white	½ in. /10 in.	late Jul-mid Sep	excellent	67 in.	30 in.	poor	whorled
★★★★	<i>Eutrochium maculatum</i>	light purple	¼ in. /9 in.	late Jul-early Sep	good	67 in.	44 in.	good	whorled
★★★★	<i>Eutrochium maculatum</i> 'Atropurpureum'	purple	½ in. /10 in.	early Aug-early Sep	excellent	68 in.	54 in.	poor	whorled
★★★★	<i>Eutrochium maculatum</i> 'Gateway'	pink	¼ in. /12 in.	late Jul-mid Sep	excellent	78 in.	57 in.	poor	whorled
★★★★	<i>Eutrochium maculatum</i> 'Glutball'	pink	½ in. /12 in.	early Aug-mid Sep	excellent	77 in.	60 in.	fair	whorled
★★★★	<i>Eutrochium maculatum</i> 'Little Red'	light purple	¼ in. /10 in.	early Aug-mid Sep	excellent	75 in.	80 in.	poor	whorled
★★★★	<i>Eutrochium maculatum</i> 'Phantom'	purplish pink	½ in. /12 in.	late Jul-late Aug	excellent	54 in.	64 in.	good	whorled
★★★★	<i>Eutrochium maculatum</i> 'Purple Bush'	purple	¼ in. /9 in.	late Jul-mid Sep	excellent	64 in.	50 in.	good	whorled
★★★★	<i>Eutrochium maculatum</i> 'Riesenschirm'	pale purple	½ in. /12 in.	early Aug-early Sep	excellent	75 in.	90 in.	fair	whorled
★★★★	<i>Eutrochium purpureum</i>	lavender	½ in. /12 in.	late Jul-early Sep	excellent	70 in.	44 in.	good	whorled

Overall Ratings: ★★★★★ excellent, ★★★★ good, ★★★ fair, ★★ poor, ★ very poor

¹ Flower Size: width of individual floret/width of flowerhead

² Flower Production: excellent 100-80%; good 79-60%; fair 59-40%; poor 39-20%; very poor <20%

³ Mildew Resistance: excellent, no infection; good <25% infection; fair 26-50% infection; poor 51-75% infection; very poor >76% infection

taller than expected. Pink buds opened to small purple flowers with pale styles and the flower heads were more tightly clustered than spotted Joe-Pye weed. 'Little Joe' had rugose green leaves, purple stems, and heavy flower production. 'Baby Joe', topping out at 60 inches too, was twice the purported size but had a compact bushy habit nonetheless. Light purple flowers were borne profusely in narrow heads to 12 inches long; new leaves were bronzy and stems were deep red-purple. Minor powdery mildew was noted on these three taxa in at least one year.

Eutrochium fistulosum (hollow Joe-Pye weed) is easily confused with other large-scale Joe-Pye weeds, but its dark green leaves are 8 to 12 inches long and arranged in whorls of four to six (or seven) leaves at each node on the hollow stems. The species was not represented in the trial. Pale pink-flowered 'Carin' was a top performer, featuring robust habits with dusky purple stems and a bounty of flower clusters to 9 inches across. At 85 inches tall, 'Carin' was the second largest plant in the trial. 'Selection' was a large cultivar too, over 6 feet tall with deep burgundy stems. Small purple flowers

in large clusters to 15 inches across bloomed from early August into September. Heavy flower production and sturdy stems were strong traits of 'Selection'; however, powdery mildew was a significant problem on leaves and flowers in the late season. At 90 inches tall, white-flowered 'Bartered Bride' was the tallest plant in the trial, and although its stems were generally yellowish green, light purple striations were periodically observed. Excellent flower production, sturdy upright stems, and disease resistance earned 'Bartered Bride' a five-star excellent rating. 'Ivory Tower' was the shortest of the hollow Joe-Pye weed cultivars, and had white flowers and pale green stems. Unfortunately, brown senescing flowers amid the fresh flowers made the floral display of the two white-flowered cultivars look dirty at times. Powdery mildew was a significant problem for 'Ivory Tower'.

In the trial, plants of *Eutrochium maculatum* (spotted Joe-Pye weed) exhibited a range of plant sizes and traits due to seedling variation, and stem coloration varied from green to light purple. Small light purple flowers, in clusters to 9 inches across,



Eutrochium purpureum

Jessie Vining Stevens



Eutrochium maculatum 'Purple Bush'

Jessie Vining Stevens



Eutrochium maculatum 'Little Red' and *Ageratina altissima* 'Chocolate'

Jessie Vining Stevens

were plentiful from late July into early September. Leaf number varied from three to four leaves in each whorl. Although considered cold-hardy in our area, we observed crown injury in three out of five winters, resulting in weaker habits in the following springs. Additionally, two plants were killed in the winter of 2003-2004. Seven cultivars of spotted Joe-Pye weed were evaluated in the trial.

'Atropurpureum' was an inconsistent performer, alternatingly good and poor every other year due to powdery mildew. Floral display was steady every year with a profusion of purple flowers clustered in domed inflorescences to 10 inches across. Stem color was generally red-purple but occasionally sparsely purple-spotted stems were present in some plants. Severe powdery mildew infection significantly diminished plant health in September of 2003 and 2005.

'Gateway' had deep burgundy stems, bushy habit, and purple buds and pink flowers in 12-inch clusters. Unfortunately, its ornamental qualities were overshadowed by severe powdery mildew in 2003, 2004,

and 2005, and minor mildew in 2006. 'Gateway' is supposedly more compact and shorter than the species, but plant size can vary widely. 'Glutball' was a large bushy plant with attractive dark red-purple stems and a strong floral display. Like 'Gateway', it suffered from mildew in most years of the trial, typically causing 50% of the leaves to drop by early autumn. 'Little Red' reached 75 inches tall, nearly 3 feet taller than described in nursery catalogs. Airy clusters of purple flowers to 16 inches across were held on deep burgundy stems. Powdery mildew was a significant problem for 'Little Red' in 2003 and 2004 but was not present in 2005 and 2006.

'Phantom' was a strong performer with dark red-purple stems and a compact bushy habit. At 54 inches tall, the plants were 18 inches taller than expected based on descriptions. Silvery buds opened to purplish pink flowers held in clusters to 12 inches across. Minor mildew was noted in 2006 and 2008 but did not impact the health or ornamental quality of the plants. Like all spotted Joe-Pye weeds, 'Phantom' was long-blooming but brown flowers

began appearing shortly after opening. 'Purple Bush' had a dense bushy habit, but at 64 inches tall was a foot or so taller than described. Its terminal leaves were purple to bronze early in the season and the stems were red-purple. Minor powdery mildew was observed in 2003, 2004, and 2006 but was an insignificant health and cosmetic issue. 'Riesenschirm' featured pink buds that opened to pale purple flowers and purple terminal leaves. Severe powdery mildew was observed in 2003 and 2004 but was minor in 2005 and 2006. Powdery mildew was generally the reason that final ratings were lower for cultivars of *Eutrochium maculatum*.

Eutrochium purpureum (sweet-scented Joe-Pye weed) and *E. maculatum* are similar to each other in character and often confused or treated interchangeably in the gardening world. Sweet-scented Joe-Pye weed featured whorls of four or five leaves on green stems with purple blotches only at the nodes. Sweetly fragrant lavender flowers, in heads to 12 inches across, were borne on tall sturdy stems in midsummer. Powdery mildew was a serious problem in 2004, but plants were untroubled by it in other years.

*Eutrochium maculatum* 'Gateway'

Richard Hawke

Summary

Joe-Pye weeds and their relatives are underrated native plants that possess many great garden qualities. Large airy inflorescences and handsome foliage grace an array of plant sizes. These long-blooming plants are invaluable for attracting an assortment of butterflies to the late season garden. The tallest species tend to be titans, which limits their use in small spaces, but can be switched out for a number of wonderful compact selections and shorter species.

Four of the 26 taxa in the trial received five-star excellent ratings for their overall performance, including *Ageratina altissima* 'Chocolate', *Eutrochium dubium* 'Little Joe', *E. fistulosum* 'Carin', and *E. fistulosum* f. *albidum* 'Bartered Bride'. All of these top-rated plants displayed superior flower production, robust habits, good disease

resistance, and winter hardiness throughout the evaluation period. Six additional taxa received four-star good ratings for their strong performances.

The Joe-Pye weeds were mostly adaptable to the growing conditions of the full sun evaluation garden. A few taxa wilted in the hottest weather, but there was typically enough soil moisture for good growth. In a few cases, the large size of some plants crowded out smaller adjacent plants, thus affecting their habit quality. Powdery mildew was the only significant disease issue for Joe-Pye weeds. Infection rates ranged from minor to severe, but some species were not troubled at all. Overall, nearly half of the taxa received good or excellent final ratings, showing that these common wildflowers are uncommonly good garden plants too.

*Eutrochium fistulosum* 'Carin'

Carol Freeman

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