

TAXONOMIC SUMMARY OF *BOLTONIA* (ASTERACEAE: ASTEREAE)

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ABSTRACT

Twenty species of *Boltonia* are recognized, including 8 described as new in accompanying manuscripts: ***B. annua***, ***B. delmaria***, ***B. ellipsium***, ***B. floridana***, ***B. kalispelia***, ***B. magnicamporum***, ***B. pacifica***, and ***B. sabinea***. ***Boltonia angustifolia*** (Raf.) Nesom (comb. nov., neotypified), is a previously unrecognized endemic of the Delmarva Peninsula and adjacent southern New Jersey. ***Boltonia cuneifolia*** (Raf.) Nesom (comb. nov., neotypified), including *B. ravenelii*, is a salt marsh species from southeastern North Carolina through Georgia and northeastern Florida. A nomenclatural/typification summary and distribution map are given for each species. A summary of chromosome number reports includes 11 species.

Boltonia has been regarded as a genus of 2 to 7 species, mostly of the eastern USA and Canada, with disjunct populations in the Pacific Northwest (e.g., Fernald 1940; Morgan 1967; Cronquist 1980; Karaman-Castro & Urbatsch 2006; Townsend & Weakley 2026). Two new species were recently described, *Boltonia apalachicolensis* (Anderson 1987) and *Boltonia montana* (Townsend & Karaman-Castro 2006), and the concept of *B. asteroides* sensu stricto was narrowed to populations in southeastern Pennsylvania and closely adjacent Maryland (Townsend 2013). Beyond Fernald's overview in 1940, however, Morgan's dissertation of 1967 has been the only detailed study of the whole genus and it was never published. The present study recognizes 20 species, based on morphology, geography, and habitat (Nesom 2026a-f).

Some species of *Boltonia* are recognized with confidence (e.g., *B. decurrens*, the most distinctive) while other names have been used inclusively and seen as comprising taxa of varietal rank (e.g., *B. recognita*, *B. latisquama*, and *B. glastifolia* within *B. asteroides*) and without an explicit explanation of what is meant by distinction in rank. Plants most often identified as *B. diffusa* prove to include several discrete, unnamed entities.

Parallelism and variability in *Boltonia* are pervasive and make species difficult to distinguish. Identifications have tended to be typological, leading to some taxa being viewed with an overly wide geographical range, often broadly sympatric with others. Morgan provided a collection-based dot map for each taxon recognized, but the maps of FNA and the Weakley flora are generalized. Attempts to identify all collections using only pre-existing names also have contributed to taxonomic difficulty. The maps and morphological contrasts presented in this set of studies presumably will make identifications simpler and more comprehensible.

Diagnostic morphological differences among *Boltonia* species are mostly in (a) presence or absence of rhizomes, (b) inflorescence architecture, (c) involucre size and phyllary morphology, (d) ray length, and (e) fruit morphology and vestiture. All of these can be seen via hi-res specimen images available via herbarium consortia — even fruit morphology can sometimes be seen.

Production of rhizomes is interpreted here as consistent within a species but apparently labile among closely similar species. They occur in *B. glastifolia* and *B. cuneifolia* but not in *B. asteroides* or *B. montana*; they occur in *B. occidentalis*, *B. pacifica*, *B. kalispelia*, *B. magnicamporum*, and *B. recognita* but not in *B. latisquama*, *B. decurrens*, or *B. apalachicolensis*; in *B. sabinea*, *B. floridana*, *B. ellipsium*, *B. angustifolia*, and *B. delmaria* but not in *B. diffusa* sensu stricto or in *B. annua*. Plants in the two genera most closely related to *Boltonia* — *Batopilasia* and *Chloracantha* (Nesom 2000, 2020) — are rhizomatous, thus production of rhizomes plausibly is a plesiomorphic feature in *Boltonia*.

Diploid and tetraploid chromosome counts have been reported for *Boltonia* (see Literature — Chromosome Number Reports), but lack of documentation (vouchers) makes identifications problematic. The 16 counts reported by Morgan (1966) were identified with only a collection number (including a state abbreviation and county) and her vouchers were neither deposited nor detailed in her dissertation. Without vouchers, identifications here are made mostly as inferred from geography, based on the ranges mapped in the current studies.

CHROMOSOME NUMBER REPORTS IN BOLTONIA

APALACHICOLENSIS

2n=18 – Franklin Co., Florida (*Anderson 7713, 7777, 7818, 8915*, as *B. apalachicolensis*; Anderson 1987)

2n=36 – Yazoo and Carroll cos., Mississippi ("M1, M4" in Morgan 1966, as *asteroides*, ID inferred from geography)

CAROLINIANA

2n=18 – Alamance Co., North Carolina ("NC2" in Morgan 1966, as IDed by Morgan)

2n=18 – Chesterfield Co., South Carolina ("SC2" in Morgan 1966, as IDed by Morgan)

2n=18 – Southampton Co., Virginia ("V1" in Morgan 1966, as IDed by Morgan)

CUNEIFOLIA

2n=18 – Jasper Co., South Carolina (*Anderson 8902*, count by L.C. Anderson, as annotated)

DECURRENS

2n=18 – Mason, Peoria, and Woodford cos., Illinois (Morgan 1967, as IDed by Morgan)

DIFFUSA

2n=18 – Tuscaloosa Co., Alabama ("A13" in Morgan 1966, as IDed)

2n=18 – Forrest Co., Mississippi (*Jones 3527*; Jones 1966, as IDed)

2n=18 – Marshall Co., Mississippi ("M6" in Morgan 1966, as IDed)

2n=18 – Craighead Co., Arkansas ("Ak2" in Morgan 1966, as *diffusa* var. interior, ID inferred from geography)

2n=18 – Jefferson Co., Arkansas ("Ak7" in Morgan 1966, as *diffusa* var. interior, ID inferred from geography)

2n=18 – Haywood Co., Tennessee ("T4" in Morgan 1966, as *diffusa* var. interior, ID inferred from geography)

2n=18 – Benton Co., Tennessee ("T3" in Morgan 1966, as *diffusa* var. interior, ID inferred from geography)

2n=18 – Coffee Co., Tennessee ("T1" in Morgan 1966, as *diffusa*, ID inferred from the geography)

2n=18 – Hamilton Co., Illinois (*Semple 9420*, not seen; Semple et al. 1993)

2n=18 – Dubois Co., Indiana (*Smith 3622*, not seen; Sherif et al. 1983 as *asteroides*; ID inferred from geography) Mapped as *B. interior*.

ELLIPSIMUM

2n=36 – Aiken Co., South Carolina ("SC4" in Morgan 1966, as *diffusa*, ID inferred from the locality)

2n=36 – Beaufort Co., South Carolina ("SC1" in Morgan 1966, as *asteroides*, ID inferred from geography and from the other tetraploid count for the species.

FLORIDANA

2n=18 – Baker Co., Georgia (*Godfrey 82963*-FSU, count by L.C. Anderson, as annotated)

LATISQUAMA

2n=18 – Douglas Co., Kansas (*Jackson 2953*-KANU, NY; Jackson 1962)

MAGNICAMPORUM

2n=36 – Harvey Co., Kansas (*McGregor 15865*-KANU; Jackson 1962)

2n=18 – Manitoba, Canada (*Love & Love S3723*, not seen; Love & Love 1982; ID inferred from geography)

RECOGNITA

2n=36 – Jefferson Co., Illinois ("I8" in Morgan 1966, as *recognita* -- in the range of *recognita*)

SABINEA

2n=18 – Hardin Co., Texas (*Turner 4612*; Turner & Ellison 1960)

2n=18 – Harris Co., Texas (*Turner 4606*; Turner & Ellison 1960)

2n=18 – Caddo Par., Louisiana (*Raven 20835*; Anderson et al. 1974)

NATURAL GROUPS

Morgan (1967) recognized "two lines of evolution" within *Boltonia* —

***Boltonia diffusa* and varieties** - "diffusely paniculate branching habit, long bracteate peduncles," and comparatively smaller other features. Stem vessel elements in irregular clusters, with oblique end walls, and pith cells thick-walled. Including Morgan's var. *diffusa*, var. *interior*, and (as inferred from her maps) *B. sabinea* and *B. floridana* of the present treatment. *Boltonia ellipsium* and *B. angustifolia* are hypothesized to be closely related and belong here, as probably does *B. annua*.

***Boltonia asteroides* and varieties** - "loosely ascending branches or corymbosely branching habit, short leafy peduncles, and ... larger leaves, more numerous disc flowers, larger receptacles, larger phyllaries, and larger fruits with longer awns." Stem vessel elements in groups of four or multiples of four, with horizontal end walls and pith cells thin-walled. Including Morgan's var. *asteroides*, var. *recognita*, var. *latisquama* (with the segregate *B. magnicamporum*), and var. *decurrens*. Within her "asteroides" (as inferred from her maps) are *B. asteroides*, *B. montana* (see below), *B. angustifolia*, *B. glastifolia*, *B. cuneifolia*, and *B. apalachicolensis* of the present treatment. *Boltonia delmaria* belongs here, as do the three Pacific Northwest species.

The present study suggests that a third group is distinct, characterized by ebracteate or sparsely bracteate peduncles, steeply conic receptacles, reduced pappus awns, and northeastern geography. Including *B. asteroides* sensu stricto, *B. montana*, and *B. caroliniana*.

KEYS

Pacific Northwest

1. Inflorescence paniculate, peduncles multibracteate ***Boltonia kalispelia***
1. Inflorescence corymboid, peduncles most without bracts.
 2. Leaves 10–17 mm wide; involucre 4.5–6 mm wide; phyllary apex apiculate; rays 45–60 ***Boltonia occidentalis***
 2. Leaves 5–10 mm wide; involucre 7–8 mm wide; phyllary apex acute; rays 15–30 ***Boltonia pacifica***

Central and Midwest

1. Inflorescence paniculate to subcorymboid; rhizomes present or absent; phyllary apex apiculate; prairies.
 2. Rhizomes absent; midcauline leaves 1–5 mm wide; inflorescence paniculate; peduncles 3–10(–30) cm long; involucre 4.5–5 mm wide; dark midline of phyllaries broadly expanded distally; ray corollas 10–18 mm long ***Boltonia latisquama***
 2. Rhizomes present; midcauline leaves 5–12 mm wide; inflorescence paniculate-subcorymboid to subcorymboid, peduncles 1–2.5(–4.5) cm long; involucre 6–8 mm wide; dark midline of phyllaries mostly linear or slightly expanded distally; ray corollas 6–8 mm long ***Boltonia magnicamporum***
1. Inflorescence distinctly corymboid; rhizomes absent; phyllary apex not apiculate; usually in bottomlands or wet woods.
 3. Leaves decurrent ***Boltonia decurrens***
 3. Leaves not decurrent.
 4. Rhizomes present; rays 30–60; inner phyllaries 2.5–3 mm long; achenes 2–3 mm long, awns 1–1.5 mm, ray achenes with awns, corona absent or only as fimbria ***Boltonia recognita***
 4. Rhizomes absent; rays 25–30; inner phyllaries 1.5–2 mm long; achenes 1.6–2 mm long, awns 0.2–0.5 mm long, ray achenes often without awns, corona prominent ***Boltonia apalachicolensis***

Atlantic seaboard species

1. Without rhizomes, basal offsets sometimes produced; receptacles steeply conic; achenes wingless or very narrowly winged, pappus absent or strongly reduced.

2. Heads often numerous, on divaricately spreading peduncles; involucre 3.5–4 mm wide; cauline leaves 3.5–7(–10) mm wide ***Boltonia caroliniana***

2. Heads relatively few, on ascending peduncles; cauline leaves 4–8(–12) mm or (8–)10–20 mm wide

3. Stems not decumbent or rooting at nodes; leaves mostly 4–8(–12) mm wide; phyllaries without scarious margins, not reflexing; achenes obovate, 1.3–1.5 mm long, narrowly winged, faces minutely strigose, pappus a corona of minute bristles and 2 longer awns ***Boltonia asteroides***

3. Stems often decumbent and rooting at nodes; leaves (8–)10–20 mm wide; phyllaries with broad, scarious margins, reflexing at fruit maturity and release; achenes oblong to oblong-elliptic or elliptic, 1.5–2 mm long, without wings, faces glabrous, pappus a crown of minute scales, without awns

..... ***Boltonia montana***

1. Rhizomatous, without basal offsets; receptacles low conic; achenes prominently winged; pappus of awns 0.8–1.2 mm long.

4. Plants of coastal marshes.

5. Cauline leaves reaching the inflorescence as linear bracts; inflorescence paniculate; involucre 5–6 mm wide; phyllary margins scarious ***Boltonia glastifolia***

5. Cauline leaves reaching the inflorescence as foliar bracts; inflorescence corymboid; involucre 3.5–5 mm wide; phyllary margins not scarious ***Boltonia cuneifolia***

4. Plants of inland habitats.

6. Leaves 2–5 mm wide; inflorescence paniculate to subcorymboid or heads solitary, inflorescence bracts linear, not discontinuous from the cauline leaves, abruptly reduced; peduncles mostly with 2–5 small or minute bracts; inner phyllaries 2.5–3 mm long ***Boltonia angustifolia***

6. Leaves 4–9 mm wide; inflorescence corymboid, with foliaceous bracts reaching the lower nodes, then abruptly reduced; peduncles mostly with 0–2 small bracts; inner phyllaries 3–4 mm long

..... ***Boltonia delmaria***

"Diffusa" species

1. Plants annual, with basal offsets; achenes 1.6–1.8 mm long, awns 0–0.1 mm long ***Boltonia annua***

1. Plants perennial, sometimes flowering the first year, without basal offsets; awns 0.5–1.2 mm long.

2. Plants rhizomatous; involucre 5–6.5 mm wide; achenes 1.8–1.9 mm long, awns 1–1.2 mm long ***Boltonia ellipsium***

2. Plants rhizomatous or not; involucre 3.5–5 mm wide; achenes 0.5–2 mm long, awns 1–1.2 mm long ***Boltonia diffusa*, *B. sabinea*, *B. floridana***

aa. Rhizomes absent; rays 28–35; phyllaries in 3–4(–5) series of unequal length, midline distinctly broadening distally; achenes 1.3–1.5 mm long ***Boltonia diffusa***

aa. Rhizomes present; rays 14–28; phyllaries in 2–3 series of equal to subequal length, midline not broadening distally; achenes 1.6–2 mm long ***Boltonia sabinea***

bb. Rhizomes absent; peduncles with 5–8 bracts; phyllaries in 3–4(–5) series of unequal length, midline distinctly broadening distally; rays 28–35, consistently white; achenes 1.3–1.5 mm long

..... ***Boltonia diffusa***

bb. Rhizomes present; peduncles mostly with 1–3(–5) bracts; phyllaries in 2–3 series of equal to subequal length, midline not broadening distally; rays 18–25, white to blue or lavender; achenes 0.5–0.8 mm long

..... ***Boltonia floridana***

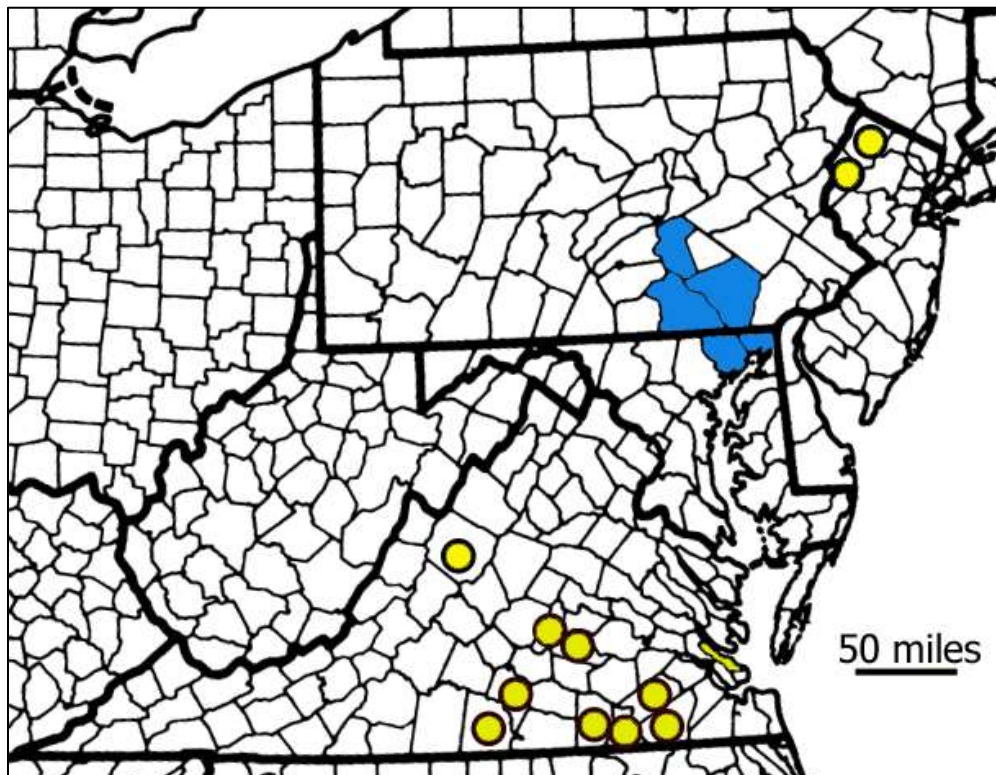
HYBRIDS

Although areas of sympatry are limited and variability makes interpretation of intermediacy difficult, hybrids in *Boltonia* apparently occur between *B. diffusa* and *B. latisquama* and between *B. diffusa* and *B. apalachicolensis*. Intermediates between *B. recognita* and *B. latisquama* are encountered in northeastern Missouri, where they come into contact. Seeming intermediates between *B. recognita* and *B. latisquama* noted by Morgan in Nebraska and North Dakota are among plants identified here as *B. magnicamporum*.

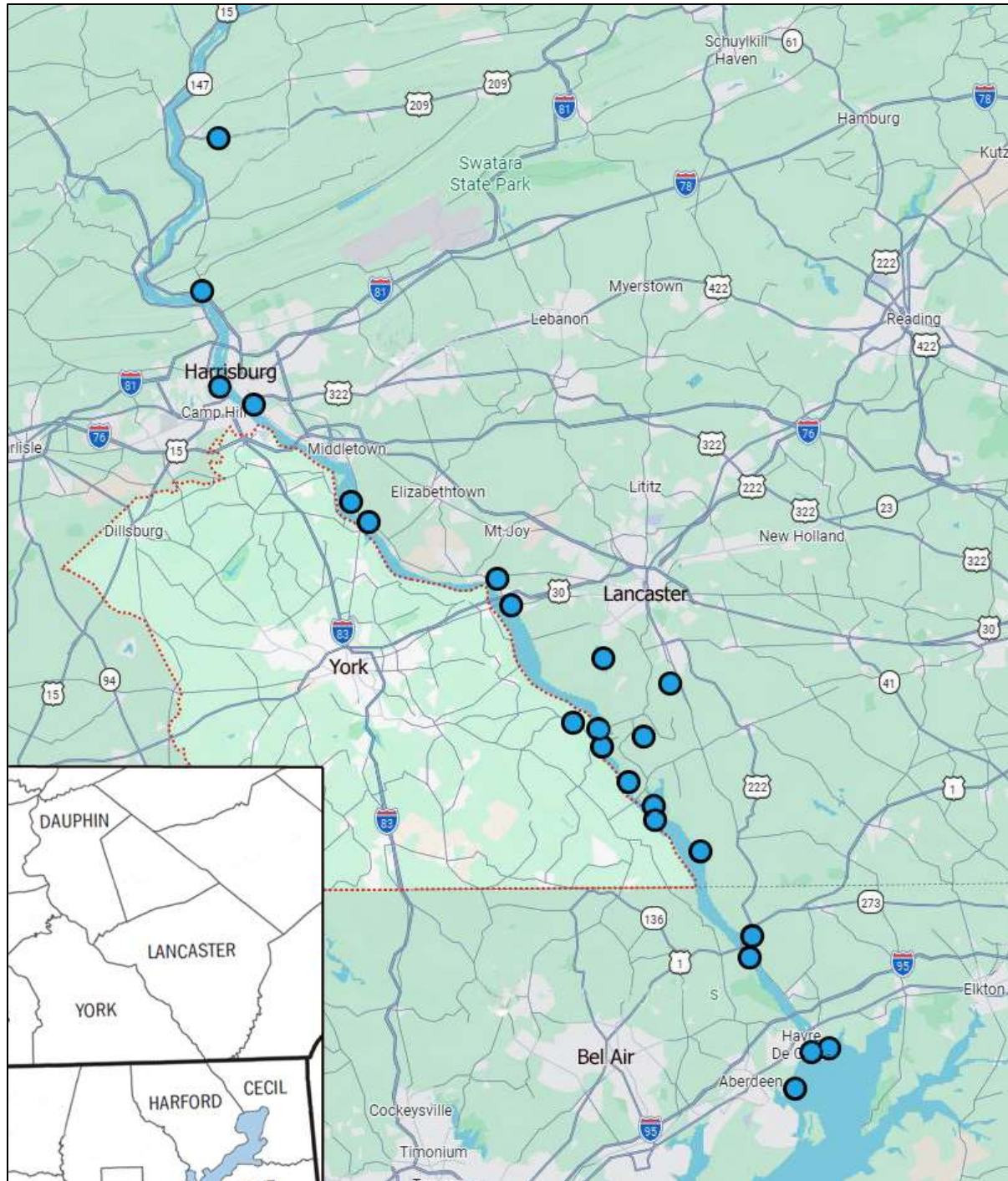
The only documented study of hybridization has been between *Boltonia decurrens* and *B. recognita* at sites in Cass Co. and Schuyler Co., Illinois, where they are closely sympatric (characterized as in "mixed populations") and similar in phenology. DeWoody et al. (2011) found an indication that backcrossing may have occurred but no evidence of F1 hybrids. Artificial crosses between species produced viable fruits at 5–10% frequency when either was the seed parent.

CONSPICUOUS TAXONOMIC PROBLEMS

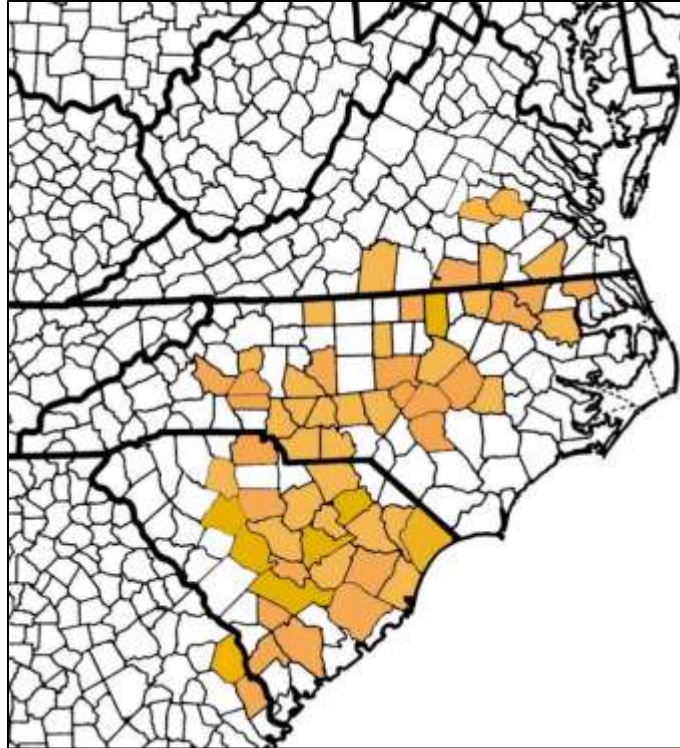
- * Are the disjunct population systems identified here as *Boltonia glastifolia* and *B. cuneifolia* conspecific? evolutionary differentiated?
- * Is the concept of *B. apalachicolensis* correctly broadened to include populations extending to Mississippi and Louisiana and northward? Tetraploid chromosome counts from Mississippi and diploid counts from the type locality in Florida suggest that two entities are present — perhaps *B. apalachicolensis* should remain a narrow endemic.
- * Could *B. angustifolia* and *B. delmaria* justifiably be considered conspecific?
- * Is the newly expanded (geographically) *B. montana* correctly identified as a single species?
- * Are the Pacific Northwest species distinct, or have they been established by dispersal from populations in the central and eastern USA?



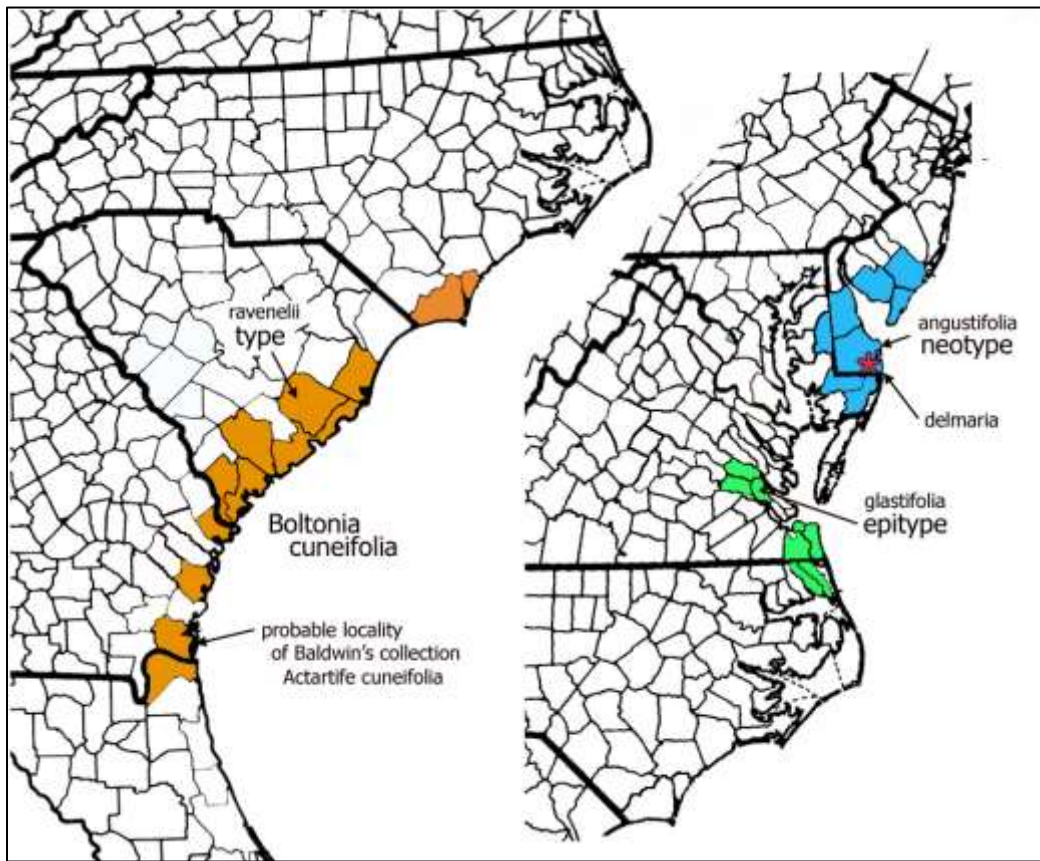
Map 1. Distribution of *Boltonia asteroides* (blue) and *B. montana* (yellow).



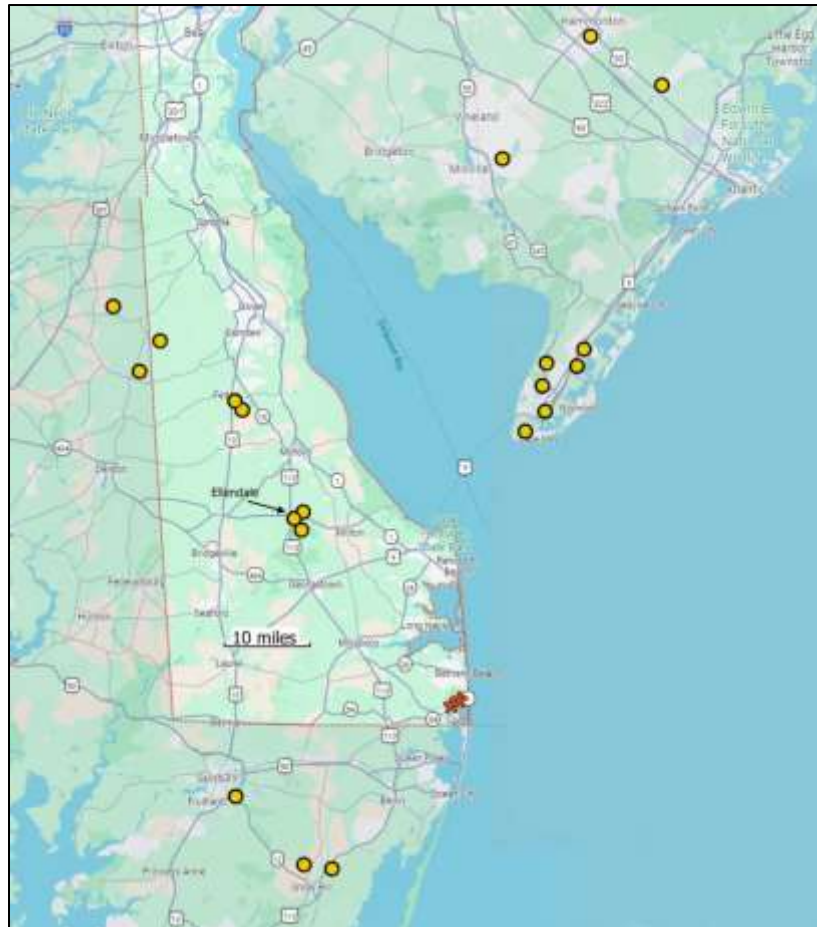
Map 2. Distribution of *Boltonia asteroides sensu stricto*. Pennsylvania and Maryland.



Map 3. Distribution of *Boltonia caroliniana*.



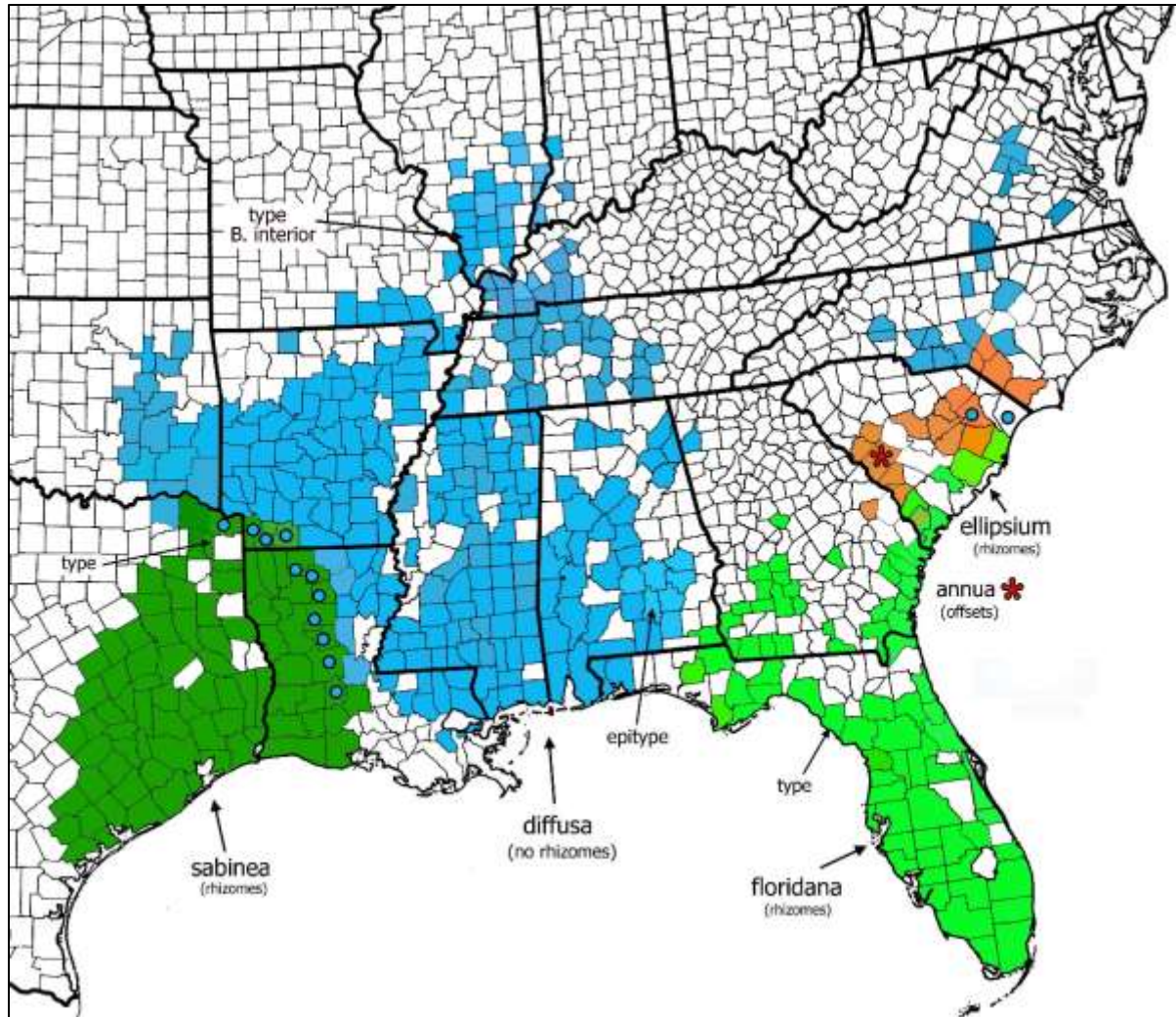
Map 4. Distribution of *Boltonia cuneifolia* (gold), *B. glastifolia* (green), *B. angustifolia* (blue), and *B. delmaria* (asterisk).



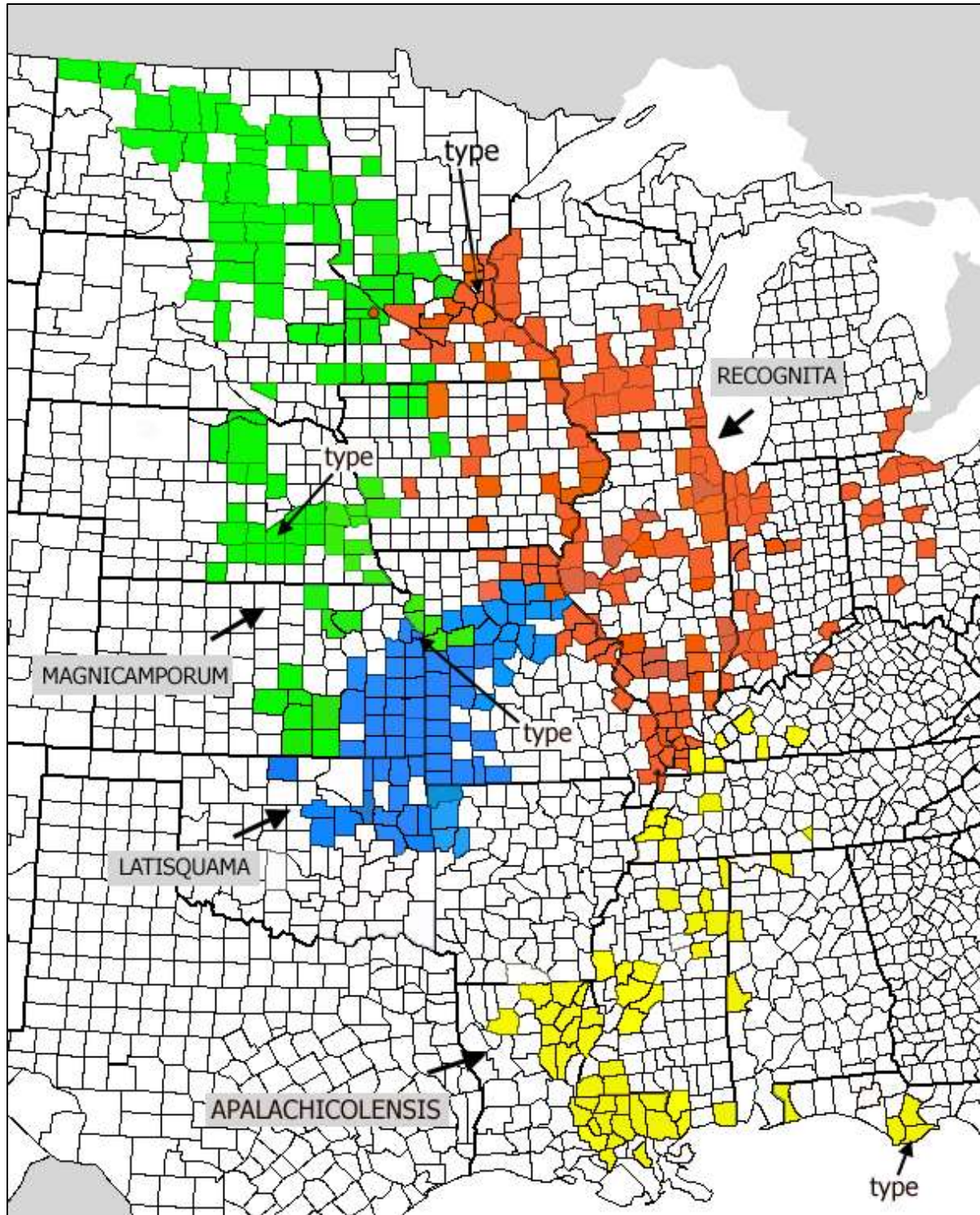
Map 5. Distribution of *Boltonia angustifolia* and *B. delmaria*.



Map 6. Distribution of *Boltonia delmaria*.



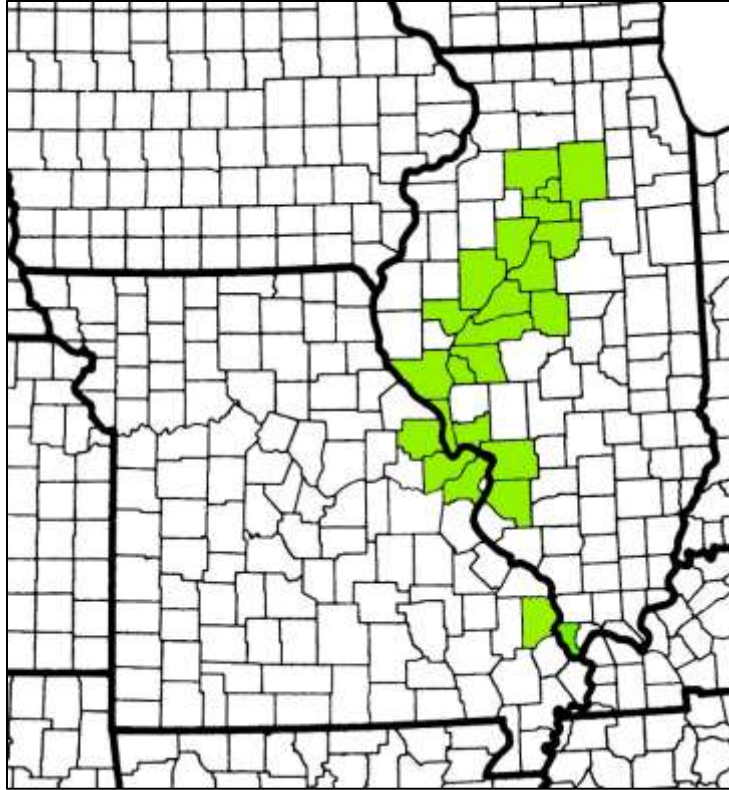
Map 7. Distribution of *Boltonia diffusa* sensu stricto, *B. sabinea*, *B. floridana*, *B. ellipsium*, *B. annua*, and *B. angustifolia*. *Boltonia diffusa* on the Atlantic seaboard is adventive and iNaturalist observations suggest that it is more widely dispersed than indicated here. *Boltonia sabinea*, *B. diffusa* sensu stricto, and *B. floridana* together have previously been regarded as *B. diffusa* sensu lato. *Boltonia sabinea* and *B. diffusa* are closely parapatric (counties of co-occurrence indicated); *B. diffusa* and *B. floridana* appear to be more widely so.



Map 8. Distribution of *Boltonia magnicamporum*, *B. latisquama*, *B. recognita*, and *B. apalachicolensis*. The distribution of *B. magnicamporum* continues into southern Manitoba and Saskatchewan.



Map 9. Distribution of *Boltonia occidentalis*, *B. pacifica*, and *B. kalispelia*.



Map 10. Distribution of *Boltonia decurrens*.

BOLTONIA L'Hérit., Sert. Angl. 27. 1788.

Lectotype species (Britton & Brown 1913): *Boltonia glastifolia* (Hill) L'Herit.

Actartife Raf., Autik. Bot. 20. 1840. **LECTOTYPE** (Pennell 1921, p. 92): *Actartife cuneifolia* Raf. = *Boltonia glastifolia* (Hill) L'Hérit.

1. **BOLTONIA ANGUSTIFOLIA** (Raf.) Nesom, Phytoneuron 2026-14: 2. 2026. *Actartife angustifolia* Raf., Autik. Bot. 21. 1840. **TYPE**: Not located (and see Moore 2022). Protologue: ... "caule dichot, corymboso angulato, fol. sessilib. longo linearib. acutis margine scabro integro, pedunculis squamosis, sq. subulatis --- Delaware, mistaken for *B. glastifolia* by Nuttall, not even of same Genus and leaves not serrate. Stem bipedal, leaves 1 or 2 inches long, flowers small, habit quite similar to *Erigeron philadelphicum*."

NEOTYPE (Nesom 2026b): **Delaware**. Ellendale, 1/4 mi E of the village, moist swale along the railroad, 23 Sep 1938, R.R. Tatnall 4051 (DOV).

2. **BOLTONIA ANNUA** Nesom, Phytoneuron 2026-17: 4. 2026. **TYPE: South Carolina**. Aiken Co.: Montmorenci, savannah-like area, 16 Sep 1961, H.E. Ahles 55071 (holotype: NCU-8426; isotypes: APSC, AUA, BOON, CLEMS, CM, COLO, CONV, ECUH, ERSK, FLAS, FSU, FSUH, FUGR, GA, GAS, GH, IND, KANU, MISS, MUR, NCU-8425, NDA, PAC, SIU, TENN, UNCC, USCH, USF, USMS, VDB, VSC, WCUH, WILLI, WWC-2).
3. **BOLTONIA APALACHICOLENSIS** L.C. Anderson, Syst. Bot. 12: 133. 1987. **TYPE: Florida**. Franklin Co.: Forbes Island at milepost 16.8 on Apalachicola River, ca. 12.7 air mi NNW of town of Apalachicola, muddy soil of wooded floodplain, frequent with *Commelina virginica*, *Eupatorium serotinum*, *Panicum gymnocarpon*, and *Lobelia* spp., 18 Oct 1985, L.C. Anderson 8921 (holotype: NY; isotype: MO).

4. **BOLTONIA ASTEROIDES** (L.) L'Hér., Sert. Angl. 27. 1788. *Matricaria asteroides* L., Mant. Pl. 116. 1767. **LECTOTYPE** (Fernald 1940, p. 465): **Pennsylvania**. Label without data (LINN 1013.6), but the protologue specifies a Bartram collection. Inferred to be a collection by John Bartram in 1743 in the vicinity of Harrisburg (Dauphin Co.), Pennsylvania.

5. **BOLTONIA CAROLINIANA** (Walter) Fernald, Rhodora 42: 487. 1940. *Chrysanthemum carolinianum* Walter, Fl. Carol. 204. 1788. Protologue: "foliis lanceolatis utrisque acuminatis laevibus, caule 5 ad 6-pedali ramosissimo, floribus radio albis disc luteis." **NEOTYPE** (Ward 2007): **South Carolina**. Berkeley Co.: Along the Santee River, 3 mi NE of Pineville, 11 Sep 1939, R.K. Godfrey 8155 (GH; isoneotypes: CAS, US).

6. **BOLTONIA CUNEIFOLIA** (Raf.) Nesom, Phytoneuron 2026-14: 7. *Actartife cuneifolia* Raf., Autikon 20. 1840. **TYPE**: Protologue: "... caule erecto paucifl. sulcato, fol. sessilib, cuneatis mucronatis, margine integro scabro, infimis subspatulatis, pedunc. subnudis---Florida, found by Bald, deemed *B. asteroides*, which differs by leaves oblong amplex. dentate, lower pinnatifid. Stem pedal nearly simple, leaves uncial, flowers like *Erigeron*, perianthe imbricate subulate as in all *Boltonias*." **NEOTYPE** (Nesom 2026b): "Georg Fløe Bald," no other information (PH).

Boltonia ravenelii Fernald & Griscom, Rhodora 42: 488. 1940. **TYPE**: **South Carolina**. [Berkeley Co.]: Santee Canal, rich swamps, Oct, H.W. Ravenel s.n. (holotype: GH 105837; isotypes: BR, GH 2215080, GH 2215088).

7. **BOLTONIA DECURRENS** (Torr. & Gray) Wood, Amer. Bot. Fl. 166. 1870. *Boltonia glastifolia* var. *decurrens* Torr. & Gray, Fl. N. Amer. 2(2): 188. 1842. *Boltonia asteroides* var. *decurrens* (Torr. & Gray) Engelm. ex Gray, Synopt. Fl. N. Amer. 1, pt. 2: 166. 1884. *Boltonia latisquama* var. *decurrens* (Torr. & Gray) Fernald & Griscom, Rhodora 42: 492. 1940. **TYPE**: **Illinois**. Label: "Wet prairies of Illinois, Sept," C.W. Short (holotype: NY).

8. **BOLTONIA DELMARIA** Nesom, Phytoneuron 2026-14: 4. 2026. **TYPE**: **Delaware**. Sussex Co.: 2 mi ESE of Bayard, Assawoman Wildlife Area, 38.4986 N, 75.0878 W, sunny wet edge of shallow, natural pond in wet-mesic deciduous forest, frequent, 29 Sep 2007, R.F.C. Naczi 12076 (holotype: NY; isotypes: PH, VDB).

9. **BOLTONIA DIFFUSA** Elliott, Sketch Bot. S. Carolina 2: 400. 1823. **TYPE**: Protologue: "Grows in damp rich soils between the Chatahouchie and Alabama," noted by Fernald (1940) to be "somewhere between southwestern Georgia and northwestern Florida and western Alabama." No collection information (possible holotype: CHARL – Elliott Herbarium).

EPITYPE: **Alabama**. Crenshaw Co.: 20.2 mi E of Georgiana by Ala Hwy 106, Patsulga [Patsaliga] Creek [31.5956 N, 86.4042 W], recently logged bottoms of creek, moister sandy disturbed areas along small branch, 26 Sep 1999, R. Kral 88968 (USCH: isoepitypes: NLU, VDB).

Boltonia diffusa var. *interior* Fernald & Griscom, Rhodora 42: 490. 1940. *Boltonia interior* (Fernald & Griscom) G.N. Jones in Jones & Fuller, Vasc. Pl. Illinois, 478. 1955. **TYPE**: **Illinois**. [Jackson Co.]: De Soto, Aug 1862, G. Vasey s.n. (holotype: GH).

10. **BOLTONIA ELLIPSIUM** Nesom, Phytoneuron 2026-17: 2. 2026. **TYPE**: **South Carolina**. Allendale Co.: [Ca. 9 air mi SW of Fairfax, ca. 32.85 N, 81.34 W], State Road S-3-26 [River Rd], 6.1 mi S of jct with Hwy 301, 0.3 mi N of jct with State Road S-3-41 [Cohens Bluff Rd], pond, 8 Sep 1967, A.E. Radford 11420 (holotype: NCU; isotypes: APSC, AUA, CHRB, CONV, DOV, HTTU, LSU, MISS, NDA, PAC, UNCC, USMS, VSCM, WCUH, WILLI).

11. **BOLTONIA FLORIDANA** Nesom, Phytoneuron 2026-16: 6. 2026. **TYPE: Florida.** Dixie Co.: 4 mi SW from Taylor County line on Hwy 98 [4 mi S of Tenille], NE 1/4 Sec 10, T9S, R10E [29.718° N, 83.305° W as estimated here], moist loamy sand of roadside depression (relatively low stature due to mowing of roadside vegetation), locally common, 8 Oct 1989, *L. Anderson* 12378 (holotype: USCH).
12. **BOLTONIA GLASTIFOLIA** (Hill) L'Hérit., Sertum Anglicum, 27. 1788. *Matricaria glastifolia* Hill, Hort. Kew. ed. 1: 19, t. 3. 1768. *Boltonia asteroides* var. *glastifolia* (Hill) Fernald, Rhodora 42: 486. 1940. **HOLOTYPE:** Hortus Kewensis, Figure 3, p. 19. 1769.
EPITYPE (Townsend 2013): **Virginia.** James City Co.: Fresh tidal marsh of Chickahominy River, below Barrat's Bridge (or Ferry), 19 Sep 1939, *M.L. Fernald* and *B. Long* 11466 (NY; isopotypes: GH-2, PH, US).
13. **BOLTONIA KALISPELIA** Nesom, Phytoneuron 2026-18: 5. 2026. **TYPE: Idaho.** Bonner Co.: Sandpoint, lakeshore along edge of slough, [ca. 48.28 N, 116.55 W, ca. 2100 ft], 13 Aug 1941, *J.H. Christ* 12830 (NY).
14. **BOLTONIA LATISQUAMA** A. Gray, Amer. J. Sci. Arts ser. 2, 33: 238. 1862. *Boltonia asteroides* var. *latisquama* (A. Gray) Cronq., Bull. Torrey Bot. Club 74: 149. 1947. *Boltonia asteroides* subsp. *latisquama* (A. Gray) M.A. Paz, Phytoneuron 2025-42: 1. 2025. **TYPE: Kansas.** Protologue: "Near the mouth of the Kansas River, Sept; growing in large clump, in rich soil." Label: Kansas River, 1861, *C.C. Parry* 12 (holotype: GH). The printed label with heading — "ROCKY MOUNTAIN FLORA — was for collections by the US-Mexican Boundary Survey in a different area. The "mouth of the Kansas River" refers to an area now within Leavenworth or Wyandotte county, Kansas (both counties mapped here), near the confluence of the Kansas and Missouri rivers.
15. **BOLTONIA MAGNICAMPORUM** Nesom, Phytoneuron 2026-15: 10. 2026. **TYPE: Nebraska.** Hamilton Co.: 5 mi S of Aurora on Hwy 14, 2 mi E [Pintail State WMA, ca. 40.79 N, 97.96 W], along marsh shore of lake, with *Juncus*, *Marsilea*, *Eleocharis*, common, 14 Sep 1975, *S.P. Churchill* 6578 (holotype: NY; isotypes: CSCN, KANU, NEB).
16. **BOLTONIA MONTANA** Townsend & Kar.-Castro, Sida 22: 874. 2006. **TYPE: New Jersey.** Sussex Co.: 3.2 km SW of Newton and 1.4 km W of Hwy 206, muckshaw pond complex, nearly dry, herb-dominated sinkhole pond, 3 Oct 2005, *J.F. Townsend* 3570 (holotype: US; isotypes: MO, NY, VPI).
17. **BOLTONIA OCCIDENTALIS** (A. Gray) Howell, Fl. N.W. Amer. 1: 305. 1900. *Boltonia latisquama* var. *occidentalis* A. Gray, Synopt. Fl. N. Amer. 1, pt. 2: 166. 1884. *Boltonia asteroides* var. *occidentalis* (A. Gray) M.A. Paz, Phytoneuron 2025-42: 1. 2025. **TYPE: Oregon.** Union Co.: Bottoms, 1882, *W.C. Cusick* s.n. (holotype: GH).
18. **BOLTONIA PACIFICA** Nesom, Phytoneuron 2026-18: 2. 2026. **TYPE: Oregon.** Clatsop Co.: Columbia River estuary (RM 28), near Svensen, fresh water tidal marsh, common, co-dominant species over several square miles of marshy island, with *Carex lynghyei*, *Sium suave*, *Juncus oxymeris*, Aug 1980, *D.W. Thomas* s.n. (holotype: OSC).
- 19 **BOLTONIA RECOGNITA** (Fernald & Griscom) G.N. Jones in Jones & Fuller, Vasc. Pl. Illinois, 478. 1955. *Boltonia latisquama* var. *recognita* Fernald & Griscom, Rhodora 42: 491. 1940. *Boltonia asteroides* var. *recognita* (Fernald & Griscom) Cronq., Bull. Torrey Bot. Club 74: 149. 1947. **TYPE: Minnesota.** [Ramsey Co.]: Fort Snelling, 20 Aug 1891, *E.A. Mearns* s.n. (holotype: GH).

Boltonia latisquama var. *microcephala* Fernald & Griscom, Rhodora 42: 492. 1940. **TYPE: Illinois.** Cook Co.: S of Harvey, 30 Aug 1893, S.H. Burnham s.n. (holotype: GH; isotypes: PH-2 sheets).

20. **BOLTONIA SABINEA** Nesom, Phytoneuron 2026-16: 5. 2026. **TYPE: Texas.** Morris Co.: Daingerfield State Park, low moist grounds, 6 Sep 1947, E. Whitehouse 19158 (holotype: SMU; isotypes: NY, US).

----- DIFFERENT GENERA

Boltonia campestris Hemsl., Biol. Cent.-Amer., Bot. 2(8): 120 (1881). = *Dichaetophora campestris* A. Gray

Boltonia cantoniensis Franch. & Sav., Enum. Pl. Jap. 2: 398. 1878. = *Asteromoea cantoniensis* (Franch. & Sav.) Matsum. = *Kalimeris indica* (L.) Schultz-Bip. = *Aster indicus* L.

Boltonia incisa (Fisch.) Benth., Fl. Hongk. 173. 1861. = *Kalimeris incisa* (Fisch.) DC. = *Aster incisus* Fisch.

Boltonia indica (L.) Benth., Fl. Hongk. 174. 1861. *Asteromoea indica* (L.) Blume = *Kalimeris indica* (L.) Schultz-Bip. = *Aster indicus* L.

Boltonia indica var. **collina** Hance, Ann. Sci. Nat., Bot. sér. 5, 5: 219. 1866. = *Kalimeris indica* s. lato

Boltonia integrifolia (Turcz. ex DC.) Lauener, Notes Roy. Bot. Gard. Edinburgh 34: 334. 1976. = *Kalimeris integrifolia* Turcz. ex DC. = *Aster integrifolius* (Debeaux) Franch.

Boltonia japonica (Miq.) N.E. Brown, Gard. Chron. n.s., 20: 375. 1883. = *Cardiagyris japonica* (Miq.) Nesom

Boltonia laevigata E. Witte, Ned. Tuinbouwbl. Sempervirens 1: 419. 1903 (nom. nud.; Dutch horticultural introduction)

Boltonia lautureana Debeaux, Actes Soc. Linn. Bordeaux 31: 215. 1877. = *Kalimeris lautureana* (Debeaux) Kitam. = *Aster lautureanus* (Debeaux) Franch.

Boltonia pekinensis (Hance) Hance, J. Bot. 5: 370. 1867. = *Aster pekinensis* (Hance) F.H. Chen

Boltonia seemannii Benth. & Hook.f., Gen. Pl. 2(1): 269. 1873, nom. inval. = *Erigeron seemannii* (Schultz-Bip.) Greene

ACKNOWLEDGEMENTS

Others surely will be surprised as I am about the taxonomic increase in *Boltonia* species and be justifiably skeptical. "But they all look alike." Well, yes, but differences in morphology (often technical), geography, and habitat provide evidence for recognizing distinct population systems that presumably are evolution's product. There's no joy in empty names, pointing to things that don't exist. This new assessment pleads for independent evidence in testing hypotheses about what's really out there. Many thanks to Dave Boufford, Alan Weakley, and Manuel Paz for helpful comments, though there's no implication here that they accept the taxonomy.

LITERATURE CITED

- Anderson, L.C. 1987. *Boltonia apalachicolensis* (Asteraceae): A new species from Florida. Syst. Bot. 12: 133–138.
- Britton, N.L. and A. Brown. 1913. An Illustrated Flora of the Northern United States, Canada and the British Possessions (ed. 2). Charles Scribner's Sons, New York.
- Cronquist, A. 1980. Asteraceae, Vol. I. Vascular Flora of the Southeastern United States. Univ. of North Carolina Press, Chapel Hill.

- DeWoody, J. J.D. Nason, and M. Smith. 2011. Hybridization between the threatened herb *Boltonia decurrens* (Asteraceae) and its widespread congener, *B. asteroides*. *Botany* 89: 191–201.
- Fernald, M.L. 1940. A synopsis of *Boltonia*. *Rhodora* 42: 182–192.
- Karaman-Castro, V. and L.E. Urbatsch. 2006. *Boltonia*. Pp. 353–357, in FNA Editorial Committee. *Flora of North America North of Mexico*. Vol. 20, Asteraceae, part 2. Oxford Univ. Press, New York.
- Morgan, J.T. [1966]1967. A taxonomic study of the genus *Boltonia* (Asteraceae). Ph.D. dissertation. Univ. of North Carolina, Chapel Hill.
- Nesom, G.L. 2000. Generic Conspectus of the Tribe Astereae (Asteraceae) in North America and Central America, the Antilles, and Hawaii. BRIT Press, Botanical Research Institute of Texas, Fort Worth.
- Nesom, G.L. 2020. Revised subtribal classification of Astereae (Asteraceae). *Phytoneuron* 2020-53: 1–39.
- Nesom, G.L. 2026a. *Boltonia asteroides*, *B. montana*, and *B. caroliniana* (Asteraceae: Astereae). *Phytoneuron* 2026-13: 1–40.
- Nesom, G.L. 2006b. *Boltonia glastifolia*, *B. cuneifolia*, *B. angustifolia*, and *B. delmaria* (Asteraceae: Astereae), species of the Atlantic coast. *Phytoneuron* 2026-14: 1–57.
- Nesom, G.L. 2006c. *Boltonia* (Asteraceae: Astereae): The central and midwestern species. *Phytoneuron* 2026-15: 1–63.
- Nesom, G.L. 2026d. Finding *Boltonia diffusa* (Asteraceae: Astereae). *Phytoneuron* 3036-16: 1–41.
- Nesom, G.L. 2026e. Two new species of *Boltonia* (Asteraceae: Astereae) from the Carolinas. *Phytoneuron* 2026-17: 1–20.
- Nesom, G.L. 2026f. *Boltonia* (Asteraceae: Astereae) in the Pacific Northwest. *Phytoneuron* 2026-18: 1–18.
- Pennell, F.W. 1921. "Unrecorded" genera of Rafinesque—I. *Autikon Botanikon* (1840). *Bull. Torrey Bot. Club* 48: 89–96.
- Townsend, J.F. 2013. Recognition of *Boltonia asteroides* var. *glastifolia* and reestablishment of a more restrictive taxonomic concept for *Boltonia asteroides* var. *asteroides*. *Phytoneuron* 2013-9: 1–8.
- Townsend, J.F. and V. Karaman-Castro. 2006. A new species of *Boltonia* (Asteraceae) from the Ridge and Valley physiographic province, U.S.A. *Sida* 22: 873–886.
- Townsend, J.F. and A.S. Weakley. 2026. *Boltonia*. In A.S. Weakley and Southeastern Flora Team. *Flora of the Southeastern United States*. Univ. of North Carolina Herbarium, N.C. Botanical Garden, Chapel Hill. <fsus.ncbg.unc.edu>

CHROMOSOME NUMBER REPORTS

- Anderson, L.C., D.W. Kyhos, T. Mosquin, A.M. Powell, and P.H. Raven. 1974. Chromosome numbers in Compositae. IX. *Haplopappus* and other Astereae. *Amer. J. Bot.* 61: 665–671.
- Gu, H. and P.C. Hoch. 1997. Systematics of *Kalimeris* (Asteraceae: Astereae). *Ann. Missouri Bot. Gard.* 84: 762–814.
- Jones, S.B. 1966. Compositae chromosome numbers. *Bull. Torrey Bot. Club* 93: 278–284.
- Jackson, R.C. 1962. Documented chromosome numbers of plants. *Madrono* 16: 268.
- Love, A. and D. Love. 1982. In IOPB chromosome number reports LXXV. *Taxon* 31: 344–360.
- Morgan, J.T. 1966. A taxonomic study of the genus *Boltonia* (Asteraceae). Ph.D. dissertation. Univ. of North Carolina, Chapel Hill.
- Semple, J.C., J. Zhang, and C. Xiang. 1993. Chromosome number determinations in fam. Compositae, tribe Astereae. V. Eastern North American taxa. *Rhodora* 95: 234–253.
- Sherif, A.S., E.B. Smith, and K.L. Hornberger. 1983. In IOPB chromosome number reports LXXX. *Taxon* 32: 508.
- Turner, B.L. and W.L. Ellison. 1960. Chromosome numbers in the Compositae. I. Meiotic chromosome counts for 25 species of Texas Compositae including 6 new generic reports. *Texas J. Sci.* 12: 146–151.

Appendix. Horticultural Plants

Boltonias are sold and propagated as garden plants, and some forms are becoming naturalized outside their native ranges. *Boltonia latisquama* and "*B. asteroides*" have been listed in seed catalogs at least since the early 1800's (Biodiversity Heritage Library — seed catalogs). PH collections show that *B. latisquama* was cultivated at Biltmore Gardens in North Carolina in 1897 and in Philadelphia in 1894. It was in Asa Gray's personal garden at Cambridge (GH specimens). Identifications are possible when vouchers are available, but in situ photos (e.g., iNaturalist, commercial nurseries) usually show portions of the inflorescence and rarely provide information about the habitat, rarely about the plant base (presence of rhizomes). Listed here are a sampling of nursery offerings, identified tentatively and without great confidence from the commercial photos. Selections (especially ray color) apparently have been made from native species, but the "nana" forms seem unusual. There is no indication that hybrids are involved in the horticultural plants.

BOLTONIA ASTEROIDES "Nana" (rays white)

Glover Perennials

<<https://www.gloverperennials.com/product/boltonia-asteroidesnana/>>

A photo shows a potted *Boltonia* in flower, described as "18 – 24" tall, with a compact mounding habit." *Boltonia asteroides* and *B. montana* are the only species where some plants are reduced in height like this. The pictured plant is not *B. latisquama*.

BOLTONIA DECURRENS

For sale on various sites and correctly identified.

BOLTONIA DIFFUSA sensu stricto

Most plants sold as "Snowbank" appear to be *B. diffusa* — a subcorymboid to corymboid inflorescence, with heads mostly near the stem tops, produces a mass of crowded white flowers.

Carolina Habitats

<https://www.carolinahabitats.com/products/boltonia-asteroides?srsId=AfmBOooNpNdeUbr1Uw9BUvAPxI9ZtLq8c4f47iHQX3-v_JeCJCfs_I0k>

Dave's Garden

<<https://davesgarden.com/guides/articles/view/4337>>

"Easily propagated by division in the spring."

Meristem

<<https://meristemhorticulture.com/planted/2018/9/21/bolting-to-boltonia>>

As "Snowbank" — not rhizomatous.

North Carolina Cooperative Extension

<<https://plants.ces.ncsu.edu/plants/boltonia-asteroides/>>

Rare Roots

<<https://www.rareroots.com/products/boltonia-snowbank>>

"*Boltonia* 'Snowbank' readily self-sows"

These, as illustrated by photos, show plants with a more paniculate inflorescence.

Izel Native Plants

<<https://www.izelplants.com/boltonia-asteroides-white-doll-s-daisy/>>

Photos show whole plants and a small portion of inflorescence.

Southern Meadows

<<https://gardening-soul.blogspot.com/2017/10/wildflower-wednesday-boltonia-asteroides.html>>

Photos of whole plants and inflorescence.

Plant Master

<<https://plantmaster.com/plants/eplant.php?plantnum=4083#gallery-3>>

As "*Boltonia asteroides* Pink Beauty." Photos show plants with long peduncles with numerous, minute, and tightly appressed bracts, and the phyllaries are spreading-recurving in bud and early anthesis in a way that does not resemble other *boltonias*. Perhaps even some other genus (*Kalimeris*?).

BOLTONIA LATISQUAMARoyal Horticultural Society (RHS)

<<https://www.rhs.org.uk/plants/73727/boltonia-asteroides-var-latisquama/details>>

Tall, apparently not rhizomatous, ID not possible from photo

BOLTONIA LATISQUAMA "Nana" (rays lavender)

Described as short (18-24 inches), compact or mound-forming, with pink to lavender rays. For sale at various nurseries, but photos don't enable ID.

Franz Witte

<https://plants.franzwitte.com/12150021/Plant/31742/Dwarf_Boltonia/>

The photo (apparently from stock) shows only a top-down inflorescence view. It appears to be *Boltonia* (but not *B. latisquama*) or possibly even *Kalimeris*.

Emerden

<<https://emerden.com/products/boltonia-nana-pink-plants>>

As "*Boltonia* 'pink Nana' " but the stem/leaf morphology and the disc florets turning dark orange-purple suggest that the pictured plant is *Symphyotrichum*.

BOLTONIA RECOGNITA (?)Prairie Moon Nursery (Minnesota)

<<https://www.prairiemoon.com/boltonia-asteroides-false-aster>>

"... prefers wet to medium soil conditions ... Standing water is even tolerated ... It is rhizomatous by nature so will spread, but not aggressively."

Missouri Botanical Garden

<<https://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=277173>>

"Rhizomatous perennial which typically grows to 5-6' tall." ID from photo not clear --- a stock photo?

Commonweeder

<<https://www.commonweeder.com/boltonia-blooming-in-autumn/>>

A photo shows a large clone (apparently) of closely packed stems and a corymboid inflorescence.

Gardenia

<<https://www.gardenia.net/plant/boltonia-asteroides>>

A photo shows only the top of an inflorescence, apparently with short peduncles; the description says "rhizomatous perennial slowly spreads by creeping rhizomes."