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The Asters of Iowa

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THE ASTERS OF IOWA

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This taxonomic study is concerned with all the species of *Aster* known by the writer to occur in Iowa. It is an endeavor, first, to provide a useful key to the species of this genus known to be found in Iowa, second, to present an up-to-date nomenclature of the species, and third, to show the distribution of the species of *Aster* in Iowa as recorded in the collections studied.

Deam's "Flora of Indiana" has been used for the sequence of species, and the key has been largely adapted from his. Research work by recent botanists has shown that some of the specific names are invalid by rules of nomenclature and by the change of taxonomic concepts. Such names are listed as synonyms in the treatment of the species.

A study of distribution shows the following interesting patterns of range in Iowa:

1. Common throughout the state: *A. azureus, A. ericoides, A. ericoides var. prostratus, A. Finkii var. moratus, A. laevis, A. novae-angliae, A. oblongifolius, A. paniculatus, A. paniculatus var. simplex, A. pantotrichus, A. praealtus, A. sagittifolius, A. sagittifolius var. Drummondii, A. sericeus.*

2. Occur in the northern half of the state, rarely in the rest of the state: *A. brachyactis, A. commutatus, A. ericoides* x *A. novae-angliae, A. ericoides f. caeruleus, A. ericoides f. Gramsii, A. junceus, A. junciformis, A. lucidulus, A. novae-angliae f. genesseensis, A. novae-angliae f. roseus, A. oblongifolius* x *A. Batesii, A. praealtus var. subasper, A. ptarmicoides, A. puniceus, A. umbellatus. A. umbellatus var. pubens, A. Woldeni.*

3. Found only in the northeastern section of the state: *A. Finkii var. moratus* x *A. Shortii, A. sagittifolius f. hirtellus.*

4. Mostly in the eastern half of the state, rarely in the rest of the state: *A. dumosus var. strictior, A. Finkii, A. lateriflorus var. pendulus, A. pantortrichus var. thyrsoides, A. praealtus var. anguslior, A. prenanthoides, A. Shortii.*

5. Found mostly in the southeastern section of the state: *A. dumosus, A. interior, A. linariifolius, A. patens, A. pilosus, A. pilosus var. Pringlei, A. turbinellus, A. vimineus.*

6. Confined to the southern half of the state: *A. furcatus.*

Twenty-seven of the plants recorded here were included by Cratty in "The Iowa Flora", two of them under other genera. Twenty-five of these species have been verified. The collections studied include the following species in addition to this list: *A. commutatus, A. dumosus, A. dumosus var. strictior, A. ericoides* x *A. novae-angliae, A. ericoides f. caeruleus, A. ericoides f. Gramsii, A. Finkii var. moratus, A. Finkii var. moratus* x *A. Shortii, A. furcatus, A. junciformis, A. lateriflorus var. pendulus, A. lucidulus, A. novae-angliae f. genesseensis, A. novae-angliae f. roseus, A. oblongifolius* x *A. Batesii, A. ob-*

longifolius var. angustatus, A. paniculatus var. simplex, A. pantotrichus, A. pantotrichus var. thyrsoides, A. patens, A. pilosus var. Pringlei, A. praealtus var. angustior, A. praealtus var. subasper, A. sagittifolius f. hirtellus, A. turbinellus, A. umbellatus var. pubens, A. vimineus.

Thirty-two species, twelve varieties, five forms, and three hybrids of *Aster* are recognized by the writer as a part of the native flora of Iowa. This increase in the number of known asters in Iowa has resulted largely from an investigation of the extensive collections of *Aster* made throughout the state by Dr. Ada Hayden and Dr. L. H. Pammel of Iowa State College and Professor Bohumil Shimek of the State University of Iowa. Some of the specimens have been identified by Dr. L. H. Shinners of Southern Methodist University, Dallas, Texas. Three thousand four hundred and twenty-four specimens have been examined. The writer wishes to express appreciation to Dr. Ada Hayden for the generous loan of the *Aster* specimens of Iowa State College and to Dr. H. S. Conard for his loan of specimens from the Grinnell College herbarium.

KEY TO THE SPECIES

A. Basal leaves cordate and petiolate; upper leaves with short petioles or sessile
  Bracts obtuse, middle ones 1.4-1.8 mm. wide; leaves scabrous above, ovate-lanceolate; rays usually white 1. *A. furcatus*
  Bracts less than 1.4 mm. wide
    Leaves entire or sometimes with a part of the margin serrate; middle bracts with distinct diamond-shaped green tips
      Leaves scabrous, thick and firm; bracts glabrous on the back 2. *A. azureus*
      Leaves glabrous or nearly so, usually thin; bracts pubescent on the back 3. *A. Shortii*
    Leaves with more or less sharply serrate margins
    Peduncles mostly 2-4 mm. long
    Stems glabrous or pubescent in lines; leaves with rather coarse hairs if pubescent
    Leaves glabrate or sparingly hairy 4. *A. sagattifolius*
    Leaves scabrous above and densely short-pubescent beneath 5. *A. sagittifolius f. hirtellus*
    Stems and leaves densely and finely short-pubescent 6. *A. sagittifolius var. Drummondii*
  Peduncles mostly more than 4 mm. long
    Bracts pubescent on the back 7. *A. Finkii*
    Bracts glabrous on the back 8. *A. Finkii var. moratus*

A. Basal leaves not both cordate and petiolate, relatively narrow and sessile
  B. Stem leaves with bases more or less cordate and clasping
    C. Involucre glandular

Bracts 6-9 mm. long, linear-attenuate, purple; achenes 1.5 mm. long; leaves conspicuously auriculate-clasping
9. *A. novae-angliae*
Rays white 10. *novae-angliae f. genesseensis*
Rays pink or rose-colored
11. *A. novae-angliae f. roseus*
Bracts 4-6 mm. long, linear-oblong, not purple; achenes about 2 mm. long
Stem leaves 15-25 mm. wide, appear perfoliate with strongly auriculate-clasping bases 12. *A. patens*
Stem leaves 5-10 mm. wide with merely clasping bases
Upper and middle stem leaves less than 7 times longer than wide, 1.5-4 cm. long 13. *A. oblongifolius*
Upper and middle stem leaves 7 times or more longer than wide, 3.5-6 cm. long 14. *A. oblongifolius var. angustatus*

C. Involucre not glandular
D. Stems glabrous or pubescent in lines on upper part
E. Leaves serrate
Blades abruptly narrowed below a wide, margined, entire petiole, auriculate clasping at the base 15. *A. prenanthoides*
Blades gradually narrowed below the middle
Leaves rarely clasping; heads mostly 15-20 mm. wide; involucre 4.5-5.5 mm. long; outer bracts not folioceous, shorter than the inner 25. *A. peniculatus var. simplex*
Leaves with wide, clasping bases; heads mostly more than 20 mm. wide; involucre 6 mm. long or more; outer bracts foliaceous, as long as. or longer than the inner
16. *A. lucidulus*

E. Leaves entire or sometimes with a few short teeth near the middle
Blades very smooth, glabrous except for scabrous margins; bracts with conspicuous diamond-shaped green tips
Stem leaves lanceolate or ovate-lanceolate; bracts with short-acute tips 17. *A. laevis*
Stem leaves elongated-lanceolate; bracts more herbaceous with slightly elongated tips 18. *A. concinnus*
Blades less smooth, somewhat scabrous
Bracts in 2 rows, of nearly equal length, mostly 6-8 mm. long; cauline leaves 15-30 mm. wide 16. *A. lucidulus*
Bracts imbricated in 3-5 rows, of various lengths
Areolae about as long as broad; leaf tips strongly involute; heads of the branches in dense, terminal clusters; rays light purple
Rameal leaves very acute, linear to narrowly elliptic-lanceolate
Primary rameal leaves linear, about 11 times longer than broad 19. *A. praealtus*
Primary remeal leaves linear ,about 11 times longer than broad 20. *A. praealtus var. angustior*

Rameal leaves usually obtuse, only about 2-5 times longer than broad 21. *A. praealtus var. subasper*

Areolae longer than broad; leaf tips not involute; heads not in clusters

Involucre 5-8 mm. high; leaves linear; disk-corolla lobes about ¼ the length of the limbs

Plants 3-9 dm. high; rays 10 mm. long; leaves 5-15 cm. long 22. *A. junceus*

Plants 3-5 dm. high; rays 6-8 mm. long; leaves 5-12 cm. long 23. *A. junciformis*

Involucre 3-5.5 mm. high; leaves linear-lanceolate; disk-corolla lobes about ½ the length of the limbs

Heads medium in size, involucre 4-5.5 mm. high

Leaves at least 12 times longer than broad, linear 24. *A. paniculatus*

Leaves less than 12 times longer than broad, oblong-lanceolate 25. *A. paniculatus var. simplex*

Heads small; involucre 3-4 mm. high 26. *A. interior*

D. Stems pubescent over entire surface, not in lines

Cauline leaves ovate-oblong, 15-25 mm. wide, appear perfoliate with strongly auriculate-clasping bases 12. *A. patens*

Cauline leaves narrow

Bracts in 2 rows essentially equal in length, about 6-9 mm. long 27. *A. puniceus*

Bracts imbricated in 3 or more rows of various lengths

Leaves glabrous with ciliate, entire margins, linear, rigid, very uniform in size, 2-3 cm. long; bracts in 4-5 series, keeled, middle ones with colored tips 28. *A. linariifolius*

Leaves pubescent

Bracts with acute or oblanceolate tips

Involucre more than 5 mm. high 29. *A. commutatus*

Involucre 4 mm. high

Rays white

Pubescence of stem appressed, ascending 30. *A. ericoides*

Pubescence of stem widely spreading 31. *A. ericoides var. prostratus*

Rays colored

Rays violet 32. *A. ericoides f. caeruleus*

Rays rose-colored 33. *A. ericoides f. Gramsii*

Bracts with acuminate tips 34. *A. ericoides* x *A. novae-angliae*

B. Stem leaves sessile or some petiolate, not clasping

a. Leaves pubescent throughout the lower surface

Pubescence of blades silvery-silky above and beneath 35. *A. sericeus*

Pubescence of blades not silvery-silky

Bracts and rameal leaves with mucronate tips

Peduncles and bracts glandular

Upper and middle stem leaves less than 7 times longer than wide, 1.5-4 cm. long 13. *A. oblongifolius*
Upper and middle stem leaves 7 times or more longer than wide, 3.5-6 cm. long
14. *A. oblongifolius var. angustatus*
Peduncles and bracts not glandular
Stems pubescent over the entire surface
Heads small, in compact clusters
Bracts with acute or oblanceolate tips
Involucre more than 5 mm. high
29. *A. commutatus*
Involucre 4 mm. high
Rays white
Pubescence of stem appressed, ascending
30. *A. ericoides*
Pubescence of stem widely spreading
31. *A. ericoides var. prostratus*
Rays colored
Rays violet 32. *A. ericoides f. caeruleus*
Rays rose-colored 33. *A. ericoides f. Gramsii*
Bracts with acuminate tips
34. *A. ericoides* x *A. novae-angliae*
Heads larger, scattered; bracts and rameal leaves with prominent subulate tips 36. *A. pilosus*
Stems pubescent only in lines, or glabrous
37. *A. pilosus var. Pringlei*
Bracts and rameal leaves without mucronate tips
Bracts with distinct green tips and midribs
Rays white
Inner bracts 3.2 mm. long or longer
38. *A. pantotrichus*
Inner bracts not more than 3 mm. long
39. *A. pantotrichus var. thyrsoides*
Rays dark purple; inflorescence corymbose
40. *A. Woldeni*
Bracts with pale green tips and midribs; inflorescence flat-topped, corymbose
Leaves with lower surface glabrous, or sometimes the the midrib and veins pubescent 41. *A.umbellatus*
Leaves densely pubescent beneath
42. *A. umbellatus var. pubens*

a. Leaves glabrous on the lower surface, or sometimes the midrib pubescent
Bracts nearly equal in length; pappus longer than rays
43. *A. brachyactis*
Bracts in series of several lengths
Involucre 9 mm. high; bracts imbricate in 5 or 6 series, with blunt green tips 44. *A. turbinellus*
Involucre less than 9 mm. high

Inflorescence corymbose
Involucre 7 mm. high; bracts in 4-5 series without central green lines from the tips to the bases 28. *A. linariifolius*
Involucre not more than 5 mm. high
Cauline leaves linear-oblanceolate, with 3 prominent longitudinal veins 45. *A. ptarmicoides*
Cauline leaves lanceolate-elliptic; areolae very distinct, uniform in size 41. *A. umbellatus*
Inflorescence not corymbose
Heads of inflorescence in 1-sided racemes
Leaves distinctly serrate, lanceolate; disk-corolla lobes at least ½ the length of the limbs
Rameal leaves not uniform in size, not abruptly smaller than the cauline; branches numerous 46. *A. lateriflorus*
Rameal leaves uniform, abruptly reduced in size compared with the cauline; branches less numerous 47. *A. lateriflorus var. pendulus*
Leaves entire or with a few fine teeth in the middle, disk-corolla lobes less than ½ the length of the limbs
Involucre at least 4 mm. high, top-shaped; leaves linear, entire, with distinct subulate tips
Leaves about 7 times longer than wide 48. *A. dumosus*
Leaves more than 1 2times longer than wide 49. *A. dumosus var. strictior*
Involucre 3-3.6 mm. high; leaves linear-lanceolate, entire or with a few short teeth in the middle 50. *A. vimineus*
Heads of inflorescence not in 1-sided racemes
Areolae about as long as broad; leaf tips strongly involute; heads of the branches in dense, terminal clusters; rays light purple.
Rameal leaves very acute, linear to narrowly elliptic-lanceolate
Primary rameal leaves lanceolate, 6-10 times longer than broad 19. *A. praealtus*
Primary rameal leaves linear, about 11 times longer than broad 20. *A. praealtus var. angustior*
Rameal leaves usually obtuse, only about 2-5 times longer than broad 21. *A. praealtus var. subasper*
Areolae longer than broad; leaf tips not involute; heads not in clusters
Involucre 5-8 mm. high; leaves linear; disk-corolla lobes about ¼ the length of the limbs 22. *A. junceus*
Involucre 3-5.5 mm. high; leaves linear-lanceolate; disk-corolla lobes about ½ the length of the limbs
Heads medium in size, involucre 4-5.5 mm. high
Leaves at least 12 times longer than broad, linear 24. *A. paniculatus*
Leaves less than 12 times longer than broad, oblong-

lanceolate 25. *A. paniculatus var. simplex*
Heads small; involucre 3-4 mm. high 26. *A. interior*

1. *Aster furcatus* Burgess

Bracts wide, blunt, pubescent. Leaves thin with deeply serrate margins. Specimens from only three counties in southern Iowa. On wooded slopes, in ravines, and in a sand dune bog near Muscatine.

2. *A. azureus* Lindl.

Leaves very scabrous. Bracts short-acute with very prominent diamond-shaped green tips.

Prairie, throughout the state. Loess ridge, Pottawattamie County. Open edge of woods, Des Moines County. Alluvial and sandy prairie, Iowa County. Prairie bog, Linn County.

Commonly associated with *Aster laevis, Solidago missouriensis, Kuhnia eupatorioides, Liatris pycnostachya,* and *Andropogon furcatus.*

3. *A. Shortii* Lindl.

Bracts short-acute, pubescent. Some authors have described the leaves as being thick and firm, whereas, the leaves of the *A. Shortii* specimens in the collections studied are thin and rather fragile. There is a form, *A. Shortii f. asper,* with leaves scabrous on the upper surface, which may have thick, firm leaves.

Only in eastern counties of the state. Linden-maple woods, Winneshiek County. Wooded rocky slopes, Clayton County. Near Backbone State Park, Delaware County. Wooded bluff, Allamakee County.

4. *A. sagittifolius* Wedemeyer ex. Willd.

Bracts long-acuminate and glabrous.

Scattered throughout the state, though rare in southwestern part. Common in open, dry woods, on wooded bluffs and rocky slopes. Abundant along river banks. Along Lick Creek, Davis County. Oak-hickory woods, Clayton County. Open, dry woods, Fremont County. Thicket in an abandoned gravel pit, Emmet County.

5. *A. sagittifolius f. hirtellus* (Lindl.) Shinners. Amer. Mid. Natl. 26:406. 1941 (*A. sagittifolius var. urophyllus* B. & B.)

This form has leaves scabrous on upper surfaces.

A specimen has been found in the northeastern corner of Iowa in Allamakee County.

6. *A. sagittifolius var Drummondii* (Lindl.) Shinners Amer. Mid. Natl. 26:406. 1941. (*A. Drummondii* Lindl.)

Frequent throughout the state in rich woods, at the base of loess covered hills and on wooded slopes. Common on Iowa drift sheet, associated with *Prunus serotina, Quercus velutina, Quercus ellipsidalis, Carya ovata* and *Helianthus strumosus,* Hardin County. Found on Kansan drift sheet, covered with Iowa loess, and clay soil associated with *Osmorrhiza Claytoni, Phryma leptostachya, Festuca nutans, Bromus purgans,* and *Ranunculus Septentrionalis,* Jasper County.

7. *A. Finkii* Rydb.

Bracts slenderly tapered, conspicuously pubescent on the back.

Found in upland woods in the eastern half of Iowa. Along Little Cedar River, Mitchell County.

8. *A. Finkii var. moratus* Shinners. Amer. Mid. Natl. 26:407. 1941.

This midwestern plant has been confused by various authors with the true *A. cordifolius,* an eastern plant. A specimen of the eastern *A. cordifolius* from Westtown, Pennsylvania is characterized by having sagittate-lanceolate leaves, an involucre less than four millimeters high, and very short-acute bracts with conspicuous colored tips, whereas, *A. Finkii var. moratus* has an involucre four millimeters high or higher and bracts with pale green tips.

A. Finkii var. moratus is found on moist, wooded hillsides in Clay County and on wooded dunes in Muscatine County. Common on shaded hills in oak-hickory woods. More widespread than *A. Finkii* and extends into the western part of the state.

A. Finkii var. moratus x *A. Shortii.* One specimen has been found in woods in Fayette County. This is one of Shinners' determinations. It has the ovate-cordate leaves characteristic of *A. Finkii var. moratus* and the wide, pubescent bracts characteristic of *A. Shortii.*

9. *A. novae-angliae* L.

Common throughout the state in alluvial prairies and along creeks in woods.

In sandy alluvial areas and restored prairie, Muscatine County. In moist loam associated with *Cornus paniculata, gentiana quinquefolia* and *Lobelia siphilitica,* Hamilton County. Common on sandy ground with *Aster praealtus, Helianthus grosseserratus,* and *Solidago serotina,* Webster County. Growing in black soil, low prairies, Wisconsin drift sheet, with *Aster praealtus, Solidago serotina, Helianthus grosseserratus,* and *Spartina pectinata,* Story County. Common in low, rich soil associated with *Aster umbellatus, Solidago Riddellii* and *Eupatorium purpureum,* Cerro Gordo County.

10. *A. novae-angliae f. genesseensis* House.

White-rayed form of *A. novae-angliae.* Habitat same as that of *A. novae-angliae,* Cerro Gordo County.

11. *A. novae-angliae f. roseus* Britton (*A. novae-angliae f. rosarius* House, *A. novae-angliae var. roseus* (Desf.) DC.)

Rose-rayed form of *A. novae-angliae.*

Prairie openings on the banks of Canoe Creek, Winneshiek County. Infrequent in Muscatine County, occurring on wet ground.

12. *A. patens* Ait.

Only one specimen was found in the collections studied. Infrequent in open woods and fields, Van Buren County.

13. *A. oblongifolius* Nutt. (*A. oblongifolius var. rigidulus* A. Gray).

The western *A. oblongifolius var. rigidulus* should be included with *A. oblongifolius,* as differences between the two plants seem to be environmental. In the western part of its range it often grows in exposed areas, and the plant is proportionately reduced in size.

A. oblongifolius is commonly found on dry, loess covered hills, and dry, gravelly prairies. Associated with *Solidago nemoralis,* Sioux quartzite exposures in the northwest corner of Iowa.

A. oblongifolius Nutt. x *A. Batesii* Rydb. This hybrid has been found in Chickasaw and Emmet Counties. The involucre varies from 4.5 millimeters to 5.1 millimeters in height.

14. *A. oblongifolius var. angustatus* Shinners. Amer. Mid. Natl. 26: 418. 1941.

Not found in central portion of the state.

Common on dry, rocky pasture slopes and in sandy areas. Rocky open ridge in upland woods, Madison County. Found on sand plain, Muscatine County. Very common in prairie openings, Clayton County and above the cliffs at Buffalo Slough, Cerro Gordo County. Associated with *Gentiana puberula* and *Polygala sanguinea,* Fayette County.

15. *A. prenanthoides* Muhl. ex. Willd.

Mostly in eastern counties, infrequent in the rest of the state.

Dry woods, Fayette County. Moist soil along Canoe Creek Valley, Winneshiek County. Along wooded streams, Muscatine County. In Clayton County on St. Peter sandstone exposure.

16. *A. lucidulus* (A. Gray) Wiegand (*A. puniceus var. lucidulus* A. Gray, *A. lucidulus* (A. Gray) Rydb.)

A. lucidulus should be recognized as a separate plant from *A. puniceus. A. lucidulus* has a more leafy stem and a more dense inflorescence than *A. puniceus.*

Commonly found in swampy places; such as hanging bogs, wet places in woods, along sandy shores, and in damp river thickets.

Associated with *Aster umbellatus* and *Solidago Riddellii.*

17. *A. laevis* L.

Throughout the state in prairies and open grassy woods. On sandstone, Clayton County. Somewhat sandy prairie opening above Iowa River bluffs, Hardin County. Prairie on Kansan drift, Lyon County. Native prairie on Illinoian drift, Muscatine County. Common, prairies of the Wisconsin drift sheet, associated with *Cirsium sp., Solidago rigida, Amorpha canescens, Aster azureus* and *Coreopsis palmata,* Dickinson County.

18. *A. concinnus* Willd.

Prairie opening, Dickinson County. Prairie-steppe, Osceola County. Woods, Lee County.

19. *A. praealtus* Poir. (*A. salicifolius* of authors).

The name *A. salicifolius* actually antedates *A. praealtus,* but the authenticity of its use has been questioned from an early date. *A. praealtus* is less equivocally applied to this species. Various authors since Poiret have used this form. Nees states that the name *A. salicifolius* has been applied to more than one species of *Aster* in herbaria.

Common throughout the state. On swampy land, Palo Alto County. Growing in the edge of water, Mitchell County. In upland prairies and along railroads in southern part of the state. Open grassland, bank of Little Wall Lake, Hamilton County. Along stream with *Eupatorium perfoliatum, Bidens cernua,* and *Helenium autumnale,* Bremer County. Associated with *Solidago serotina, Spartina pectin-*

ata, Solidago canadensis, and *Aster novae-angliae* in low places, Guthrie County.

20. *A. praealtus var. angustior* Wieg.

Most species seen by the writer are from central eastern counties. In damp, open thickets and borders of woods. Open places along Big Creek, Linn County. Prairie border along road, Iowa County.

21. *A. praealtus var. subasper* (Lindl.) Wieg.

Our species all from sedge meadow in Clay County and in Palo Alto County.

22. *A. junceus* Ait.

Common in Buffalo Slough swamp and on sandy Clear Lake beach, Cerro Gordo County. Low ground, Green Slough, Clay County. Prairie along railroad, O'Brien County.

23. *A. junciformis* Rydb.

Common in the swamp at Buffalo Slough, Cerro Gordo County.

24. *A. paniculatus* Lam.

Scattered throughout the state on alluvial prairie. Beach, West Okoboji Lake, Dickinson County. Sandy alluvial plain, Muscatine County. Border of Silver Lake, Palo Alto County. Growing with *Solidago rigida, Liatris scariosa, Andropogon scoparius,* and *Sorgastrum nutans,* Hamilton County. Associated with *Helianthus grosseserratus, Boltonia asteroides,* and *Phragmites communis,* Story County. In Cerro Gordo County found associated with *Aster praealtus,* and *Eupatorium perfoliatum.*

25. *A. paniculatus var. simplex* (Willd.) Burgess.

Common in swamps and marshes in Cerro Gordo, Dickinson, and Dubuque Counties. Also found on alluvial plains, at the edge of woods and along railroads.

26. *A. interior* Wieg. (*A. Tradescanti,* in part, of Gray, Man., ed. 7.)

Damp soil along the Mississippi and Cedar Rivers, Muscatine County. Common in prairie border along railroads. Along bottomland road, Audubon County.

27. *A. puniceus* L.

Grows in damp habitat. Boggy places in prairie, Humboldt and Muscatine Counties.

28. *A. linariiflorus* L. (*Ionactis linariifolius* (L.) Greene).

Specimens only from Louisa and Muscatine Counties. Big Sand Mound, Louisa County. Sandy soil, open woods, Muscatine County.

29. *A. commutatus* (T. & G.) A. Gray.

Specimens from only Palo Alto County. Dry prairie hillside, shore of Lost Island Lake.

30. *A. ericoides* L. (*A. multiflorus* Ait., *A. multiflorus var. exiguus* Fernald.)

Common in dry locations throughout the state in rich, open prairies, roadsides, pastures and borders of woods.

31. *A. ericoides var. prostratus* (Kuntze) Blake (*A. exiguus* Rydb.)

Common on prairies throughout Iowa. Open hills, Davis County. Dewey's Pasture, Clay County. On sandy soil in Dickinson, Harrison

and Muscatine Counties. On Wisconsin drift sheet associated with *Aster laevis, Monarda mollis* and *Liatris pycnostachya,* Cerro Gordo County. Associated with *Aster laevis, Solidago missouriensis, Kuhnia eupatorioides, Ratibida pinnata,* and *Heliopsis scabra,* Guthrie County.

32. *A. ericoides f. caeruleus* (Benke) Blake.

All specimens seen are from northern counties. On prairie slopes and roadside banks in Dickinson, Clay, Lyon, Kossuth, and Palo Alto Counties.

33. *A. ericoides f. Gramsii* Benke.

Specimens from only three counties in the state, two on the north border and a central eastern border county. Low gravelly prairie ridge, Lyon County. Border of opening, Dickinson County. Sandy alluvial flat, Muscatine County.

34. *A. ericoides* x *A. novae-angliae* L. (*A. amethystinus* Nutt.)

Found on rather low prairie, Lyon County. Common on hummocky soil in Dewey's Pasture, Clay County where *Aster novae-angliae* and *A. ericoides* are abundant.

35. *A. sericeus* Vent.

Throughout the state in dry prairies and sandy areas. Loess ridges in Monona and Plymouth Counties, and in the Missouri Valley. Gravelly slopes, Allamakee and Dickinson Counties. Associated in colonies with abundance of *Anemone patens* and *Panicum scribnerianum.*

36. *A. pilosus* Willd. (*A. ericoides var. villosus* T. & G., *A. ericoides var. platyphyllus* T. & G.)

The urn-shaped involucre of *A. pilosus* distinguishes it from *A. dumosus* which has a top-shaped involucre. The subulate-tipped rameal leaves are quite similar in the two species.

A. pilosus occurs largely in the southeastern corner of the state. On sandy soil in Lee, Mahaska, and Muscatine Counties.

37. *A. pilosus var. Pringlei* (A. Gray) Blake (*A. pilosus var. demotus* Blake).

Common in southeastern counties, infrequent in the rest of the state. Abundant on stony hills, Davis County. Very common on gravelly hillsides and in fallow fields and pastures.

38. *A. pantotrichus* Blake (*A. missouriensis* Britton).

The name *A. missouriensis* must be abandoned because it has been used for another species of *Aster* by Kuntze.

Very common in alluvial woods throughout the state. Upland woods, Boone County. Wooded bluffs along Iowa and Shell Rock Rivers. Abundant on low ground with *Solidago canadensis, Echinochloa crus-galli, Helianthus tuberosus, Panicum dichotomiflorum.* Alluvial soil along Little Sioux River, Clay County, and in low woods associated with *Desmodium canadensis, Laportea canadensis,* and *Pilea pumila.*

39. *A. pantotrichus var thyrsoides* (Gray) Blake.
(*A. missouriensis var. thyrsoides* (Gray) Wieg.)

Dewey's Swamp, Louisa County. Alluvial woods, Clayton County. Sandy opening, Iowa County.

40. *A. Woldeni* Rydb.

Uncommon. Specimens from Benton and Emmet Counties. Found on dry soil in prairies. Collected along roadside, Emmet County.

41. *A. umbellatus* Mill. (*Doellingeria umbellata* (Mill.) Nees).

Common in northern and eastern counties in low, wet places. Sedge zone of hanging bogs. Clay County. In a pasture, Dickinson County. Drier portion of peat bogs.

42. *A. umbellatus var. pubens* A. Gray.

Not uncommon in peat bogs and on low ground. Hanging bog, Dickinson County. Common in damp thickets, Louisa County and in the Cedar River region, Muscatine County. Associated with *Aster prenanthoides, A. novae-angliae,* and *Carex filiformis.*

43. *A. brachyactis* Blake (*A. angustus* (Lindl.) T. & G., *Brachyactis angusta* (Lindl.) Britton).

Four counties in northern Iowa. Clear Lake, Cerro Gordo County. Marshy border of lagoon, Palo Alto County. Low ground, Emmet County. Banks of Mud Lake, sandy shore of Round Lake, and hummocks in dry, marshy outlet of Lost Island Lake, Clay County.

44. *A. turbinellus* Lindl.

Specimens only from Lee County. Open places ,edge of woods.

45. *A. ptarmicoides* (Nees) T. & G.

In gravelly soil on drier prairies and prairie-steppe mostly in northwestern part of the state. Some specimens from Muscatine County sand dunes.

46. *A. lateriflorus* (L.) Britt.

Most common in eastern part of state. Sandy ridge near river, Bremer County. Rather low woods, Clinton County. Sandy alluvial woods, Delaware County. Upland woods, Fayette County. Sandy prairie opening, Iowa County. Deep woods, Linn County. Upland prairie opening, Washington County. Associated with *Aster azureus, A. Shortii, A. sagittifolius, Solidago ulmifolia, Eupatorium altissimum.*

47. *A. lateriflorus* (L.) Britton *var. pendulus* (Ait.) Burgess (*A. lateriflorus var. angustifolius* Wiegand).

Mostly in the eastern part of the state. Shaded slopes near the base of hills and in semi-open woodland along Lick Creek, Davis County. Moist soil, Canoe Creek Valley, Winneshiek County. Common on shaded slopes of Des Moines River, Boone County.

48. *A. dumosus* L.

Involucre not constricted as in *A. pilosus,* top-shaped.

Restricted to southeastern section of Iowa. Alluvial prairie, Iowa County. Alluvial sand flats, Lee and Muscatine Counties. Prairie openings above sandstone bluffs, Mahaska County.

49. *A. dumosus var. strictior* T. & G.

Confined to eastern part of the state. Alluvial woods, Clayton County. Hanging bog and sand bed of Lake Calvin, Muscatine County.

50. *A. vimineus* Lam.

Three counties in southeastern Iowa. Sandy alluvial plain, Louisa

County. Wiehl's prairie, Johnson County. Also collected from Muscatine County.

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