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A Checklist of the Aquatic and Wetland Vascular Plants of Iowa: I. Ferns, Fern Allies, and Dicotyledons

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A Checklist of the Aquatic and Wetland Vascular Plants of Iowa: I. Ferns, Fern Allies, and Dicotyledons.[1]

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LAMMERS, THOMAS G. and A. G. VAN DER VALK (Department of Botany and Plant Pathology, Iowa State University, Ames, Iowa 50011). A checklist of the aquatic and wetland vascular plants of Iowa: I. Ferns, fern allies, and dicotyledons. Proc. Iowa Acad. Sci. 84(2):41-88, 1977.

This paper is an annotated checklist of the aquatic and wetland ferns, fern allies, and dicotyledons of Iowa and is based primarily on published floristic surveys. For each species, information about its habitat, distribution, synonomy, and frequency of occurrence is provided, plus a distribution map.

A total of 9 ferns, 6 fern allies, and 262 dicotyledons are considered aquatic or wetland species in Iowa.

INDEX DESCRIPTORS: Aquatic plants, Iowa flora, wetland plants, ferns and fern allies, dicotyledons.

This series of papers is intended, by means of an annotated checklist, to provide up-to-date information on the known distribution of wetland plants in Iowa. It is based almost entirely on recent floristic surveys conducted by various Iowa authors (see BIBLIOGRAPHY). Specimens in the Herbarium of Iowa State University also were examined in the preparation of this paper. Part I contains an annotated checklist and distribution maps of Iowa's aquatic ferns, fern allies, and dicotyledons. Part II will contain an annotated checklist of the aquatic monocotyledons and a discussion of species distributional patterns in Iowa. Because these papers are based primarily on literature reports, we cannot vouch for the identifications of specimens other than our own. However, we believe that most of the determinations included here are accurate. In compiling the checklist, older literature reports (i.e., pre-1950) have not been consulted since this literature has already been reviewed in the regional floristic surveys done under the direction of Dr. Robert F. Thorne at the University of Iowa in the fifties and early sixties. A bibliography of this older literature is given in Eilers (1975) who also gives a map showing the coverage of the various floristic surveys done in the fifties and sixties. In the checklist, the exact location as it appeared in the original literature is provided for very rare species. The herberia where these rare specimens are housed are abbreviated as:

IA	University of Iowa, Iowa City;
ISC	Iowa State University, Ames;
ISTC	University of Northern Iowa, Cedar Falls;
DPM	Putnam Museum, Davenport;
PC	Parson's College, Fairfield.

Beal and Monson's (1954) *The Marsh and Aquatic Angiosperms of Iowa* was the first comprehensive checklist of Iowa aquatic plants. It also contained keys for identifying the plants, brief habitat and range information, and distribution maps based on herbarium specimens examined by the authors. However, this work has two major deficiencies. First, it is more than 25 years old and predates the regional Iowa floristic surveys mentioned previously. Second, Beal and Monson (1954) use a narrow definition of an aquatic plant. It is much the same as that of Dr. N. C. Fassett (1940) who defined an aquatic plant as any plant visible to the naked eye, which, under normal conditions, may germinate and grow with at least its base under water. Beal and Monson (1954), using these criteria, recognized only 224 species of vascular aquatic plants in Iowa.

In this series of papers, we wish to update and expand the Beal and Monson (1954) checklist. It is our intention in compiling the present list to include all species that a worker in wetland ecology might encounter in Iowa wetlands. As a result, some plants have been included that are not restricted to wetland habitats, but that also may grow in drier habitats. We define a wetland plant as any plant reported in the literature as growing in one or more of the following Iowa wetland types:

1) seasonally flooded lowlands,
2) wet meadows,
3) shallow and deep freshwater marshes,
4) open water of various depths,
5) bogs and fens.

The definition of these wetland types follows that of Martin et al. (1953). As a result of this broader definition, we recognize more than 470 aquatic and wetland species in Iowa. This is more than double the number of species in Beal and Monson (1954).

The distribution maps given for each species were compiled from published information except for a few species only recently found in Iowa (e.g., *Peltandra virginica*) where the voucher specimens were examined. A species is indicated as present in a county if a voucher specimen is known to exist from that county or if, in one of the regional surveys, it was observed in that county even if no voucher specimen was collected. The distribution of most aquatic and marsh plants undoubtedly is wider than is indicated in the maps in as much as they seem to have been inadequately collected in the regional surveys. This is especially true of submerged species. A map of Iowa identifying the counties is given in Fig. 1 to help in interpreting the distribution maps.

The nomenclature in these checklists is based on Cronquist (1963) except for grasses, when Pohl (1966) is followed. In compiling this checklist, numerous nomenclatural problems were encountered: different authors have treated certain taxa at different levels (species, subspecies, variety, or form) because they have followed different authorities. Because of these inconsistencies in the literature, we have not included any taxonomic categories below the species, except in a few cases where statewide information is available for a subspecies. In the checklist, families are arranged according to Cronquist (1968), but genera and species are arranged alphabeti-

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cally. An index to genera is provided at the ends of Part I and II. Introduced species are indicated by an asterisk.

We hope that these papers will be immediately useful to those working in many areas of wetland ecology and management. We also hope that the compilation of this material will aid in the eventual preparation of a much needed state flora. This has been the goal of Iowa botanists since C.E. Bessey's first *Contributions to the Flora of Iowa* in 1871, and it is a tragedy that, despite repeated starts, no flora has ever been completed.

I. LYCOPODIOPHYTA

SELAGINELLACEAE

Selaginella apoda (L.) Spring. Map 1-A

MUSCATINE: abundant in a seepage bog at the foot of a sandy bluff along Cedar River (sec. 15 Lake twp.), Thorne 20178, 1958 (IA). This population is still in existence according to J. H. Peck (1976).

ISOETACEAE

Isoetes melanopoda Gay & Durieu Map 1-B

CLINTON: Clinton, Vasey, 1863 (Missouri Botanical Garden and Gray Herbaria).

II EQUISETOPHYTA

EQUISETACEAE

Equisetum arvense L. Map 1-C

Common Statewide; wet ditches, roadsides, railways, streambanks, alluvial open woods, prairie swales.

E. fluviatile L. Map 1-D

Infrequent in the northeastern third of Iowa; marshes, bogs, and streambanks.

E. hyemale L. (*E. prealtum* Raf.; *E. robustum* A. Br.) Map 1-E

Common throughout; wet ditches, alluvial woods, streambanks, roadsides.

E. *sylvaticum* L. Map 1-F

Rare, scattered locally in the eastern half of Iowa; wooded streambanks, bogs, fens, and low prairie.

III. POLYPODIOPHYTA

OPHIOGLOSSACEAE

Botrychium simplex E. Hitchc. Map 1-G

LINN: sandy pasture near pond (sec. 27, Jackson twp.), Thorne 14112, 1954 (IA).

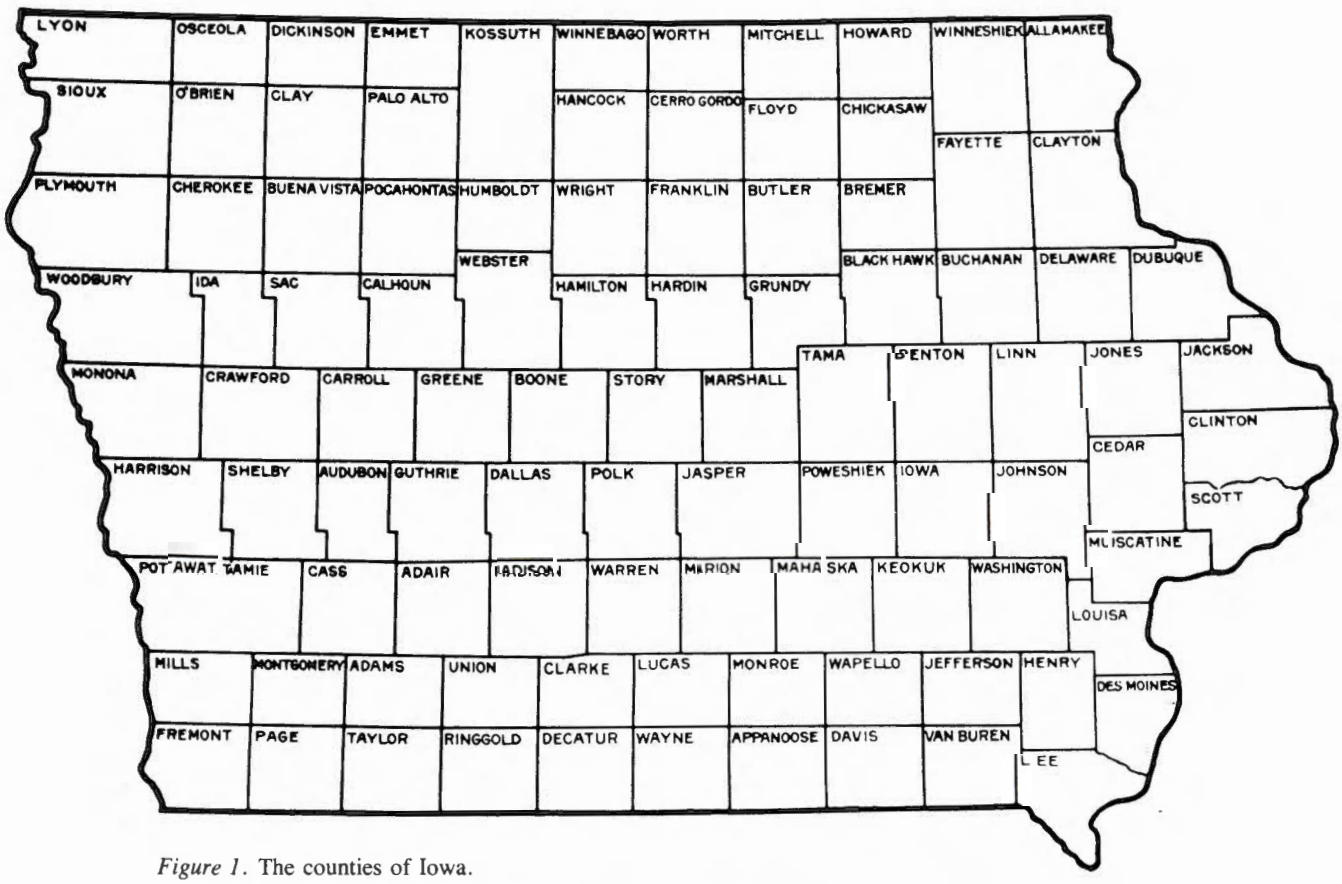

Figure 1. The counties of Iowa.

Ophioglossum vulgatum L. Map 2-A
LINN: sandy pasture near pond (sec. 27, Jackson twp.,), Thorne 14113, 1954 (IA); same station Niemann 1000, 1974 (ISC). CHICASAW: Nieman; Peck (1976). BREMER: Peck (1976).

OSMUNDACEAE

Osmunda cinamomea L. Map 2-B
Rare on moist seepage slopes in eastern Iowa, scattered locally. JACKSON: Green Island, Pammel, 1905 (ISC). JASPER: west side of road between Colfax and Prairie City, Graves, 1933 (IA). MUSCATINE: along the Cedar River, Lake twp., Reppert, 1891 (IA); same station, Thorne 10524, 1952 (IA). DELAWARE: sandy meadow in Oneeda twp., Rickey 1595, 1963 (IA).

O. regalis L. var. *spectabilis* (Willd.) Gray Map 2-C
Rare in bogs and marshes of east-central Iowa. CEDAR: along road 1 mile east of Cedar River, 4 miles south of Rochester, Fay & Thorne 1185, 1950 (IA); same station, Lammers 648, 1976 (ISC and ISTC). CLINTON: NE¼ sec. 36, Spring Rock twp., Cooperrider 3993p. (IA). DELAWARE: sandy meadow along Rt. 38 near Hopkington, Rickey 452, 1963 (IA). MUSCATINE: Lake twp., Reppert, 1891 (IA); Wildcat Den, Melhus, 1931 (ISC).

ASPIDIACEAE

Dryopteris cristata (L.) Gray *(Aspidium cristatum* (L.) Sw.)Map 2-D
Infrequent in the northeastern third of Iowa; bogs, streambanks, alluvial woods.

Onoclea sensibilis L. Map 2-E
Common in the eastern two-thirds of the state; bogs, marshes, streambanks, and wet woods.

Thelypteris palustris Schott var. *pubescens* (Lawson) Fern. *(Dryopteris thelypteris* (L.) Gray) Map 2-F
Infrequent in the northeastern third of Iowa; bogs, marshes, low prairie.

MARSILEACEAE

Marsilea mucronata A. Br. *(M. vestita* of auth., not Hook. & Grev.) Map 2-G
LYON: northwest corner of the county, in a pool on Sioux quartzite, Shimek, 1889 (IA); rediscovered in 1963 in same area by Grant (ISTC).

J.C. Arthur (1882) states that this species is reported from Iowa (as *M. vestita)* in the 1860 and 1869 editions of Alphonso Woods' *Classbook of Botany*. This report is based on specimens collected by Dr. Cousens "in Iowa, along the Mississippi River." The specimens were deposited in the Herbarium of the College of Pharmacy, New York City, and were inadvertantly destroyed before Arthur's time. Numerous attempts to relocate the station in Lyon county have failed, and the species was thought to be no longer extant in Iowa until its rediscovery in 1963.

**M. quadrifolia* L. Map 3-A
Introduced from Europe and sparingly naturalized in southern Iowa. VAN BUREN: escaped from cultivation on the Charles Campbell farm, Mt. Zion (sec. 8, Van Buren twp.), becoming a weed, Hayden 8646, 1940 (ISC); on west shore of lake and into two feet of water, Lacey Keosaucqua State Park, Monson 428, 1951 (IA & ISC); same station, extremely abundant, Lammers 504, 1975 (ISTC). DECATUR: in shallow water in Nine Eagles State Park, Farrar 1166, 1974 (ISC).

SALVINIACEAE

Azolla mexicana Presł. *(A. caroliniana* of auth., not Willd.) Map 3-B
Infrequent in eastern and southern Iowa; still water of ponds and sloughs.

IV. MAGNOLIOPHYTA

A. MAGNOLIATAE

NYMPHAEACEAE

Brasenia schreberi Gmel. Map 3-C
Rare, scattered locally across Iowa; shallow ponds and lakes.

0*Nuphar luteum* (L.) Sibth. & Sm. subsp. *variegatum* (Englm.) Beal (*N. advena* (Ait.) Ait. F.) Map 3-D
Frequent in the northeastern half of Iowa; ponds, lakes, oxbows, sloughs, and quiet waters of major streams.

Nymphaea tuberosa Paine Map 3-E
Habitat and distribution similar to that of *Nuphar luteum variegatum,* and often occurring together.

NELUMBONACEAE

Nelumbo lutea (Willd.) Pers. (*N. pentapetala* Walt.) Map 3-F
Lakes, ponds, sloughs, oxbows, quiet waters of major streams; predominantly along Mississippi and Missouri rivers and also introduced to several interior stations.

CERATOPHYLLACEAE

Ceratophyllum demersum L. Map 3-G
Very common in ponds, lakes, sloughs, and oxbows throughout Iowa.

RANUNCULACEAE

Anemone canadensis L. Map 3-H
Frequent statewide; wet roadside ditches, marshes, streambanks, and open alluvial woods.

A. caroliniana Walt. Map 4-A
Rare, locally in extreme northern and east-central Iowa; wet sandy prairie swales.

Caltha palustris L. Map 4-B
Frequent in the northeastern half; bogs, marshes, pond and lake margins, streambanks.

Myosurus minimus L. Map 4-C
Infrequent in eastern Iowa; sandy alluvial flats and marshes.

Ranunculus abortivus L. Map 4-D
Common; alluvial woods, moist slopes and ravines, wet ditches.

R. aquatilis L. (*R. trichophyllus* Chaix) Map 4-E
Infrequent in eastern Iowa and the Lakes Region; cold running water.

R. cymbalaria Pursh Map 4-F
Infrequent in western Iowa; bogs, swamps, wet margins, streambanks.

R. flabellaris Raf. (*R. delphinifolius* Torr.) Map 4-G
Frequent in the Lakes Region and in the drainage of the Des Moines, Skunk, and Cedar-Iowa river systems; marshes, margins, bogs, swamps.

R. gmelini DC var. *hookeri* (D. Don) Benson (*R. purshii* Richards) Map 4-H
DICKINSON: southeast shore of Spirit Lake, Cratty, 1920 (ISC); sandy shore of Center Lake (sec. 5, T99N R36W), Thorne 11013, 1952 (IA).

R. longirostris Godr. (*R. circinatus* Sibth.) Map 5-A
Rare, scattered locally; sloughs, sluggish streams, lakes, and ponds.

R. pennsylvanicus L. f. Map 5-B
Most frequent in the northeastern half of Iowa; marshes, bogs, ponds, swamps.

R. recurvatus Poir. Map 5-C
Infrequent in the eastern third; wet ravines, alluvial woods, streambanks.

**R. repens* L. var.*villosus* LaMotte Map 5-D
SCOTT: wet ditch north of Long Grove, Guldner (DPM); roadside north of Donahue, Guldner (DPM). JOHNSON: Somes, 1907 (ISC); along a railroad east of Iowa City, low ground, Shimek 1909 (ISC).

R. sceleratus L. Map 5-E
Infrequent, predominantly in the Lakes Region and along the Des Moines, Mississippi, and Missouri river systems; wet margins, bogs, swamps, and lakes.

R. septentrionalis Poir. (*R. caricetorum* Greene) Map 5-F
Common throughout; wet swales, alluvial woods, streambanks.

URTICACEAE

Boehmeria cylindrica (L.) Sw. Map 5-G
Infrequent in eastern and central Iowa; wet margins, alluvial woods, marshes, swamps, streambanks.

B. drummondiana Wedd. Map 5-H
MUSCATINE: boggy margin of "Nelumbo pond" (sec. 15, Lake twp.), Guldner (DPM). Gleason and Cronquist (1963) consider this to be a sun form of *B. cylindrica*.

Laportea canadensis (L.) Wedd. Map 6-A
Common throughout; alluvial woods and streambanks.

Pilea fontana (Lunnell) Rydb. Map 6-B
BREMER: moist lowland prairie (sec. 1, T92N R12W), Fay, 1950 (IA). DICKINSON: wet springy marl of Silver Lake Fen, Thorne 16209, 1955 (IA). JONES: sandy marsh (NE¼, sec. 17, T85N R1W), Cooperrider 3139 (IA). LOUISA: very moist ground near margin of spring fed pond (NW¼, sec. 7, T75N R4W), Davidson 4047 (IA).

P. pumila (L.) Gray Map 6-C
Common statewide; marshes, streambanks, alluvial woods.

Urtica dioica L. (*U. procera* Muhl.; *U. viridis* Rydb.; *U. gracilis* Ait; *U. lyallii* of auth., not S. Wats.) Map 6-D
Very common throughout; alluvial ground, wet waste places, roadsides, alluvial woods.

BETULACEAE

Alnus rugosa (DuRoi) Spreng. Map 6-E
Restricted to extreme northeastern Iowa; infrequent on streambanks.

Betula glandulosa Michx. var. *glandulifera* (Regel) Gl. Map 6-F
ALLAMAKEE: Postville, Schultz, 1913 (ISC); marsh in sandhills along the Upper Iowa River, 7 miles south of New Albin, Hayden 10308, 1937 (ISC). CHICKASAW: New Hampton, Spiker, 1923 (ISC); bog near New Hampton, Murley 1549, 1940 (ISC).

B. lutea Michx. f. (*B allegheniensis* Britt.) Map 6-G
Infrequent; wet woods of northeastern Iowa.

B. nigra L. Map 6-H
Frequent in the southeastern quarter; alluvial woods and stream banks.

CARYOPHYLLACEAE

Cerastium arvense L. (*C. velutinum* Raf.) Map 7-A
Rare; wooded streambanks of northeastern Iowa.

C. nutans Raf. Map 7-B
Infrequent in southeastern Iowa; wet ditches, alluvial woods.

**C. viscosum* L. Map 7-C
Infrequent in eastern Iowa; wet sandy alluvial flats.

**C. vulgatum* L. Map 7-D
Frequent in eastern Iowa; wet prairie, low pastures, wet disturbed ground.

**Silene cserei* Baumg. Map 7-E
Rare, scattered locally in nothern and eastern Iowa; low wet disturbed ground.

**S. cucubalus* Wibel Map 7-F
Rare, scattered locally in central and eastern Iowa; wet margins, ditches, alluvial woods, cropland.

S. nivea (Nutt.) Otth. Map 7-G
Rare; low wet disturbed ground.

S. stellata (L.) Ait. f. Map 7-H
Common; prairie swales, alluvial woods, wet margins.

**Stellaria aquatica* (L.) Scop. (*Myosoton aquaticum* (L.) Moench.) Map 8-A
Rare, eastern Iowa; wet ditches, streambanks, and alluvial woods.

S. longifolia Muhl. Map 8-B
Infrequent in eastern Iowa; wet margins and alluvial woods.

**S. media* (L.) Cyrillo Map 8-C
Common throughout; disturbed alluvial woods, streambanks, waste ground, shaded lawns and gardens.

CHENOPODIACEAE

Atriplex patula L. Map 8-D
Scattered locally in southern Iowa, infrequent; wet roadsides, pastures, meadows, swales.

Chenopodium rubrum L. Map 8-E
CLAY: muddy shore of Mud Lake, Hayden 4015 (ISC); sandy southwest shore of Lost Island Lake, Hayden 4013 (ISC).

C. standleyanum Aellen (*C. boschianum* of auth., not Moq.) Map 8-F
Frequent, predominantly in the southern half; marshes, alluvial woods, streambanks.

AMARANTHACEAE

Amaranthus tamariscinus Nutt. Map 8-G
Frequent throughout; marshes, alluvial woods, streambanks.

A. tuberculatus (Moq.) Sauer. Map 8-H
Frequent in southeastern Iowa and the Lakes Region; marshes.

A. tuberculatus (Moq.) Sauer. x *tamariscinus* Nutt. Map 9-A
LOUISA: alluvial woods (sec. 16, T75N R2W), Davidson 3835, 1954 (IA).
MAHASKA: alluvial prairie (sec. 1, T74N R17W), Davidson 3998, 1954 (IA).

POLYGONACEAE

**Polygonum caespitosum* Blume var. *longisetum* (DeBruyn) Stewart Map 9-B
SCOTT: a native of tropical east Asia, abundant in low wet places on Credit Island, Guldner (DPM).

P. coccineum Muhl. (*P. muhlenbergii* (Meisn.) S. Wats.; *P. iowense* Rydb.; *P. pratincola* Greene; *P. rigidula* Sheld.) Map 9-C
Very common statewide; marshes, swamps, ponds, lakes, often a crop weed in low fields. This species exhibits great morphological diversity, due almost entirely to environmental factors.

**P. hydropiper* L. Map 9-D
Frequent statewide; marshes, prairie swales, swamps, wet margins.

P. hydropiperoides Michx. (*P. opelousanum* Riddell) Map 9-E
Infrequent, primarily in southern Iowa; marshes, ponds, and lakes.

P. lapathifolium L. (*P. incanum* Willd.) Map 9-F
Common throughout; marshes, streambanks, lake and pond margins.

P. natans Eat. (*P. amphibium* of auth., not L.; *P. fluitans* Eat.; *P. hartwrightii* Gray) Map 9-G
Frequent, primarily in the Lakes Region and in the Des Moines and Cedar-Iowa river systems; marshes, ponds, lakes. Highly polymorphic, the fluctuations in gross morphology due, for the most part, to environmental factors.

P. pennsylvanicum L. (*P. longistylum* Small) Map 9-H
Common throughout; low fields, marshes, roadsides, wet waste ground, lake and pond margins, often a crop weed.

**P. persicaria* L. Map 10-A
Common throughout; marshes, ditches, roadsides, low fields, often a crop weed.

P. punctatum Ell. (*P. robustum* (Small) Fern.) Map 10-B
Common statewide; bogs, marshes, streambanks, wet ditches, low fields, an occasional crop weed.

P. ramosissimum Michx. (*P. exertum* Small) Map 10-C
Frequent throughout; moist sandy marshes and prairies.

P. sagittatum L. Map 10-D
Frequent in the eastern half of the state, absent west of Des Moines; ponds, lakes, marshes, bogs, and streambanks.

Rumex maritimus L. var. *fueginus* (Phil.) Dusen. (*R. persicarioides* of auth., not L.) Map 10-E
Infrequent, primarily in the northwestern third of the state; bogs, swamps, marshes, pond and lake margins.

R. orbiculatus Gray (*R. britannica* of auth., not L.) Map 10-F
Infrequent in the northeastern third of Iowa; bogs, marshes, streambanks, wet ditches and margins.

**R. patientia* L. Map 10-G
Introduced by early German settlers as a vegetable green; rarely escaping and becoming naturalized in marshes, swamps, and other disturbed wet ground.

R. verticillata L. Map 10-H
Infrequent, primarily in the southeast quarter; streambanks, marshes, lake and pond margins.

Triadenum fraseri (Spach) Gl. (*Hypericum virginianum* of auth., not L.) Map 11-G
Rare, scattered in eastern Iowa; marshes, sloughs, prairie swales.

MALVACEAE

Hibiscus militaris Cav. Map 11-H
Frequent in the southeastern half along major streams.

HYPERICACEAE

Hypericum boreale (Britt.) Bickn. Map 11-A
LINN: boggy margin of marsh in sandy pasture, 2½ miles south of Coggon (sec. 27, Jackson twp.), Thorne 10844, 1952 (IA).

H. canadense L. Map 11-B
CLAY: around a pond at the crossroads west of Lost Island Lake, Hayden 9512 (ISC).

H. majus (Gray) Britt. Map 11-C
Infrequent in eastern and south-central Iowa; wet sandy margins, marshes, prairie swales.

H. mutilum L. Map 11-D
Frequent in the southeastern quarter; wet sandy soil of marshes, meadows, swales, pond and lake margins.

H. mutilum L. × *majus* (Gray) Brit. Map 11-E
SCOTT: marsh northeast of St. Ann's Church, Guldner (DPM).

H. pyrimidatum Ait. (*H. ascyron* of auth., not L.) Map 11-F
Infrequent, southeastern half; marshes, alluvial woods.

ELATINACEAE

Elatine triandra Schk. Map 12-A
DICKINSON: clear shallow water of Jackpot (Three-Corners) Pond (sec. 3, T98N R37W), Crum, 1975 (IA, ISC, ISTC). Gilly & MacDonald (1948) state that an earlier report by them (1938) was based on a misidentified specimen of *Justicia americana* (L.) Vahl., from Jefferson County.

VIOLACEAE

Viola lanceolata L. Map 12-B
Rare; restricted to marshes, meadows, and swales of east-central Iowa.

Viola macloskeyi Lloyd subsp. *pallens* (Banks) Baker (*V. pallens* (Banks) Brainerd) Map 12-C
Rare; restricted to bogs and marshes of east-central Iowa.

Viola macloskeyi pallens (Banks) Baker × *lanceolata* L. Map 12-C
MUSCATINE: bog among dunes 8 miles northwest of Muscatine, Newbro, 1935 (IA). JONES: sandy marsh (SW¼ sec. 6 T83N R2W), Cooperrider 848 (IA).

V. nephrophylla Greene Map 12-E
Infrequent, northeastern half of Iowa; marshes, bogs, fens, and prairie swales.

V. nephrophylla Greene × *sororia* Willd. Map 12-F
CLINTON: rich marshy seepage slope surrounded by woods (SW¼ sec. 2 T82N R6E), Cooperrider 3878 (IA).

V. papilionacea Pursh. Map 12-G
Common, throughout state in prairie swales and on wet shores.

V. sagittata Ait. (*V. fimbriatula* of auth., not J. E. Smith) Map 12-H
Infrequent in the eastern third of Iowa; streambanks, prairie swales, marshes, sandy alluvial openings.

DROSERACEAE

Drosera rotundifolia L. Map 13-A
HANCOCK: floating sphagnum mat in Dead Man's Lake, Pilot Knob State Park, Thorne 14359, 1954 (IA); same station, Lammers 550, 1975 (ISC). LINN: Berry, 1908 (IA).

JUGLANDACEAE

Carya illinoensis (Wang.) K. Koch (*C. pecan* (Marsh.) Englm. & Graebn.) Map 13-B
Rare in southeastern Iowa; wet alluvial woods along the Mississippi.

C. lacinosa (Michx. f.) Loud (*C. sulcata* Nutt.) Map 13-C
Rare in southeastern Iowa; wet alluvial woods along the Mississippi.

C. × *nussbaumeri* Sarg. (*C. illinoensis* (Wang.) K. Koch × *lacinosa* (Michx. f.) Loud.) Map 13-D
This putative hybrid is represented at ISC by several collections from Des Moines and Lee counties, made by C. C. Lounsberry in the 1930s. The labels state that the trees were located on the floodplain of the Mississippi, at different stations, but are unclear as to whether they are native or planted.

SALICACEAE

Populus balsamifera L. var. *subcordata* Hylander Map 13-E
Occasionally in northern Iowa along river banks and on lakeshores. EMMET: Estherville, School Section Creek valley, Wolden, 1922 (ISC). HOWARD: sec. 23, New Oregon twp., Spence & Thorne 173, 1958 (IA). MITCHELL: sec. 28, Jenkins twp., Spence & Thorne 161, 1958 (IA). OSCEOLA: wooded streambank southeast of Sibley, Shimek, 1899 (IA).

P. deltoides Marsh. var. *deltoides* Map 13-F
Very common throughout the state; low alluvial woods, streambanks, wet margins of ponds and lakes.

var. *occidentale* Rydb. (*P. sargentii* Dode) Map 13-G

Frequent in northwest alluvial woods, streambanks; L. J. Eilers (personal communication) doubts that this variety of *P. deltoides* actually occurs in Iowa.

Salix amygdaloides Anderss. Map 13-H
Common statewide; streambanks, marshes, alluvial woods, wet margins.

**S. babylonica* L. Map 14-A
This frequently planted shade tree occasionally escapes to marshes, wet ditches and margins, streambanks, and alluvial woods.

S. bebbiana Sarg. Map 14-B
Infrequent in northern Iowa; marshes, bogs, prairie swales.

S. candida Fluegge Map 14-C
CERRO GORDO: swamp, Buffalo Slough, Mason City, Shimek, 1920 (IA). JOHNSON: marshes, Iowa City, Shimek, 1892 (IA).

S. discolor Muhl. Map 14-D
Infrequent, primarily known from northeastern Iowa; streambanks, wet margins and ditches, marshes, prairie swales.

S. discolor Muhl. × *humilis* Marsh. Map 14-E
MUSCATINE: wet ground, Reppert, 1891 (IA). A putative hybrid annotated by C. R. Ball.

**S. fragilis* L. Map 14-F
Frequently planted cultigen, occasionally escaping to marshes, streambanks, wet ditches and margins. Primarily collected from the northern half of Iowa.

S. interior Rowlee Map 14-G
Very common throughout; wet ditches and margins, streambanks, sand bars, thickets, alluvial open woods.

S. lucida Muhl. Map 14-H
CERRO GORDO: swamp, Buffalo Slough, Mason City, Shimek, 1920 (IA). SCOTT: Fejervery Park, Davenport, Guldner (DPM). WINNISHIEK: Ft. Atkinson, Shimek, 1903 (IA).

S. nigra Marsh. Map 15-A
Common statewide; wet ditches and margins, streambanks, alluvial woods.

S. pedicellaris Pursh Map 15-B
Rare in north-central Iowa; swamps, marshes, bogs.

**S. pentandra* L. Map 15-C
GUTHRIE: boggy ravine near the north end of Springbrook State Park, Fay 2311 (IA).

S. petiolaris Sm. (*S. gracilis* Anderss.) Map 15-D
Infrequent in the northeastern third of Iowa, and the Lakes Region; bogs, marshes, swamps, wet margins of ponds and lakes, streambanks.

**S. purpurea* L. Map 15-E
MUSCATINE: banks of Mud Creek, Muscatine, Reppert, 1892 (IA).

S. rigida Muhl. (*S. missouriensis* Bebb.; *S. cordata* of auth., not Michx.) Map 15-F
Very common throughout; wet margins and ditches, streambanks, and alluvial woods.

S. sericea Marsh. Map 15-G
HENRY: Mt. Pleasant, Jacques, 1917 (ISC). JOHNSON: Solon, Shimek, 1895 (IA).

S. subsericea (Anderss.) Schneider Map 15-H
PALO ALTO: peat bog north of Rock Island gravel pit at Graettinger, Wolden 1440 (ISC). Hartley (1966) and others consider this to be a hybrid between *S. petiolaris* and *S. sericea*.

BRASSICACEAE

Armoracia aquatica (Eat.) Wieg. (*Neobeckia aquatica* (Eat.) Britt.; *Radicula aquatica* (Eat.) Robbins.; *Nasturtium lacustre* Gray) Map 16-A
MUSCATINE: slough near the Cedar River, Reppert, 1894 (IA). SCOTT: ponds near Noels, Barnes (DPM).

Cardamine bulbosa (Schreb.) BSP (*C. rhomboidea* DC) Map 16-B
Frequent throughout; bogs, marshes, streambanks, wet margins.

C. douglasii (Torr.) Britt. (*C. rhomboidea* DC var. *purpurea* Torr.) Map 16-C
Rare in southern and eastern Iowa; alluvial woods and streambanks.

C. pennsylvanica Muhl. (*C. parviflora* of auth., not L.; *C. arenicola* Britt.) Map 16-D
Frequent, predominantly in the southeastern third; marshes, streambanks, swamps, alluvial woods.

**Nasturtium officinale* R. Br. (*Radicula nasturtium-aquaticum* (L.) Britt. & Rendl.) Map 16-E
Introduced from Europe as a vegetable green; escaped and naturalized, primarily in the eastern half of the state; cold running springs, streams, wet ditches, marshes and sloughs.

Iodanthus pinnatifidus (Michx.) Steud. Map 16-F
Rare, scattered locally in Iowa; low wet alluvial woods.

Rorippa islandica (Oeder) Borbas Map 16-G
Common statewide; sandy marshes, alluvial woods, swamps, wet margins and ditches.

R. sessiliflora (Nutt.) Hitchc. Map 16-H
Infrequent in the southeast quarter and extreme southwestern tip of Iowa; marshes, sloughs, alluvial woods, wet margins, and ditches.

**R. sylvestris* (L.) Besser Map 17-A
A weed of European origin, sparingly introduced and naturalized in the state; alluvial flats along streams, wet sandy pond and lake margins.

PRIMULACEAE

Lysimachia ciliata L. Map 17-B
Common statewide; wet ditches, streambanks, alluvial woods.

L. hybrida Michx. (*L. lanceolata* (Walt.) Gray) May 17-C
Infrequent across Iowa; marshes and bogs.

**L. nummularia* L. Map 17-D
Escaped from cultivation to disturbed wet sites; primarily collected in the eastern half, but to be expected elsewhere.

L. quadrifolia Sims. Map 17-E
Frequent in the northern half of the state; prairie swales, marshes, swamps.

L. terrestris (L.) BSP Map 17-F
Infrequent in the eastern third of the state; marshes, streambanks, wet margins, prairie swales.

L. thyrsiflora L. Map 17-G
Infrequent in the northeastern half of Iowa; wet sandy marshes.

SAXIFRAGACEAE

Parnassia glauca Raf. Map 17-H
Infrequent in northern and east-central Iowa; bogs, fens, and marshes.

P. parviflora DC Map 18-A
LINN: Cedar Rapids, Berry, 1913 (IA).

Penthorum sedoides L. Map 18-B
Common statewide; marshes, alluvial openings, prairie swales.

Ribes americanum Mill. Map 18-C
Bogs, swamps, marshes and streambanks of eastern Iowa; infrequent.

Saxifraga pennsylvanica L. Map 18-D
Frequent in the northeast third of Iowa, evidently absent elsewhere; fens, bogs, marshes, streambanks, prairie swales.

ROSACEAE

Agrimonia parviflora Ait. Map 18-E
Frequent in southeastern Iowa, evidently absent elsewhere;

marshes, fens, bogs, wet open ground.

Filipendula rubra (Hill) Robbins (*Spiraea lobata* Jacq.) Map 18-F
MUSCATINE: moist soil near the Cedar River, Lake twp., MacKenzie, 1894 (IA).

Geum aleppicum Jacq. Map 18-G
BREMER: moist lowland prairie (sec. 1, T92N R12W), Eilers (IA). CERRO GORDO: Mason City, Shimek, 1921 (IA). CLINTON: rich marsh surrounded by woods (SE¼ sec. 2, T82N R6E), Cooperrider 4125 (IA). DELAWARE: slough, in pasture (sec. 27, T88N R6W), Eilers (IA).

Potentilla anserina L. Map 18-H
LINN: wet meadow, Cedar Rapids, Berry, 1913 (IA).

P. palustris (L.) Scop. Map 19-A
Infrequent, northern Iowa; bogs, marshes, swamps.

P. paradoxa Nutt. Map 19-B
Rare, along the Missouri River and in the Lakes Region; low sandy soil.

P. rivalis Nutt. (*P. millegrana* Englm.; *P. pentandra* Englm.) Map 19-C
Infrequent, scattered locally across the state; wet marshes, pond and lake margins, waste ground, and low wet fields.

Spiraea alba DuRoi (*S. salicifolia* of auth., not L.) Map 19-D
Infrequent in the northeastern half; bogs, marshes, fens, prairie swales.

FABACEAE

Amorpha fruticosa L. Map 19-E
Frequent throughout; streambanks and wet margins.

Amphicarpa bracteata (L.) Fern. Map 19-H
Found occasionally in prairie swales and on shores; distributed throughout Iowa.

Apios americana Medic. Map 19-F
Infrequent across the state; streambanks and prairie swales.

Lathyrus palustris L. Map 19-G
Infrequent, scattered across Iowa; sandy alluvial flats, prairie swales, marshes, sloughs.

LIMNANTHACEAE

Floerkea proserpinicoides Willd. Map 19-H
DUBUQUE: wet ground of springy ravine, White Pine Hollow State Forest, Thorne 14037, 1954 (IA).

HALORAGACEAE

Myriophyllum spicatum L. var. *exalbescens* (Fern.) Jeps. (*M. exalbescens* Fern.) Map 20-A
Most frequent in the Lakes Region scattered locally elsewhere; lakes and ponds.

M. heterophyllum Michx. Map 20-B
Infrequent in the Lakes Region; ponds and lakes.

M. pinnatum (Walt.) BSP (*M. scabratum* Michx.) Map 20-C
Rare in ponds and lakes of southern and eastern Iowa.

Proserpinica palustris L. Map 20-D
CLINTON: marsh in pasture (NE¼ sec. 15, T82N R1E), Cooperrider 346 (IA). MUSCATINE: Salisbury Bridge, Barnes, 1896 (DPM); same station, Thorne & Beal, 1951 (IA).

HIPPURACEAE

Hippuris vulgaris L. Map 20-E
CERRO GORDO: Mason City, Anderson, 1903 (IA). CLAY: Lake twp., Hayden 10149, 1935 (ISC). DICKINSON: Upper Gar Lake, Shimek, 1916 (ISC); Lower Gar Lake, Shimek, 1918 (ISC).

LYTHRACEAE

Ammania coccinea Rothb. Map 20-F
Infrequent in southern Iowa; prairie swales, wet margins of ponds and lakes.

Decodon verticillatus (L.) Ell. Map 20-G
LINN: Cedar Rapids, Berry, 1913 (IA).

Lythrum dacotanum Nieuw. (*L. alatum* of auth., not Pursh) Map 20-H
Very common statewide; prairie swales, swamps, bogs, marshes, sloughs, wet margins and ditches.

**L. salicaria* L. Map 21-A
Cultivated garden ornamental, occasionally escaping to wet sites. BUENA VISTA: marsh, Storm Lake, Thorne 16314, 1955 (IA). DES MOINES: wet roadside ditch at intersection of Vineyard St. and Cottonwood Drive, Burlington, Lammers & Vorwerk 332, 1975 (ISC). POLK: shoreline of the Des Moines city reservoir, Van Bruggen 869 (IA). SCOTT: abandoned city dump at 11th and Vine Sts., Davenport, Guldner (DPM).

Peplis diandra Nutt. (*Didiplis diandra* (Nutt.) Wood.) Map 21-B
Infrequent in southeastern Iowa; ponds, lakes, and marshes.

Rotala ramosior (L.) Koehne. Map 21-C
Infrequent, primarily in southeastern Iowa; marshes, ponds, and lakes.

MELASTOMACEAE

Rhexia virginica L. Map 21-D
CEDAR: small sandy *Sphagnum* bog near Cedar River, Rochester twp., Fay 1324, 1950 (IA). LINN: hillside opposite Eagle Cliff Country Club, Kenwood, Berry, 1913 (IA). MUSCATINE: sandy swale among wooded sand hills (sec. 7, Lake twp.), Thorne 10964, 1952 (IA); same station, Shimek, 1922 & 1926 (IA).

ONAGRACEAE

Epilobium coloratum Muhl. Map 21-E
Frequent, primarily in the northeast half of the state; bogs, fens, marshes, swamps, sloughs, wet ditches and margins.

E. glandulosum Lehm. (*E. adenocaulon* Haussk.) Map 21-F
Infrequent in the northwestern half of Iowa; marshes, pond and lake margins, swamps, bogs.

E. palustre L. (*E. leptophyllum* Raf.; *E. nesophilum* Fern.; *E. oliganthum* Michx.; *E. wyomingense* Nels.; *E. densum* of auth., not Raf.; *E. lineare* of auth., not Muhl.) Map 21-G
Infrequent in northern Iowa; bogs, fens, marshes, swales, margins, alluvial flats, sloughs.

E. strictum Muhl. Map 21-H
GREENE: bog, Spring Lake State Park, Fay 4041 (IA).

Jussiaea repens L. var. *glabrescens* Ktze. (*J. diffusa* of auth., not Forsk.) Map 22-A
LUCAS: Red Haw Hill Lake near Chariton, Lewis 16, 1948 (ISC).

Ludwigia alternifolia L. Map 22-B
Infrequent, southeast quarter; marshes, swales, bogs, streambanks.

L. palustris (L.) Ell. var. *americana* (DC) Fern. & Grisc. Map 22-C
Infrequent in the eastern third; ponds, bogs, swamps, marshes.

L. polycarpa Short & Peter Map 22-D
Infrequent across Iowa, except seemingly absent from most of the western third; marshes, swamps, streambanks, prairie swales, wet pond and lake margins.

Oenothera parviflora L. (*O. muricata* L.) Map 22-E
Infrequent in eastern and northern Iowa; marshes, sloughs, wet pond and lake margins.

O. pilosella Raf. (*O. fruticosa* of auth., not L.; *O. pratensis* (Small) B. L. Robinson) Map 22-F
Rare; bogs, marshes, and swales of southeastern Iowa.

CORNACEAE

Cornus obliqua Raf. (*C. ammomum* of auth., not Mill.; *C. purpusi* Koehne; *C. sericea* of auth., not L.) Map 22-G
Infrequent, decreasing in occurrence from east to west; pond and lake margins, marshes, streambanks, thickets, swales.

C. stolonifera Michx. Map 22-H
Rare, scattered in northern and eastern Iowa; pond and lake margins, marshes, streambanks, thickets.

BALSAMINACEAE

Impatiens capensis Meerb. (*I. biflora* Walt.; *I. fulva* Nutt.) Map 23-A
Very common across the state; marshes, pond and lake margins, alluvial woods, streambanks, wet ditches.

I. pallida Nutt. Map 23-B
Very common statewide; occurring with *I. capensis*, in similar habitats.

APIACEAE

Berula erecta (Huds.) Cov. (*B. pusilla* (Nutt.) Fern.) Map 23-C
DICKINSON: Silver Lake fen, Anderson, 1934; same station, Fox, 1941 (IA). EMMET: Des Moines River, Wolden 1130, 1925 (ISC). PALO ALTO: sec. 34, Walnut twp., Hayden, 1936 (ISC).

Cicuta bulbifera L. Map 23-D
Infrequent, northern Iowa; marshes, bogs, wet margins, streambanks.

C. maculata L. Map 23-E
Common throughout; wet margins, marshes, swales, sloughs.

Sium suave Walt. (*S. cicutaefolium* Schrank) Map 23-F
Frequent, scattered locally throughout, primarily in the northern and central sections; marshes, swamps, bogs, lakes, ponds.

GENTIANACEAE

Gentiana andrewsii Griseb. Map 23-G
Infrequent in the eastern two-thirds of Iowa; prairie swales, marshes, bogs.

G. crinita Froel. Map 23-H
Rare in eastern Iowa; marshes, bogs, lowland prairie.

G. procera Holm. Map 24-A
Rare in northern Iowa; marshes, fens, bogs.

Menyanthes trifoliata L. var. *minor* Raf. Map 24-B
Rare in northern Iowa; marshes, swamps, bogs.

ASCLEPIADACEAE

Asclepias incarnata L. Map 24-C
Very common statewide; marshes, sloughs, ditches.

CONVOLVULACEAE

Cuscuta — A large genus of native, chlorophyll-lacking, twining, parasitic vines, usually found in meadows, marshes, and low wet fields. It occasionally becomes a pest in crops and pastures. Some of our Iowa species are locally abundant in marshes when water levels are low. Very little habitat information is available about individual species.

C. cephalanthi Englm. (*C. tenuifolia* Englm.) Map 24-D
C. coryli Englm. (*C. inflexa* Englm.) Map 25-A
C. cuspidata Englm. Map 24-E
C. gronovii Willd. Map 25-B
C. indecora Choisy Map 24-F
C. paradoxa Raf. Map 24-G
C. polygonorum Englm. Map 24-H

CALLITRICHACEAE

Callitriche heterophylla Pursh Map 25-C
Rare, locally in the Lakes Region, eastern Iowa, and Ringgold County; ponds, lakes, sloughs, and marshes.

C. palustris L. (*C. verna* L.) Map 25-D
Rare, known from the Lakes Region and Delaware County; pond and lake margins, cold springs, marshes, and bogs.

VERBENACEAE

Lippia lanceolata Michx. var. *recognita* Fern. & Grisc. (*Phyla lanceolata* (Michx.) Greene) Map 25-E
Common statewide; marshes, wet margins, streambanks.

Verbena hastata L. Map 25-F
Common statewide; marshes, swales, margins, ditches, alluvial woods.

V. × *rydbergii* Moldenke (*V. hastata* L. × *stricta* Vent.) Map 25-G
Infrequent across Iowa; swamps, bogs, marshes, streambanks, margins.

LAMIACEAE

Lycopus americanus Muhl. (*L. sinuatus* Ell.) Map 25-H
Common statewide; wet ditches and margins, sloughs, marshes, streambanks.

L. asper Greene Map 26-A
Infrequent in the western third of the state; fens, bogs, marshes, streambanks, wet margins of ponds and lakes.

L. rubellus Moench. Map 26-B
LINN: Berry, 1913 (IA). MARION: sandy moist roadside below Red Rock Cliff (NW¼ sec. 2, T76N R20W), Beck, 1962 (Simpson College). SCOTT: river banks at Blue Grass, Barnes, 1894 (DPM).

L. uniflorus Michx. Map 26-C
Infrequent, scattered locally; marshes, bogs, wet margins.

L. virginicus L. Map 26-D
Infrequent across Iowa; streambanks and wet pond and lake margins.

Mentha arvensis L. var. *glabrata* (Benth.) Fern. (*M. canadensis* L.) Map 26-E
Frequent statewide; marshes, sloughs, wet ditches and margins.

**M. aquatica* L. Map 26-F
JOHNSON: low wet ground, Iowa City, Bass, 1942 (IA).

**M. cardiaca* Gerarde Map 26-G
European herb, escaped sparingly to wet ground in southern Iowa.

**M. citrata* Ehrh. Map 26-H
Reported as an escape from cultivation to wet ground in Johnson County, by Bass (1943).

**M. gentilis* L. Map 27-A
Sparingly escaped from cultivation in eastern Iowa.

**M. piperita* L. Map 27-B
A popular garden herb, occasionally escaping to wet ground.

**M. spicata* L. Map 27-C
A popular garden herb, not infrequently escaping to low wet areas.

Physostegia virginiana (L.) Benth. (*P. speciosa* Sweet; *P. parviflora* Nutt; *P. formosior* Lunnell; *Dracocephalum nuttallii* Britt.) Map 27-D
Throughout state; marshes, alluvial woods, streambanks, wet ditches, and meadows.
This highly polymorphic species-complex is much in need of a general revision and clarification. Treatments of the group are contradictory and confusing, and until further studies demonstrate the correct relationships, the synonomy of necessity, will have to suffice.

Scutellaria galericulata L. (*S. epilobifolia* A. Hamil.) Map 27-E
Most frequent on the Des Moines lobe of the Wisconsin drift sheet; marshes, sloughs, bogs, and streambanks.

S. lateriflora L. Map 27-F

Frequent statewide; lake and pond margins, open alluvial woods, marshes, and streambanks.

Stachys palustris L. (*S. arenicola* Britt.) Map 27-G
Throughout state; wet ditches and margins, streambanks, marshes.

S. tenuifolia Willd. Map 27-H
Most frequent in the southeastern quarter and the Lakes Region; wet margins of lakes, ponds, and marshes.

Teucrium canadense L. var. *occidentale* (Gray) McClnt. & Epl. (*T. occidentale* Gray) Map 28-A
Frequent across Iowa; marshes, alluvial woods, streambanks, wet ditches and margins of lakes and ponds.
This is the wetlands phase of the species; in the interior United States, the var. *virginicum* (Eat.) Raf. is the phase found on dry soils. Typical var. *canadense* is a plant of the Coastal Plain province, not reaching Iowa.

SCROPHULARIACEAE

Bacopa rotundifolia (Michx.) Wettst. Map 28-B
Infrequent, primarily known from southeastern Iowa; shallow water and muddy margins of small ponds.

Chelone glabra L. (*C. linifolia* (Coleman) Pennell) Map 28-C
Infrequent, northeastern third of Iowa; fens, bogs, marshes, wet meadows, streambanks.

C. obliqua L. Map 28-D
CLINTON: swamp in woods below Camanche, Shimek, 1930 (ISC). DES MOINES: Skunk River valley, Bartsch, 1895 (IA). LEE: Skunk River valley, Bartsch, 1895 (ISC). MITCHELL: Osage, Tuttle, 1914 & 1929 (ISC). MUSCATINE: thickets along Muscatine Slough, Reppert, 1894 (IA). SCOTT: moist shallow ditch west of the pond at Credit Island, Guldner (DPM).

Gerardia purpurea L. var. *purpurea* Map 28-E
Infrequent in the northeastern half of Iowa; fens, bogs, marshes, wet meadows, prairie swales, wet margins of ponds and lakes.
var. *parviflora* Benth. (*G. paupercula* (Gray) Britt.) In habitats similar to the typical, large-flowered phase, and scattered throughout its range in Iowa, but seldom together.

G. tenuifolia Vahl. Map 28-F
Infrequent throughout; marshes, margins, prairie swales, wet ditches.

Gratiola neglecta Torr. Map 28-G
Frequent in the eastern half of the state; bogs, fens, marshes, streambanks, wet margins and ditches.

G. virginiana L. Map 28-H
DECATUR: Anderson, 1900 (ISC). JEFFERSON: Gilly & McDonald 499, 1935 (PC). LEE: small pond 1½ miles west-southwest of Ft. Madison, Davidson 1532 (IA). MUSCATINE: small ponds among fixed sand dunes, Lake twp., Thorne, 1952 (IA). RINGGOLD: Fitzpatrick, 1898 (IA). SCOTT: shallow pond in pasture, near McCausland, Guldner (DPM).

Lindernia dubia (L.) Pennell (*L. anagallidea* (Michx.) Pennell) Map 29-A
Frequent statewide; wet margins, sloughs, ponds, lakes, marshes, alluvial woods, streambanks, swamps, bogs. We follow Davidson (1959) in reducing *L. anagallidea* to synonomy.

Mimulus alatus Ait. Map 29-C
Frequent in southeastern Iowa, but evidently absent elsewhere; marshes, open alluvial woods, streambanks.

M. glabratus HBK var. *fremontii* (Benth.) Grant Map 29-B
Rare, scattered locally in extreme eastern and western Iowa; cold calcareous springs, bogs, streambanks, marshes.

M. ringens L. var. *ringens* Map 29-D
Very common; prairie swales, open alluvial woods, pond and lake margins, streambanks.

var. *minthoides* (Greene) Grant
An occasional form with leaves tapering to the sessile base, slightly resembling a petiole, and sometimes confused with *M. alatus;* habitats similar to var. *ringens,* often growing together.

Pedicularis canadensis L. Map 29-E
Frequent statewide; marshes, alluvial woods, prairie swales, also onto drier soil.

P. lanceolata Michx. Map 29-F
Infrequent, northeastern half; bogs, marshes, swamps, swales.

Penstemon calycosus Small Map 29-H
CEDAR: wet prairie swale at Rochester Cemetery, Guldner (DPM).

P. digitalis Nutt. (*P. alluviorum* Pennell) Map 29-G
Frequent in the southeastern third of Iowa; marshes, prairie swales, and up onto drier, open ground.

Veronica americana (Raf.) Schwein. Map 30-A
LEE: Hitchcock (ISC). WINNISHIEK: Decorah, Fitzsimmons, 1895 (IA); Decorah, Shimek, 1903 (IA).

**V. anagallis-aquatica* L. Map 30-B
Rare, northeastern Iowa; cold springs and ponds.

V. catenata Pennell (*V. connata* Raf.; *V. comosa* of auth., not Richt.) Map 30-C
Infrequent in marshes and bogs in northern Iowa.

**V. longifolia* L. Map 30-D
LINN: wet meadow, Cedar Rapids, Berry, 1912 (IA).

V. peregrina L. Map 30-E
Frequent throughout; wet ditches and margins.

V. scutellata L. Map 30-F
BUCHANNAN: Muncey, Bessey, 1876 (ISC). CLINTON: marsh in pastured field (NE¼ sec. 15, T82N R1E), Cooperrider 2075 (IA). SCOTT: low wet ground at Noels, Barnes (DPM).

ACANTHACEAE

Justicia americana (L.) Vahl. (*Dianthera americana* L.) Map 30-G
HENRY: Mt. Pleasant, Mills (IA); very abundant around margin of lake, into shallow water, Geode State Park, Lammers 423, 1975 (ISC & ISTC). JEFFERSON: rocky bed of Cedar Creek (sec. 34, Round Prairie twp.), MacDonald 3049, 1935 (PC). LEE: Fults, 1931 (ISC).

LENTIBULARIACEAE

Utricularia gibba L. Map 30-H
JOHNSON: Swan Lake, Thorne 10467, 1950 (IA). MUSCATINE: Muscatine, Reppert, 1878 (ISC).

U. intermedia Hayne Map 31-A
CLAY: sec. 11, Freeman twp., Hayden 10054, 1935 (ISC). EMMET: Cratty, 1878 & 1881 (ISC).

U. minor L. Map 31-B
DICKINSON: Silver Lake, Shimek, 1932 (IA) and 1933 (ISC). EMMET: sec. 11, T99N R31W, Cratty, 1880 (ISC). HANCOCK: Dead Man's Lake, Pilot Knob State Park, Thorne, 1954 (IA).

U. vulgaris L. (*U. macrorhiza* LeConte) Map 31-C
Infrequent, scattered across Iowa; ponds, lakes,marshes.

CAMPANULACEAE

Campanula aparinoides Pursh (*C. uliginosa* Rydb.) Map 31-D
Infrequent in the northeastern half of Iowa; marshes, swamps, streambanks, alluvial woods. We follow Eilers (1971) in reducing *C. uliginosa* to synonomy.

LOBELIACEAE

Lobelia cardinalis L. Map 31-E
Infrequent in the eastern half of the state; marshes, swamps, streambanks, alluvial woods.

L. kalmii L. Map 31-F
Locally abundant; restricted to bogs and fens of the Lakes Region.

L. siphilitica L. Map 31-G
Common throughout; streambanks, wet ditches, pond and lake margins, marshes, swales, alluvial woods.

RUBIACEAE

Cephalanthus occidentalis L. Map 31-H
Most frequent in the southeast half; marshes, wet margins, streambanks.

Galium labradoricum (Wieg.) Wieg. Map 32-A
CERRO GORDO: marsh, Mason City, Shimek, 1896 (IA).

G. obtusum Bigel. Map 32-B
Frequent throughout; alluvial woods, swamps, marshes, swales.

G. trifidum L. var. *trifidum* Map 32-C
MUSCATINE: Wildcat Den, Guldner (DPM). SCOTT: Allen's Grove, Guldner (DPM); Credit Island, Guldner (DPM). WINNISHIEK: Cardinal Marsh (sec. 6, T98N R10W), Eilers, (IA).

var. *tinctorium* (L.) T. & G. (*G. tinctorium* L.; *G. claytonii* Michx.) Map 32-D
Infrequent in the eastern third of the state; marshes, swamps, bogs, alluvial woods.

ASTERACEAE

Aster furcatus Burgess (*A. macrophyllus* of auth., not L.) Map 32-E
Rare, southern Iowa; alluvial woods and swamps.

A. junciformis Rydb. (*A. junceus* Ait.) Map 32-F
Rare in northern Iowa; fens, marshes, meadows, and swamps.

A. lateriflorus (L.) Britt. Map 32-G
Frequent in the southeast quarter; prairie swales, marshes, alluvial woods.

A. novae-angliae L. Map 32-H
Common throughout; prairie swales, wet ditches, streambanks.

A. ontarionis Wieg. Map 33-A
Frequent throughout, except apparently absent from the northwestern third of the state; alluvial woods and streambanks, on up to drier woods and prairies.

A. prealtus Poir. Map 33-B
Infrequent in southern Iowa; prairie swales, open alluvial woods.

A. prenanthoides Muhl. Map 33-C
Infrequent in eastern Iowa; streambanks, open alluvial woods.

A. puniceus L. (*A. lucidulus* (Gray) Wieg.) Map 33-D
Frequent in the eastern two-thirds of Iowa; marshes, bogs, swamps and swales.

A. simplex Willd. (*A. interior* Wieg.; *A. tredescanti* of auth., not L.) Map 33-E
Frequent throughout; low open woods, prairie swales, marshes, streambanks.

A. umbellatus Mill. (*A. pubentior* Cronq.) Map 33-F
Scattered locally in the northeastern half of the state; bogs, marshes, thickets, streambanks, prairie swales.

A. vimineus Lam. Map 33-G
Rare in southeastern Iowa; fens, bogs, and wet sandy swales. Reported by Davidson (1959) from four stations in Louisa and Muscatine counties; Guldner (1960), however, does not accept these specimens as *A. vimineus*.

Bidens aristosa (Michx.) Britt. Map 33-H
JEFFERSON: low ground ½ mile west of Fairfield, Davidson 4097 (IA). KEOKUK: desiccated marshy area along IA 149 (NE¼ sec. 28, T77N R11W), Davidson 1271 (IA). MUSCATINE: Moscow, Guldner (DPM); Brasenia Pond (sec. 6, Lake twp.), Guldner (DPM). SCOTT: Oakton, Ross, 1880 (DPM); Credit Island, Guldner (DPM).

B. beckii Torr. (*Megalodonta beckii* (Torr.) Greene) Map 34-A
Rare, known only from Clear Lake, Cerro Gordo county, and Little Miller's Bay, West Lake Okoboji, in Dickinson county.

**B. bipinnata* L. Map 34-B
LEE: Rand Park near the Mississippi, Keokuk, Davidson 3293 (IA.) LOUISA: moist sandy margins of slough, Muscatine Island (NE¼ sec. 4, T75N R2W), Davidson 3935 (IA).

B. cernua L. Map 34-C
Common statewide; marshes, wet margins and ditches, streambanks, alluvial woods, prairie swales.

B. coronata (L.) Britt. Map 34-D
Infrequent in eastern Iowa; sloughs, wet margins, marshes, streambanks.

B. discoidea (T. & G.) Britt. Map 34-E
JACKSON: along dike through Green Island Slough, Cooperrider 3105 (IA). LOUISA: Muscatine Island, Shimek & Myers, 1897 (IA). SCOTT: low wet grounds, West Davenport, Reppert (DPM).

B. frondosa L. Map 34-F
Frequent statewide; wet margins, pastures, marshes, streambanks, prairie swales.

B. polylepis Blake (*B. involucrata* (Nutt.) Britt.) Map 34-G
Frequent in southern Iowa; marshes, margins of ponds and lakes, streambanks, wet ditches, occasionally as a roadside, crop, and pasture weed.

B. tripartita L. (*B. comosa* (Gray) Wieg.; *B. connata* Muhl.) Map 34-H
Most frequent in the southeastern quarter; marshes, wet ditches and margins, prairie swales.

B. vulgata Greene. Map 35-A
Frequent in the southeastern half; margins, marshes, and swales.

Boltonia asteroides (L.) L'Her (*B. latisquama* Gray) Map 35-B
Infrequent throughout; marshes, margins, swales, alluvial woods.

Cirsium flodmanii (Rydb.) Arthur. Map 35-C
In western Iowa, where the species is not uncommon, it grows on dry loess bluffs, dry upland prairies, and gravelly roadsides. In eastern Iowa, however, at the following stations (perhaps introduced), it has been collected from marshy prairie swales. FLOYD: Rockfork, Pammel, 1922 (ISC). JOHNSON: along railway at Solon, Shimek, 1902 (ISC).

C. muticum Michx. Map 35-D
CERRO GORDO: marsh, Bufalo Slough, Mason City, Shimek, 1922 (IA). CLINTON: rich seeping marshy ground surrounded by woods, Cooperrider 3057 (IA).

Eclipta alba (L.) Hassk. Map 35-E
Frequent in the southeastern quarter; streambanks, wet margins of ponds, lakes and sloughs.

Erechtites hieracifolia (L.) Raf. Map 35-F
Frequent, southern half of the state; marshes, wet margins, swales.

Eupatorium maculatum L. Map 35-G
Infrequent across the state, evidently absent from the southeast.

Helenium autumnale L. Map 35-H
Frequent statewide; open alluvial woods and flats, low pastures, marshes, margins, streambanks.

Iva ciliata Willd. Map 36-A
DES MOINES: moist depression in commercial sand and gravel area, Spring Grove, Davidson 3275 (IA). POTTAWATOMIE:

Council Bluffs, Shimek, 1898 (IA). JEFFERSON: Fairfield, Gilly and McDonald, 1203 and 2891 (PC).

Silphium perfoliatum L. Map 36-B
Common statewide; alluvial openings, wet ditches and margins, prairie swales, roadsides, streambanks.

Solidago gigantea Ait. (*S. serotina* of auth., not Retz.) Map 36-C
Common throughout; low pastures, alluvial thickets and woods, marshes, streambanks.

S. graminifolia (L.) Salisb. (*S. hirtella* (Greene) Bush; *S. tenuifolia* of auth., not Pursh) Map 36-D
Frequent across the state; wet sandy swales, marshes, and ditches.

S. patula Muhl. Map 36-E
MUSCATINE: wet woods on fixed dune (NW¼ sec. 7, Lake twp.), Thorne, 1952 (IA).

S. riddellii Frank. Map 36-F
Infrequent in northern and east-central Iowa; marshes and prairie swales.

Vernonia fasciculata Michx. Map 36-G
Common throughout; low pastures, wet ditches, marshes, sloughs.

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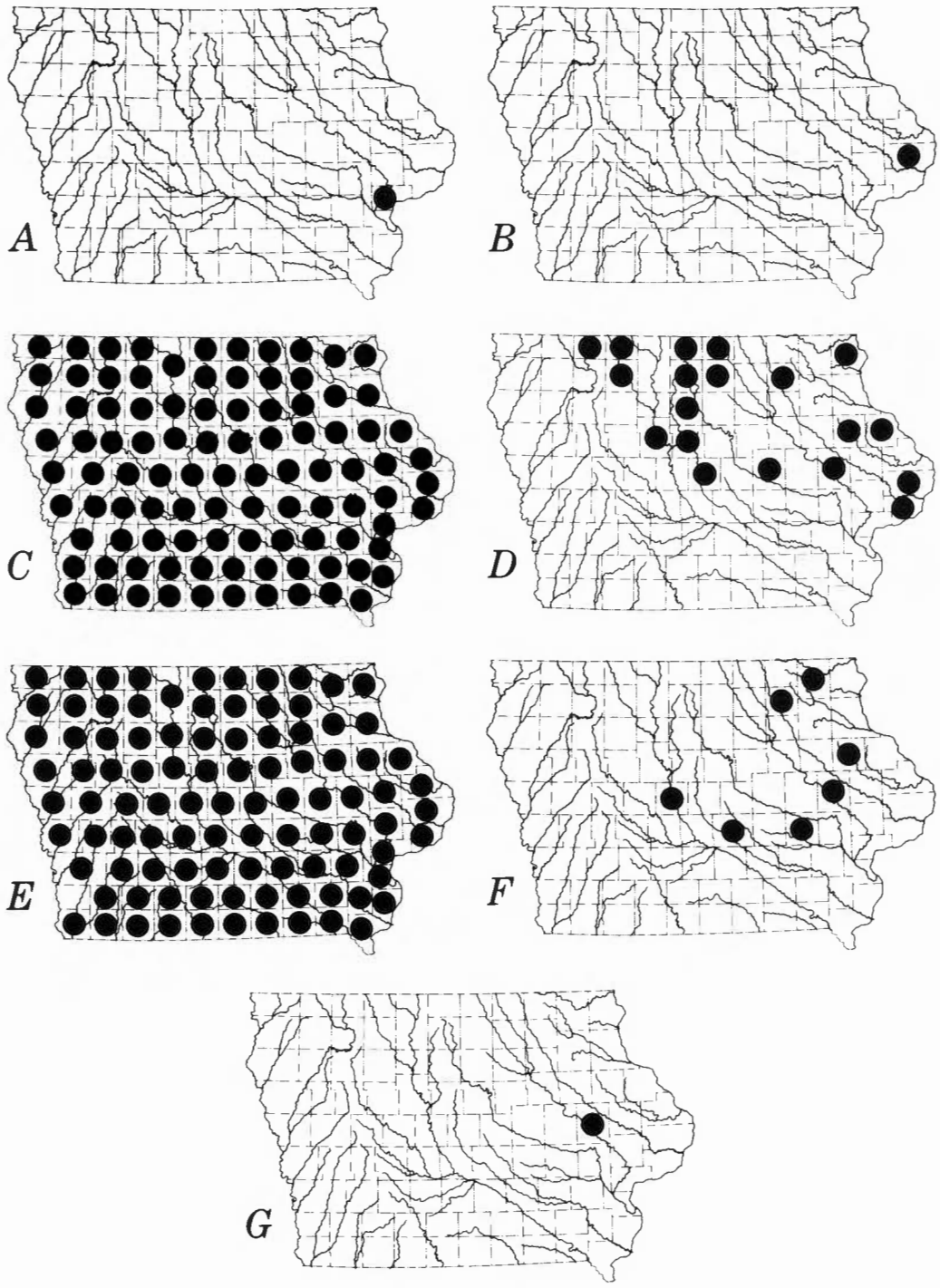

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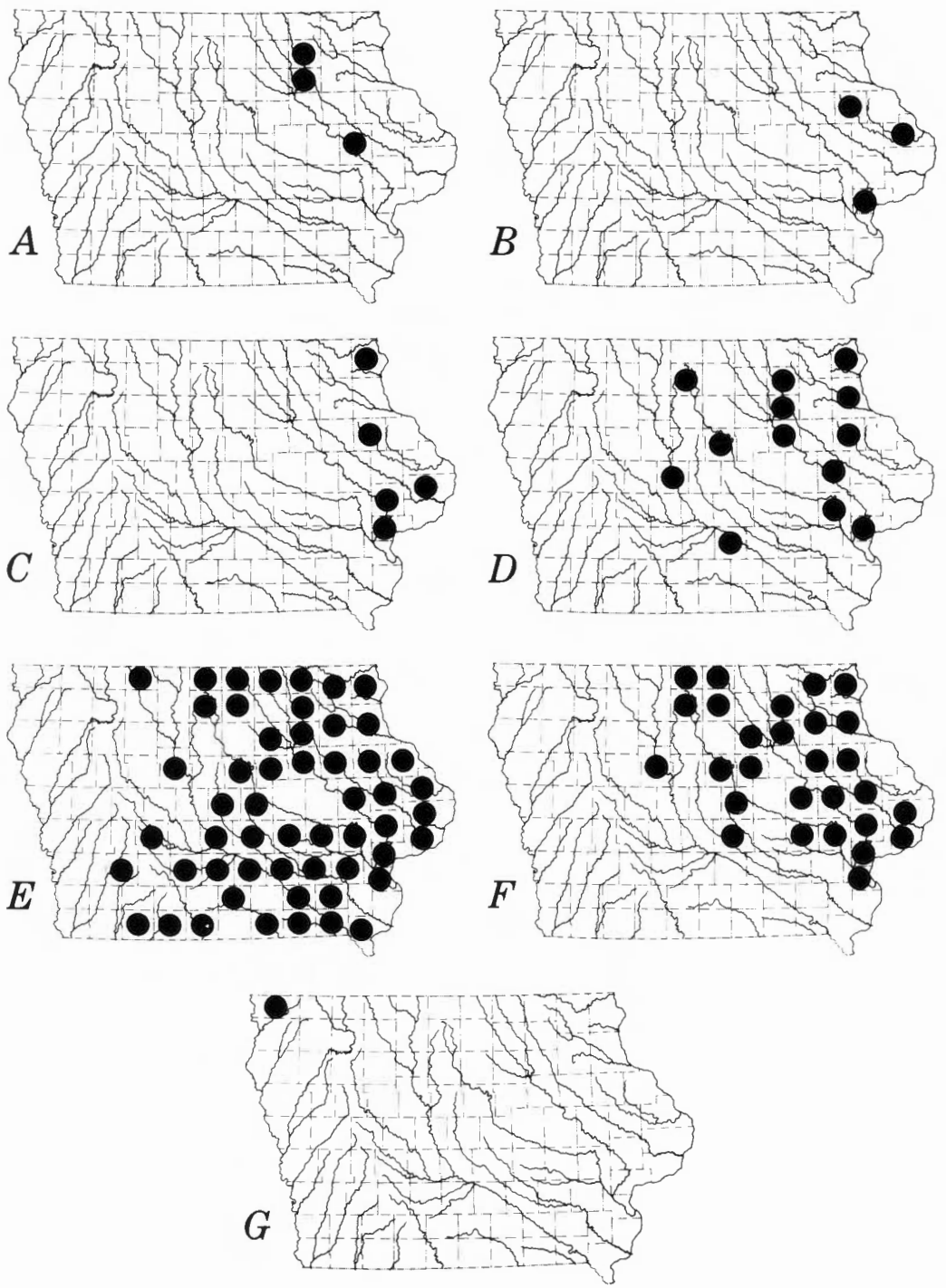

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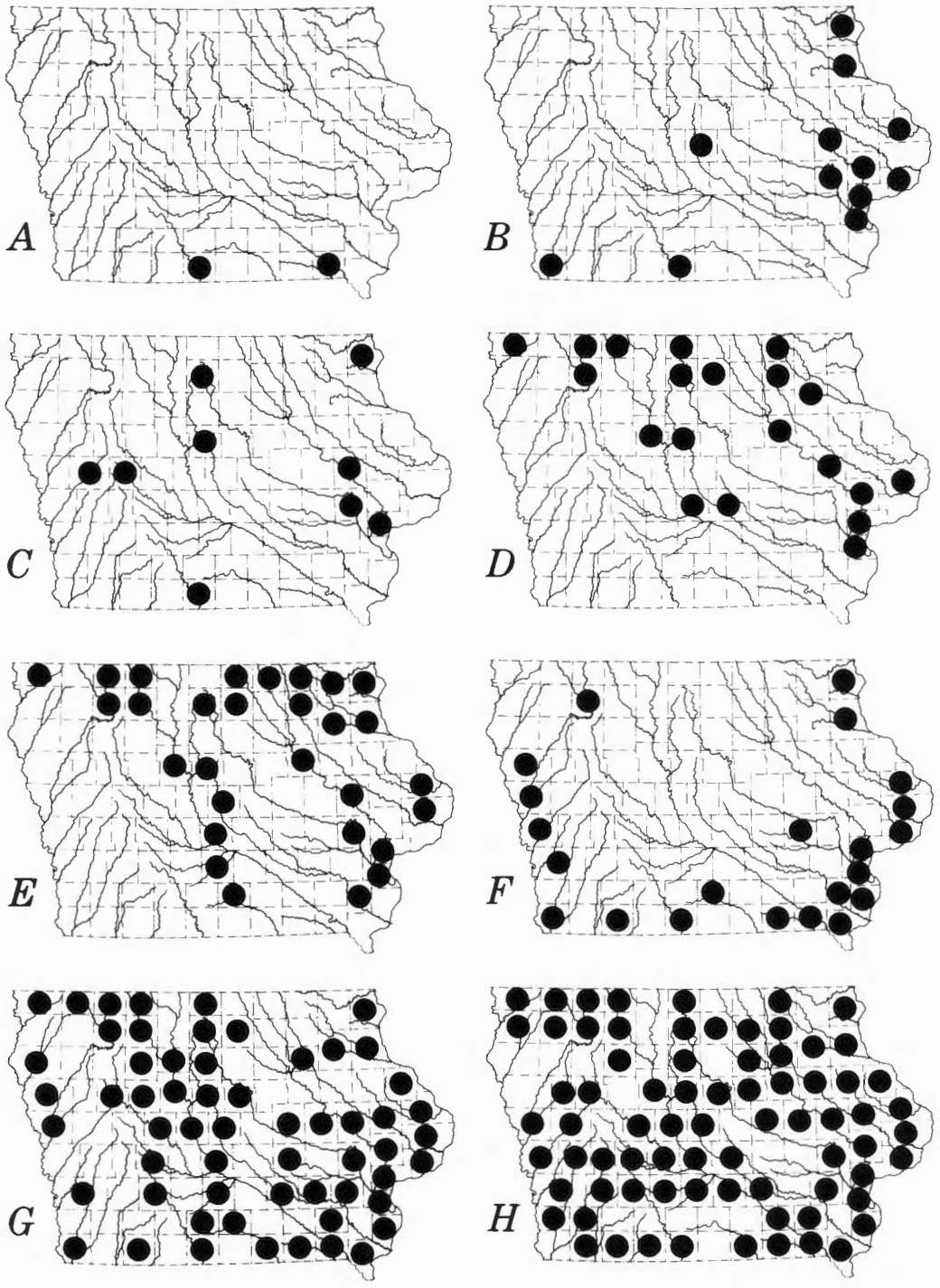

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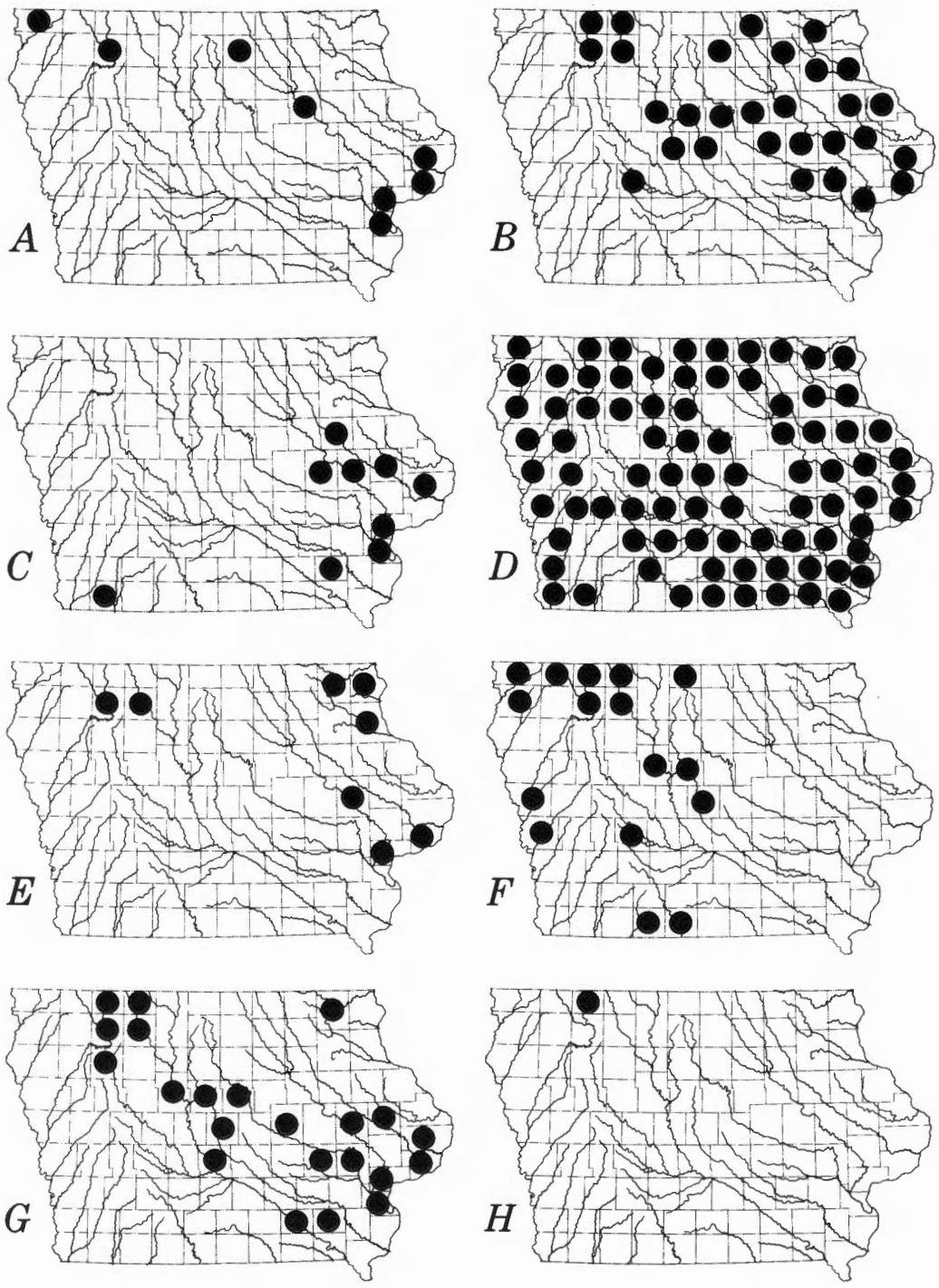

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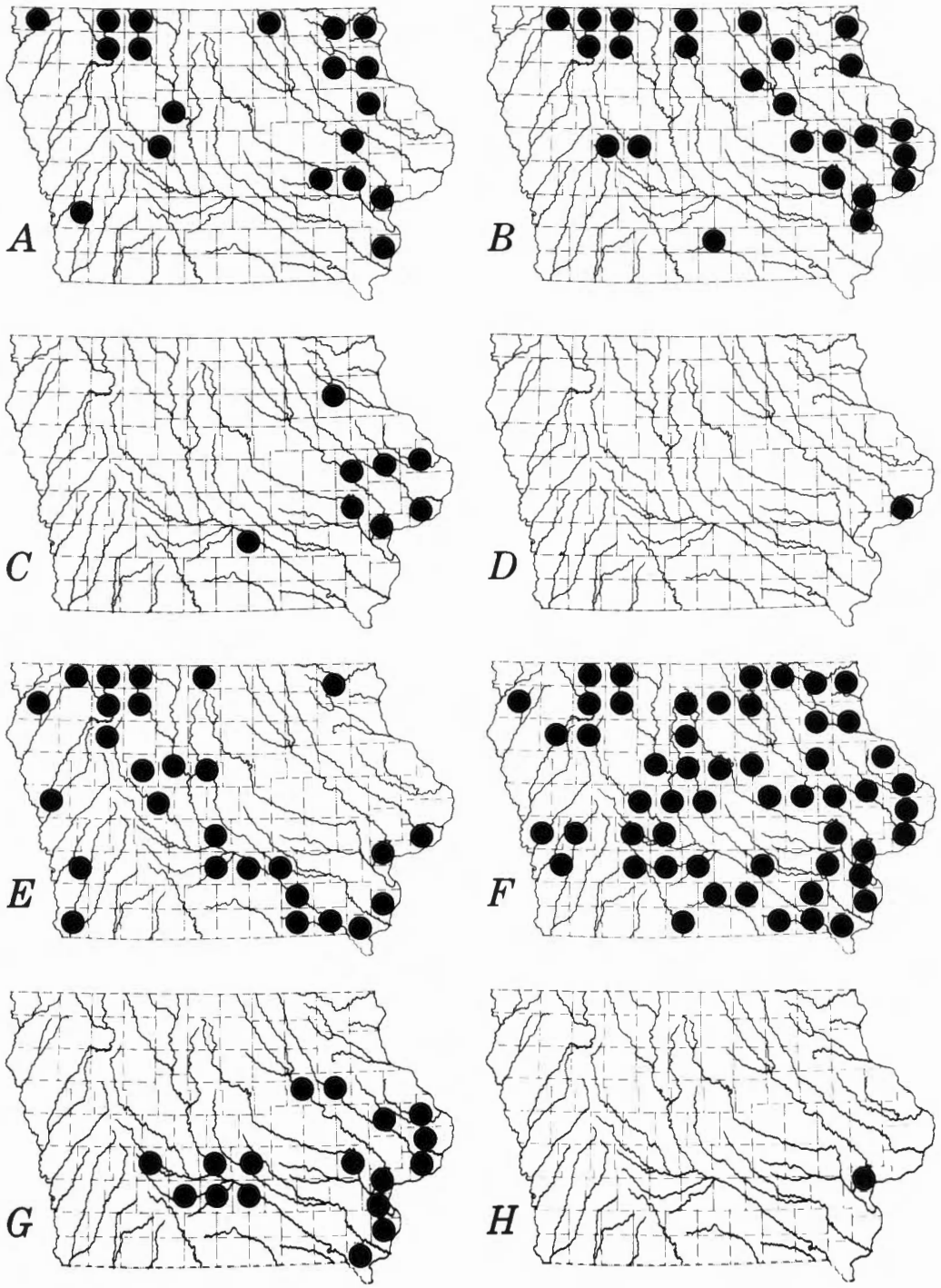

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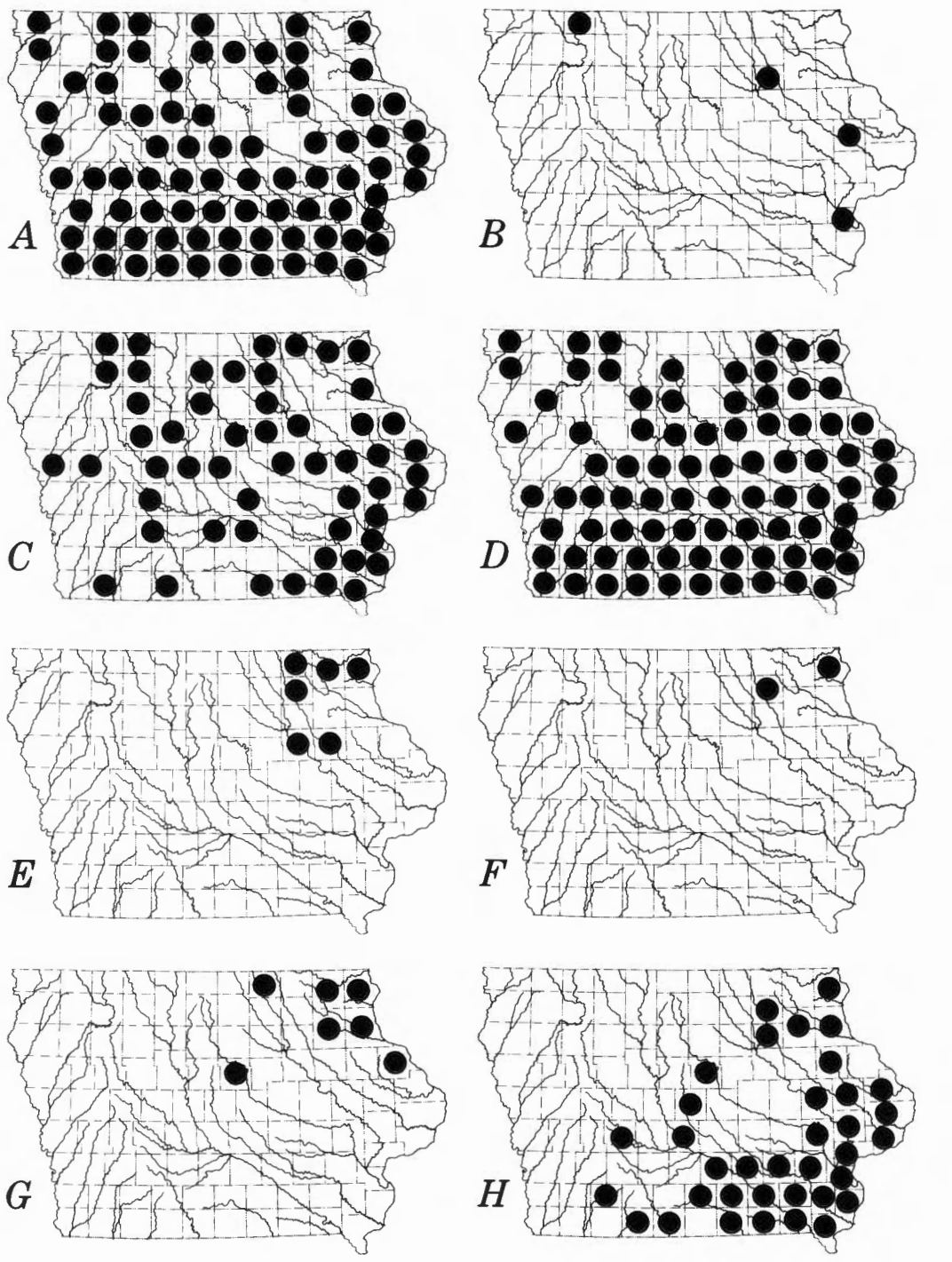

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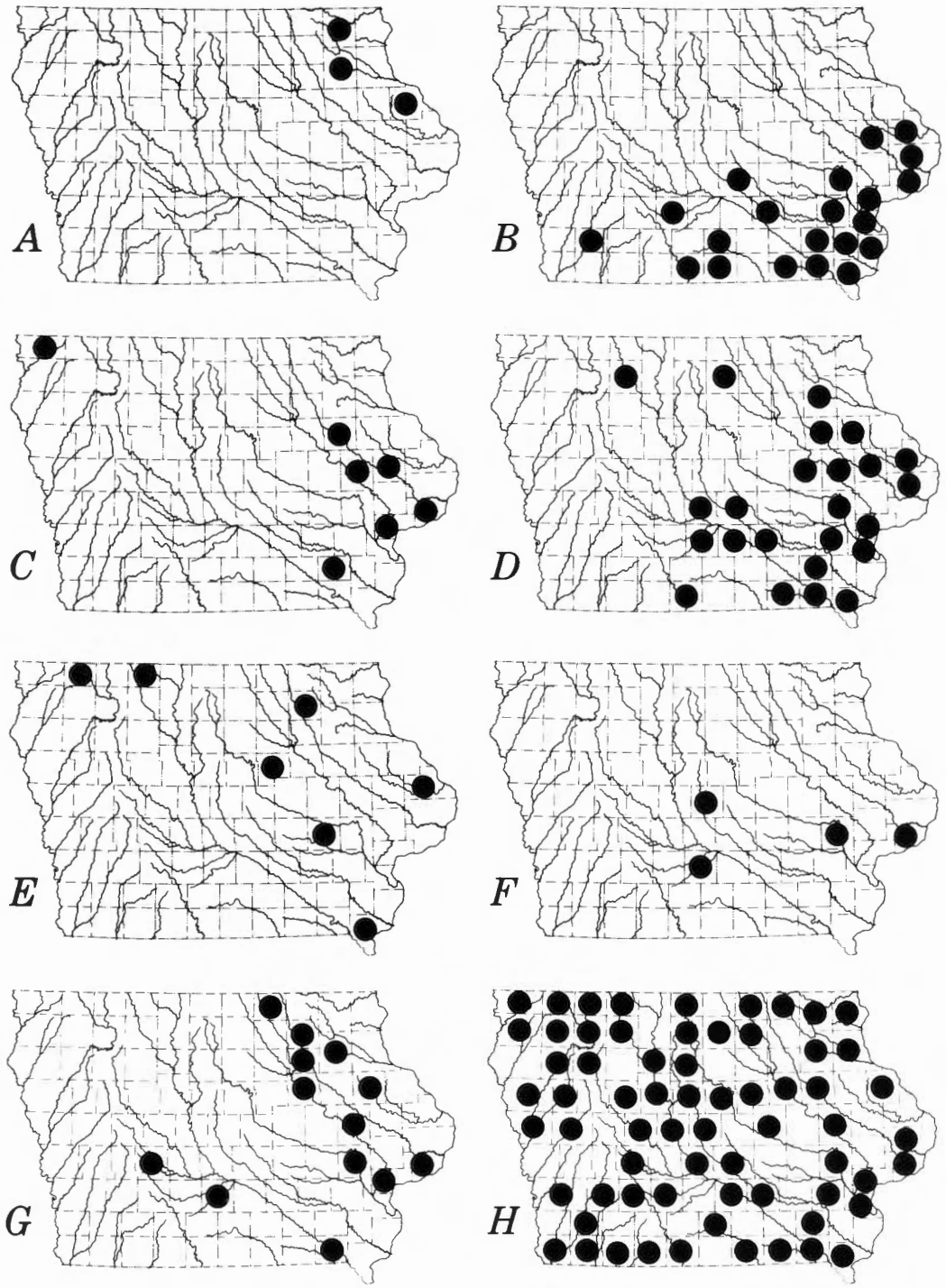

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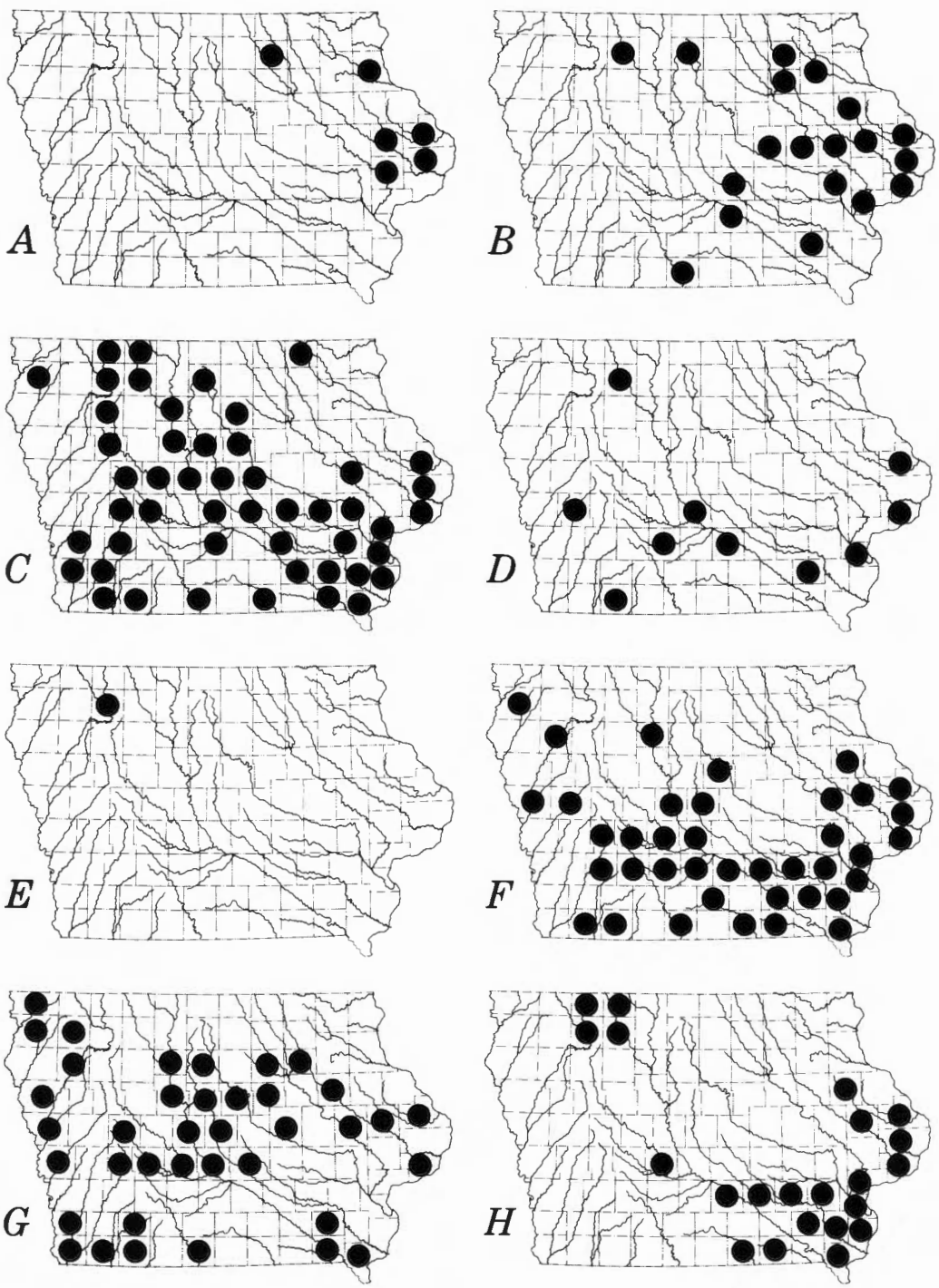

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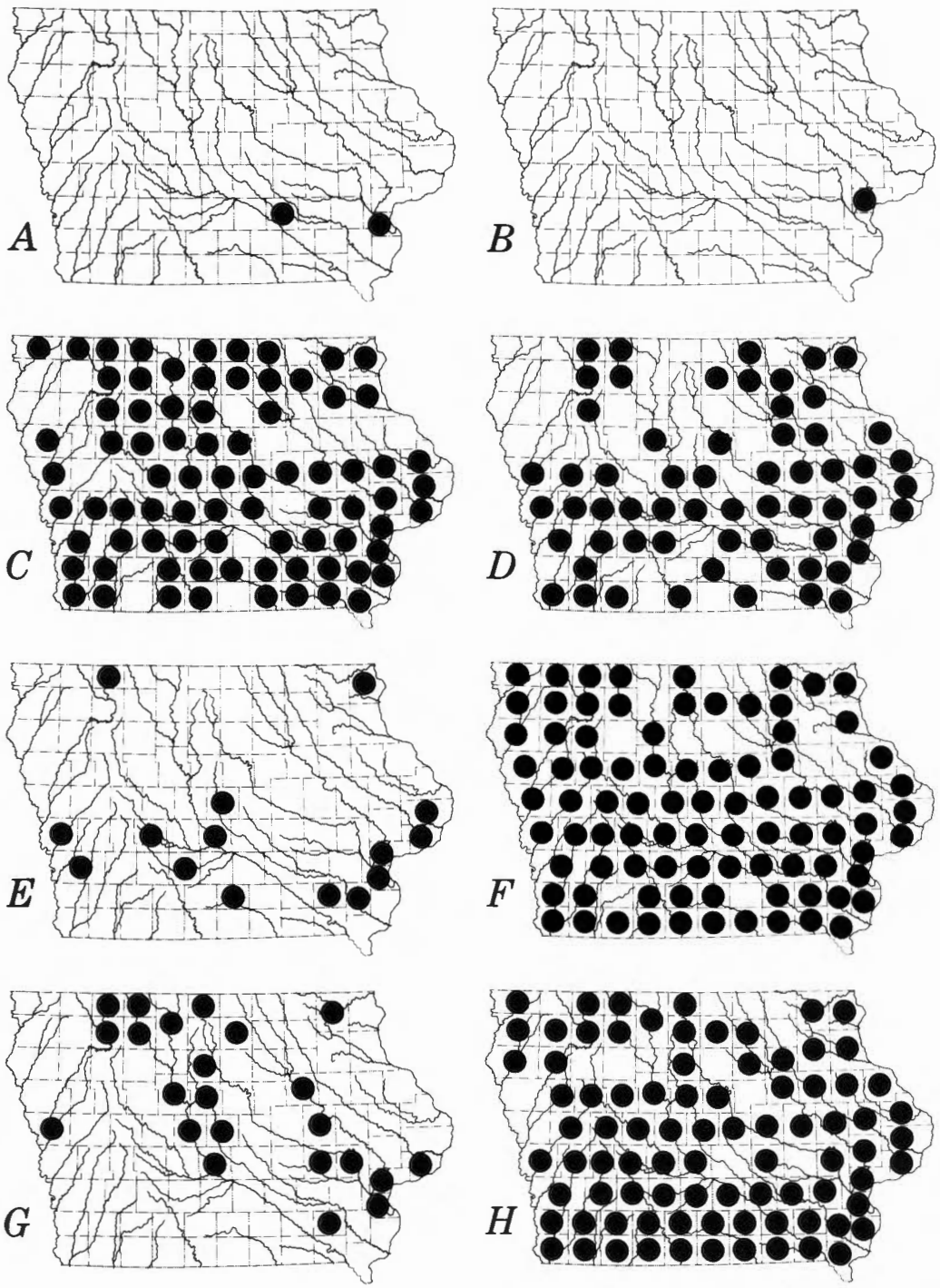

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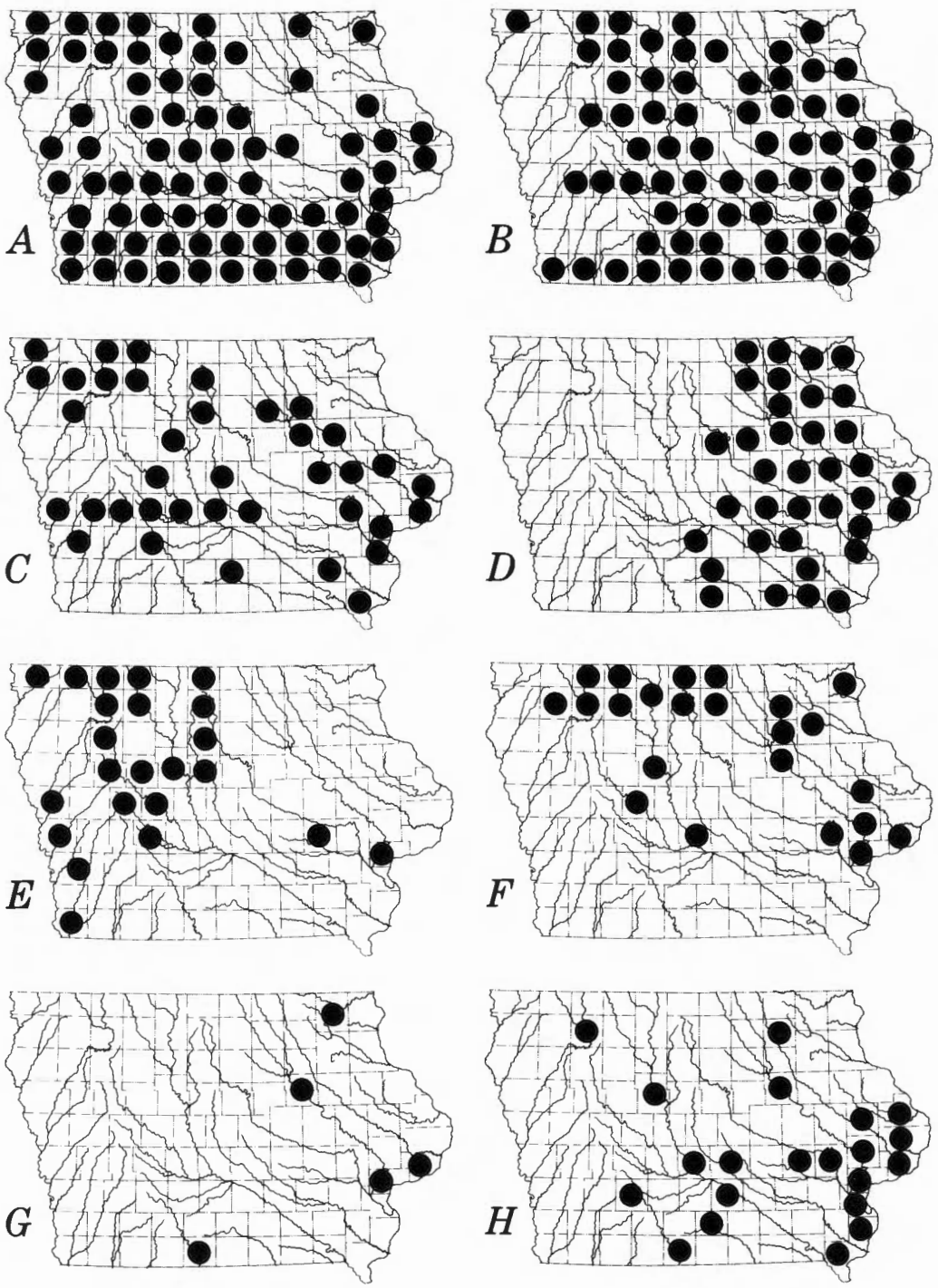

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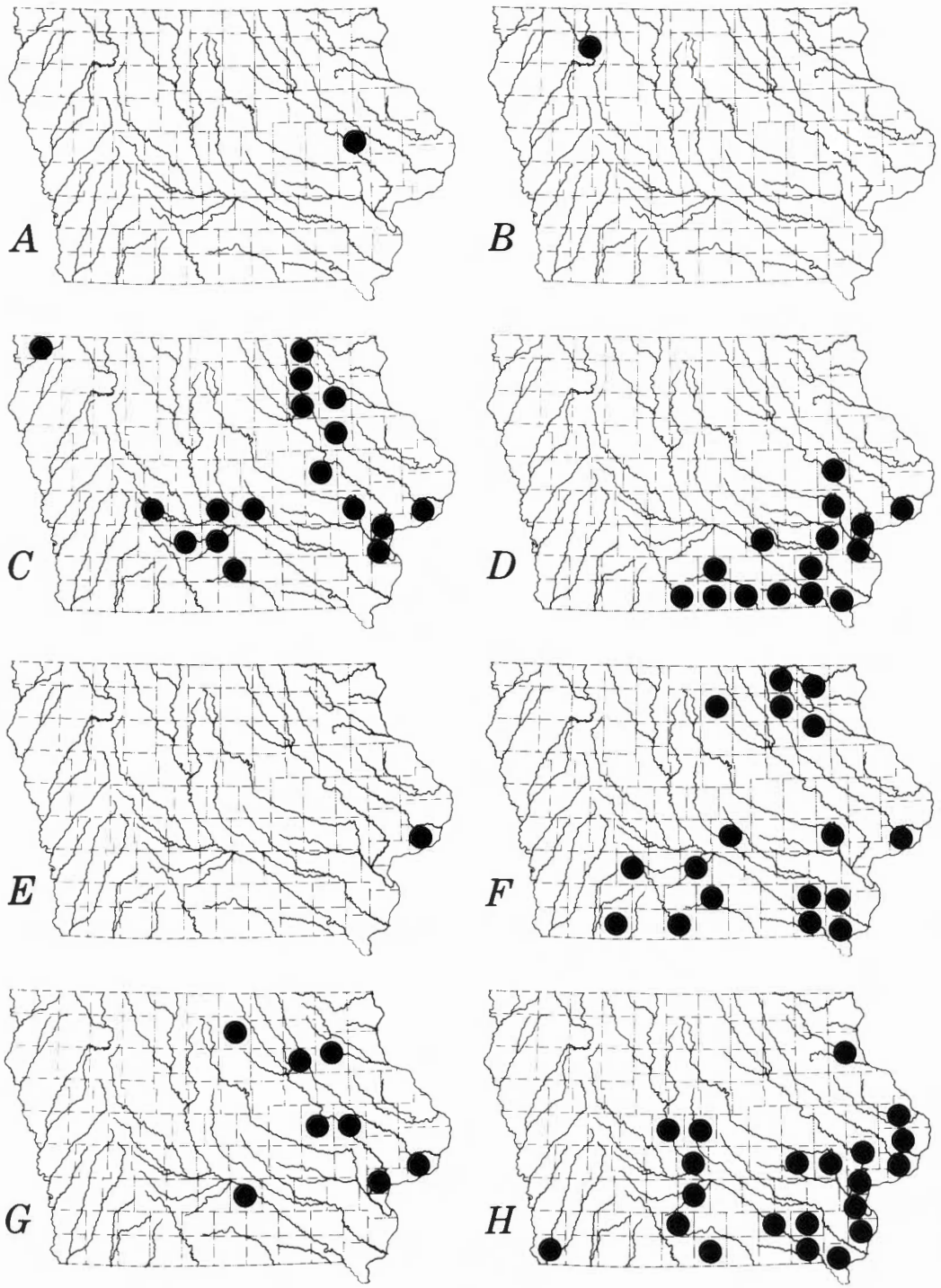

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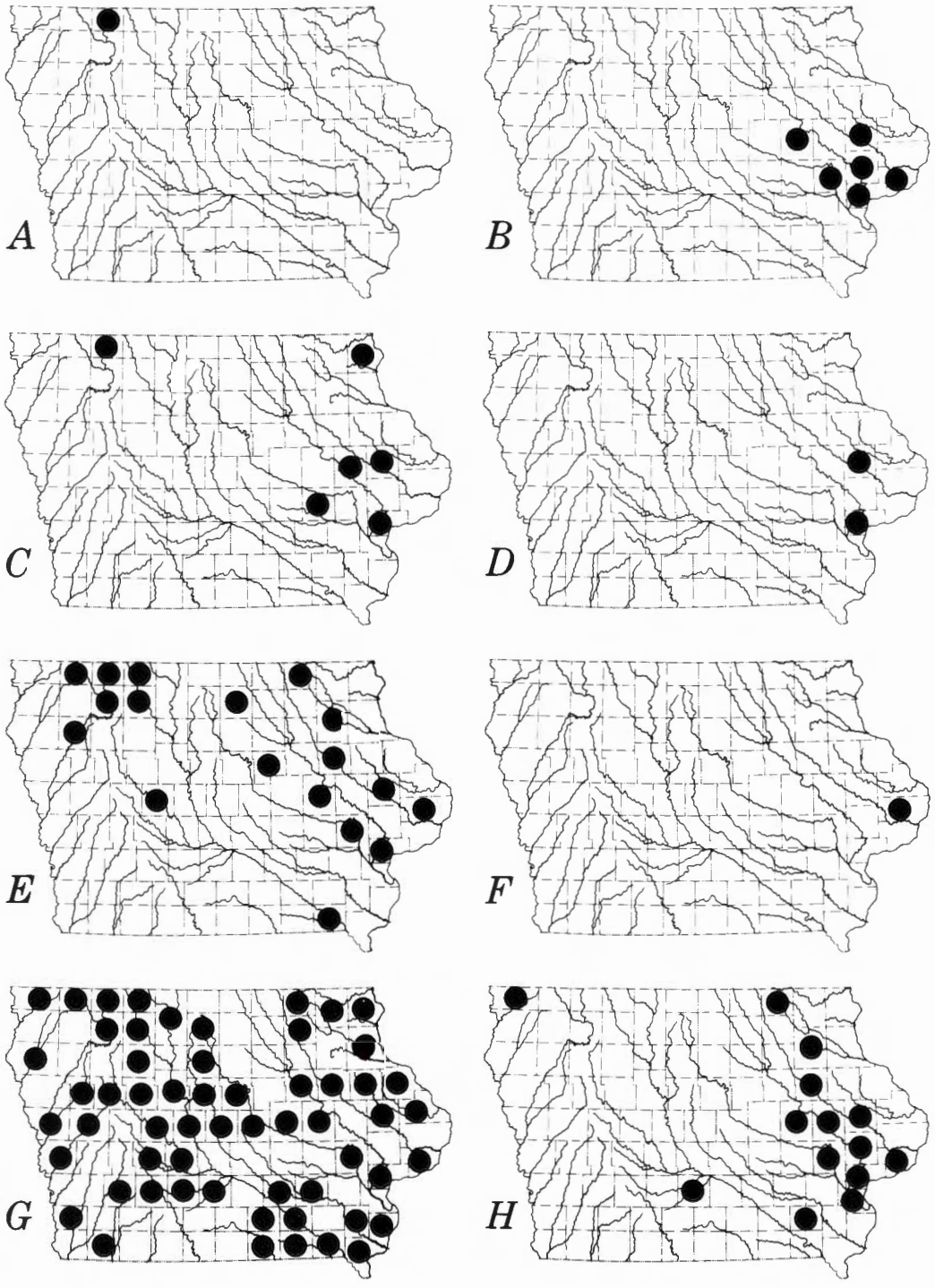

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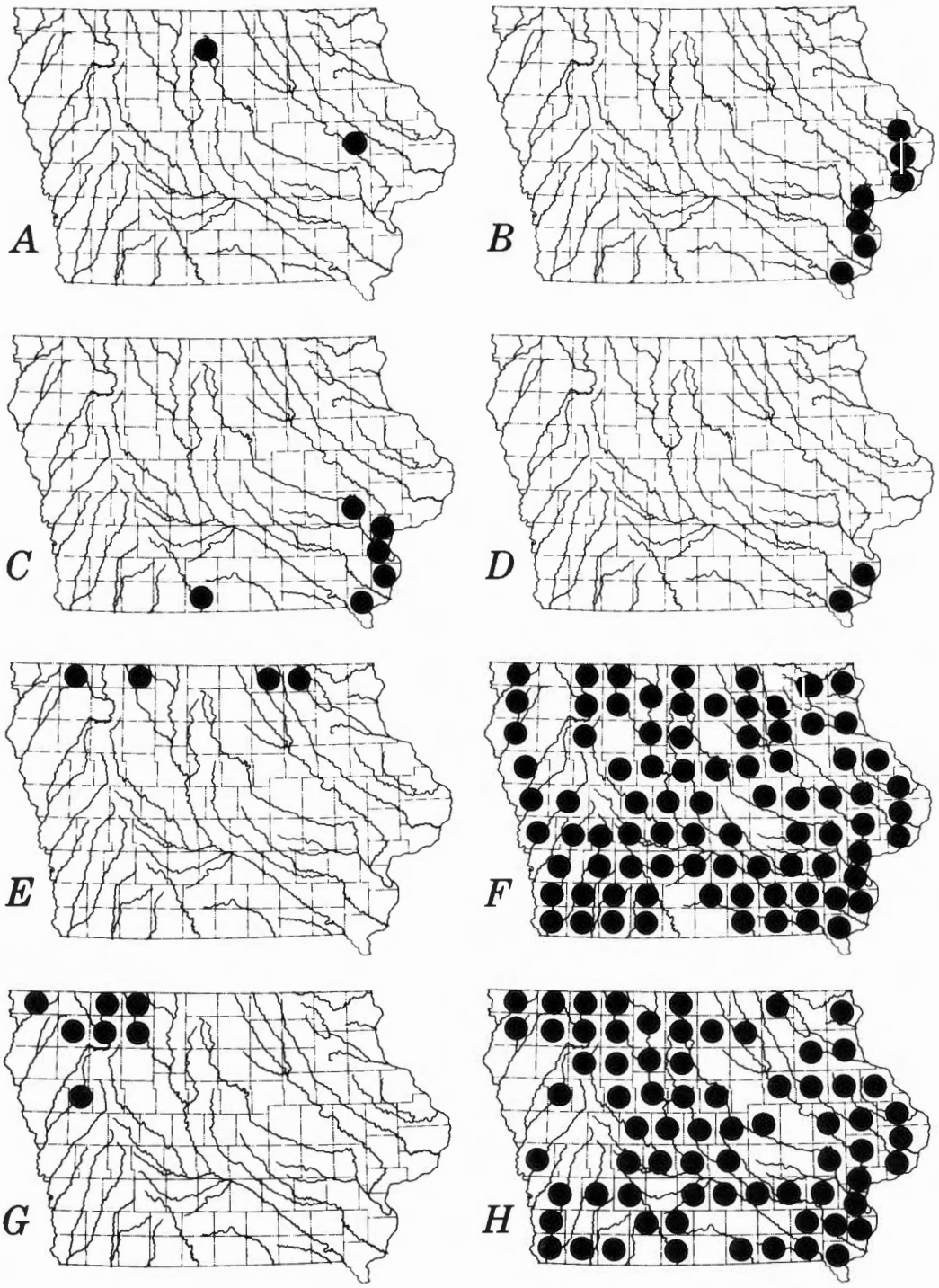

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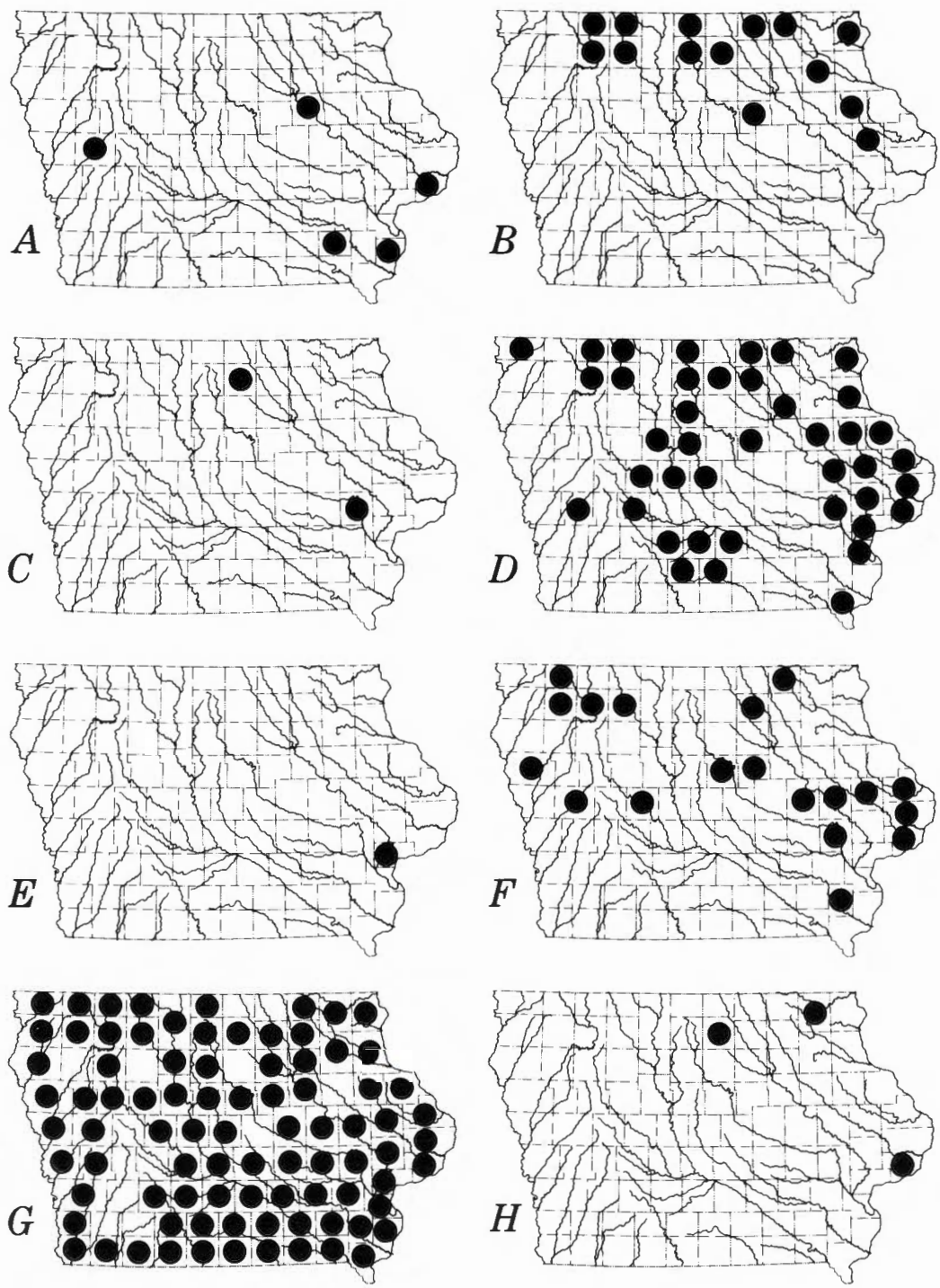

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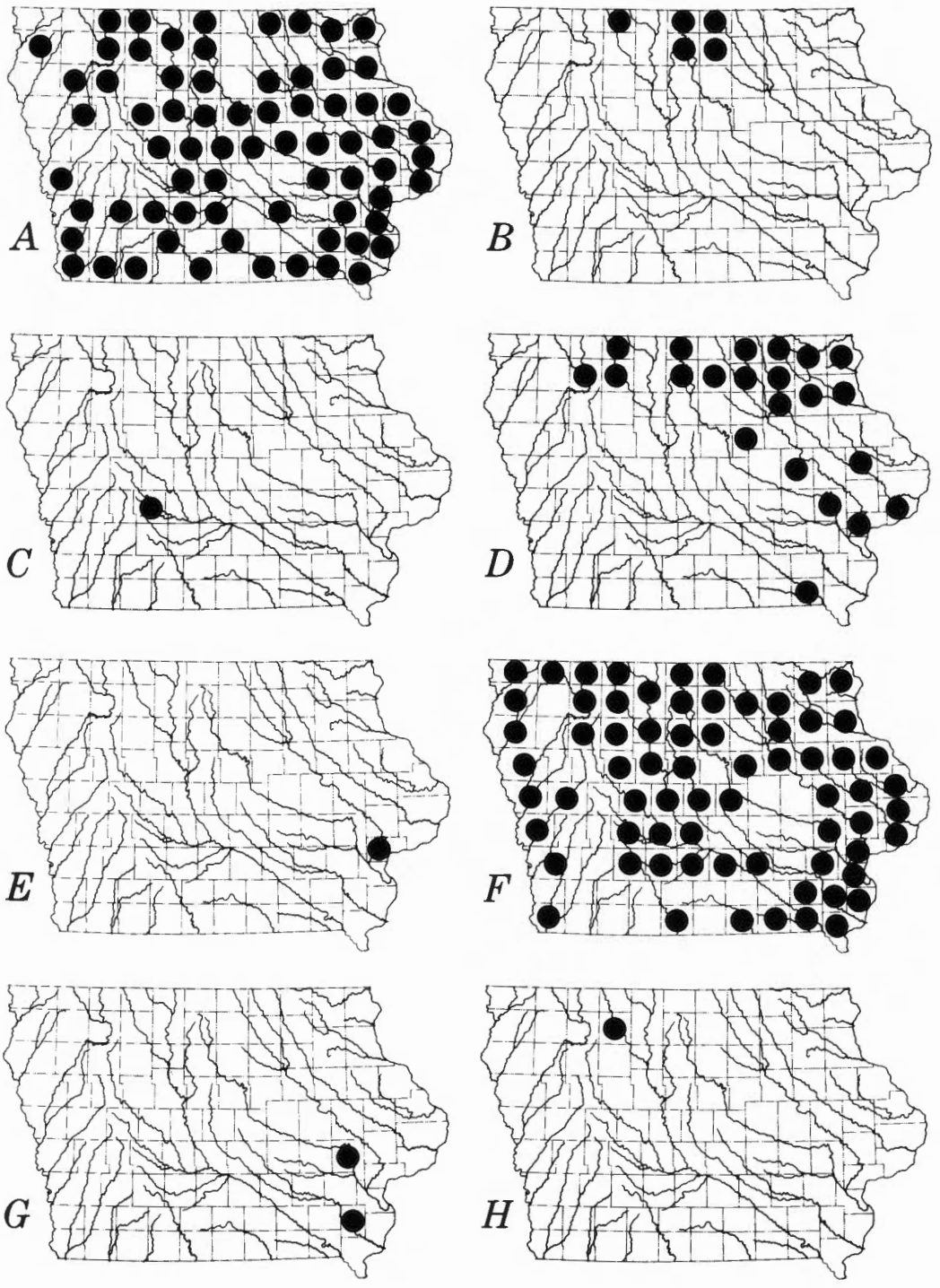

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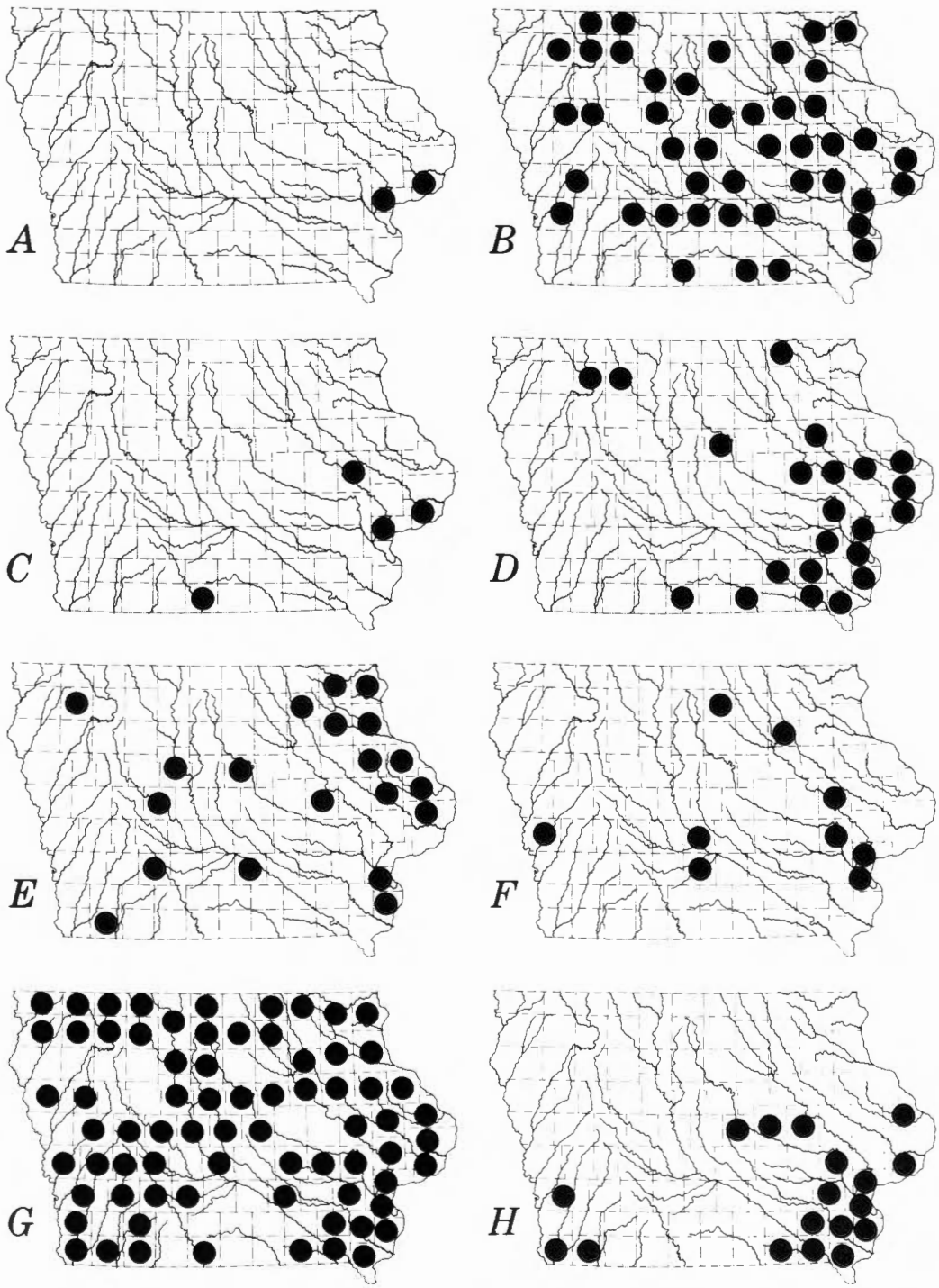

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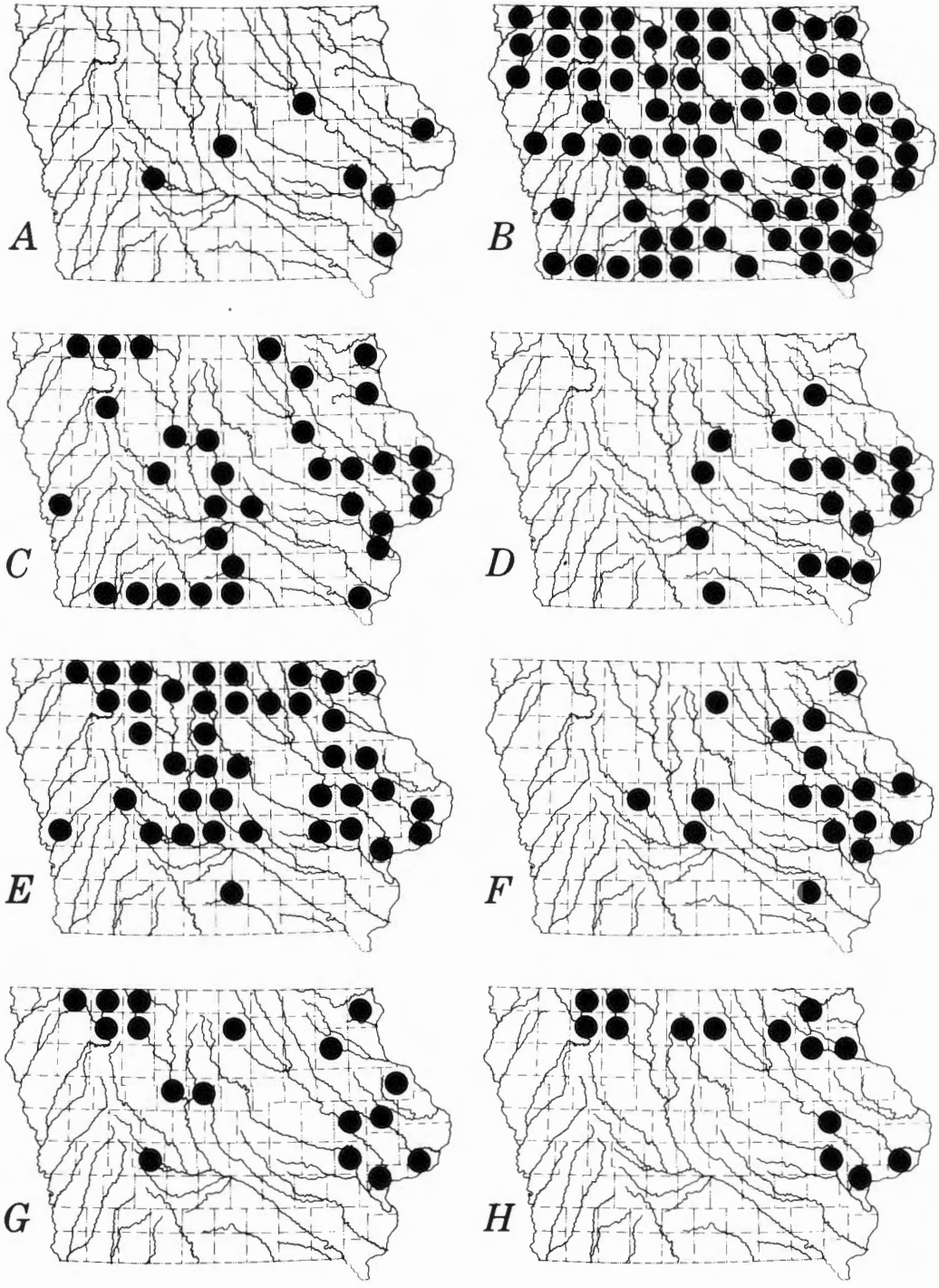

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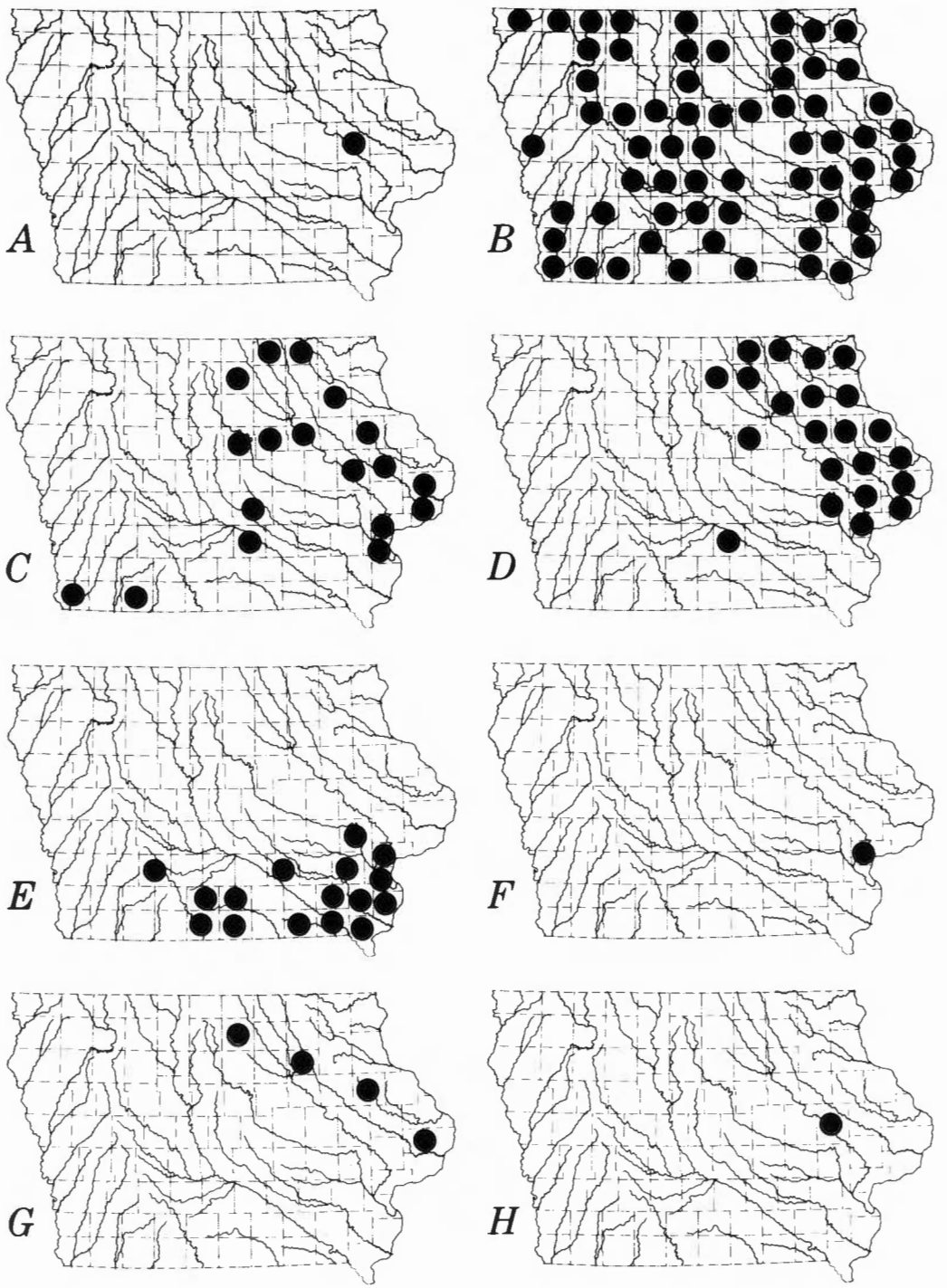

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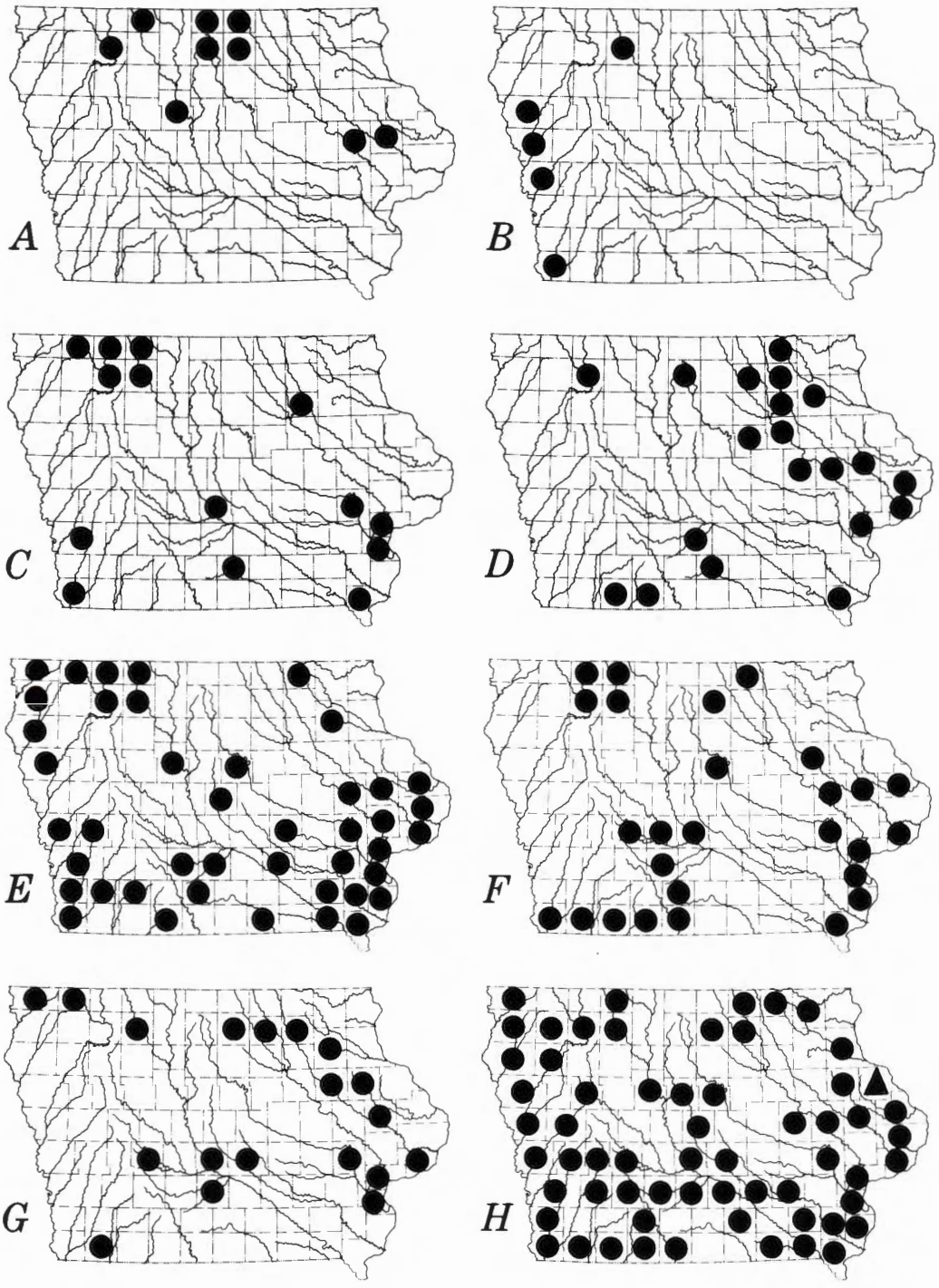

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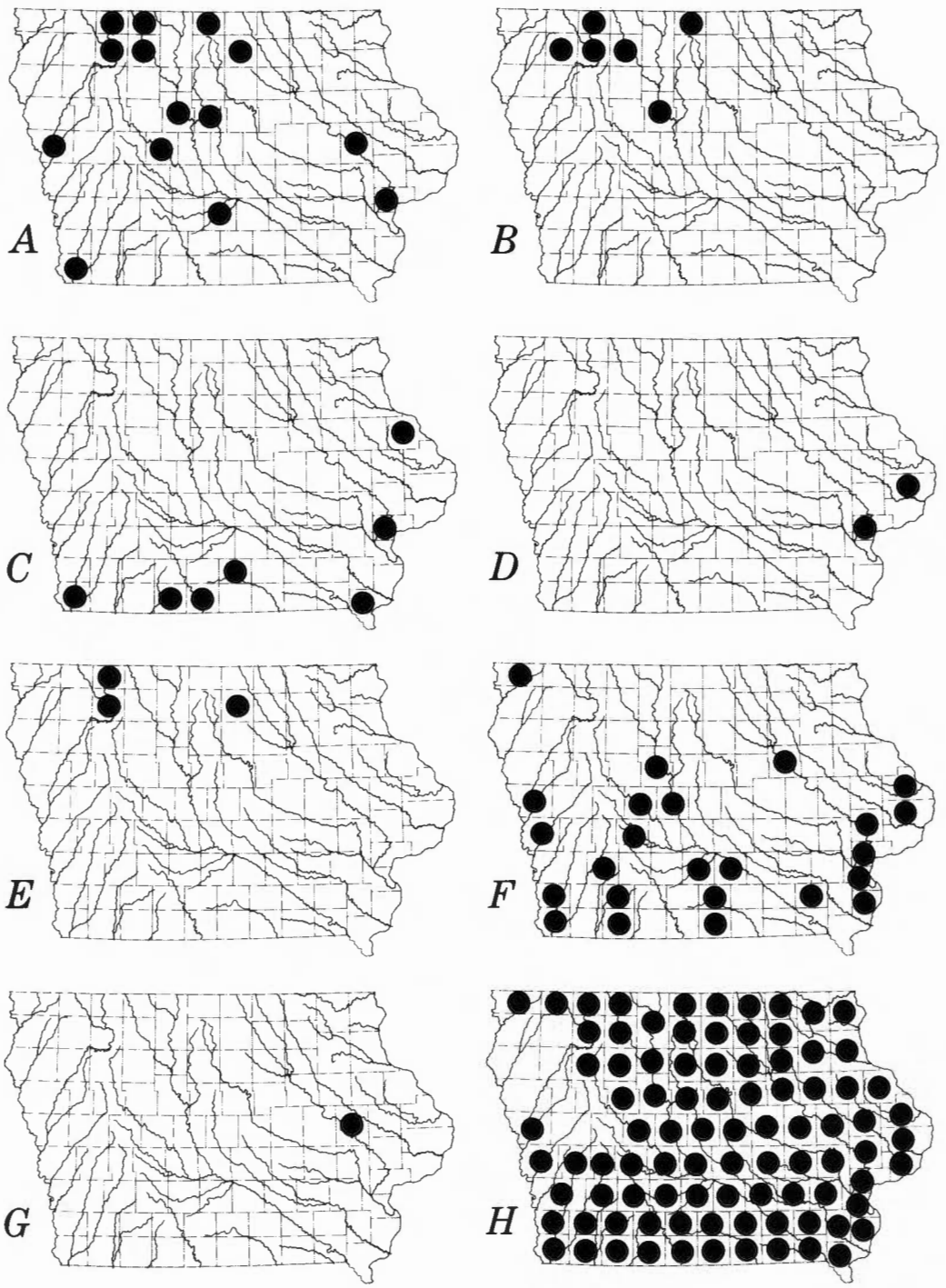

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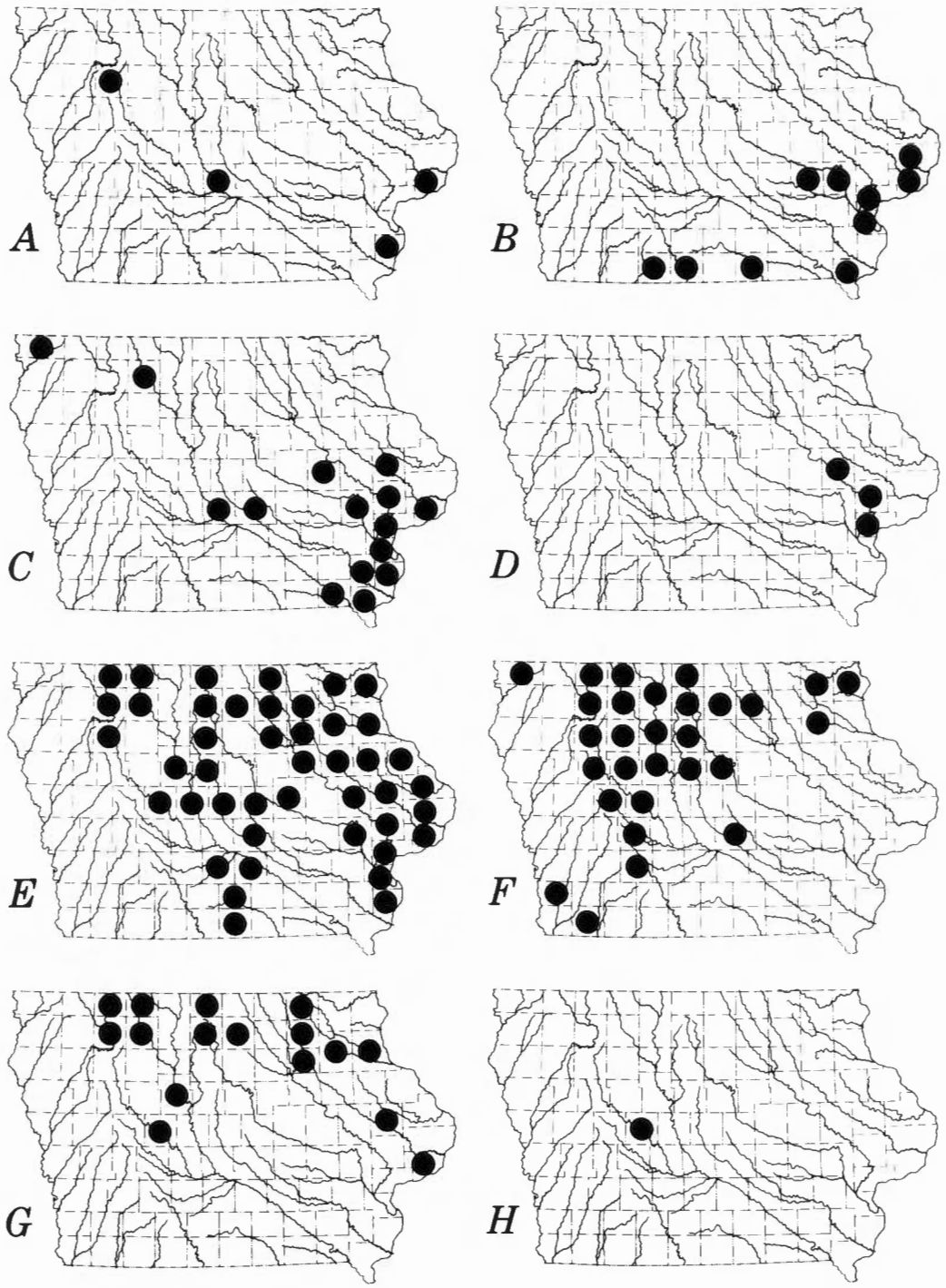

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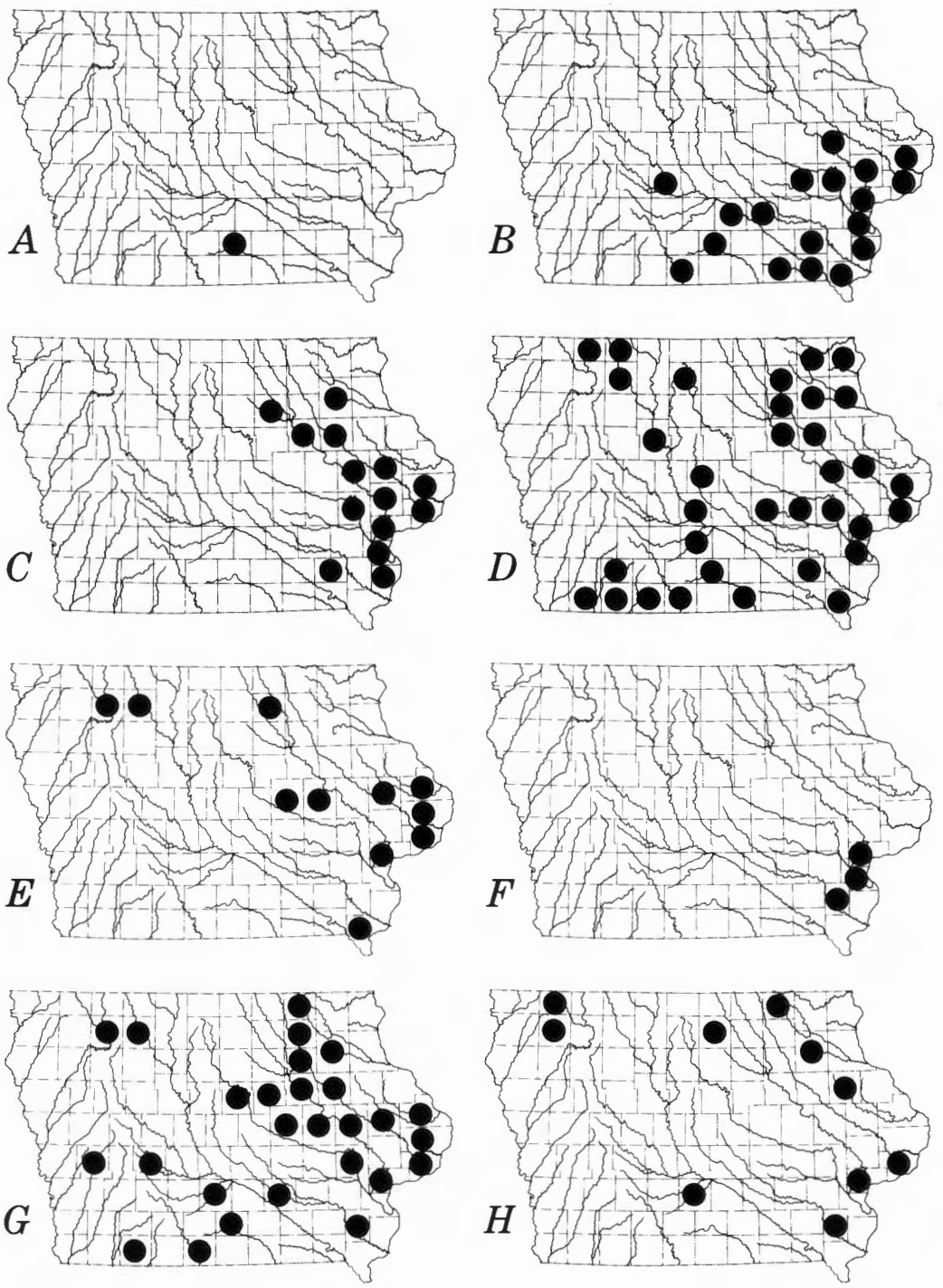

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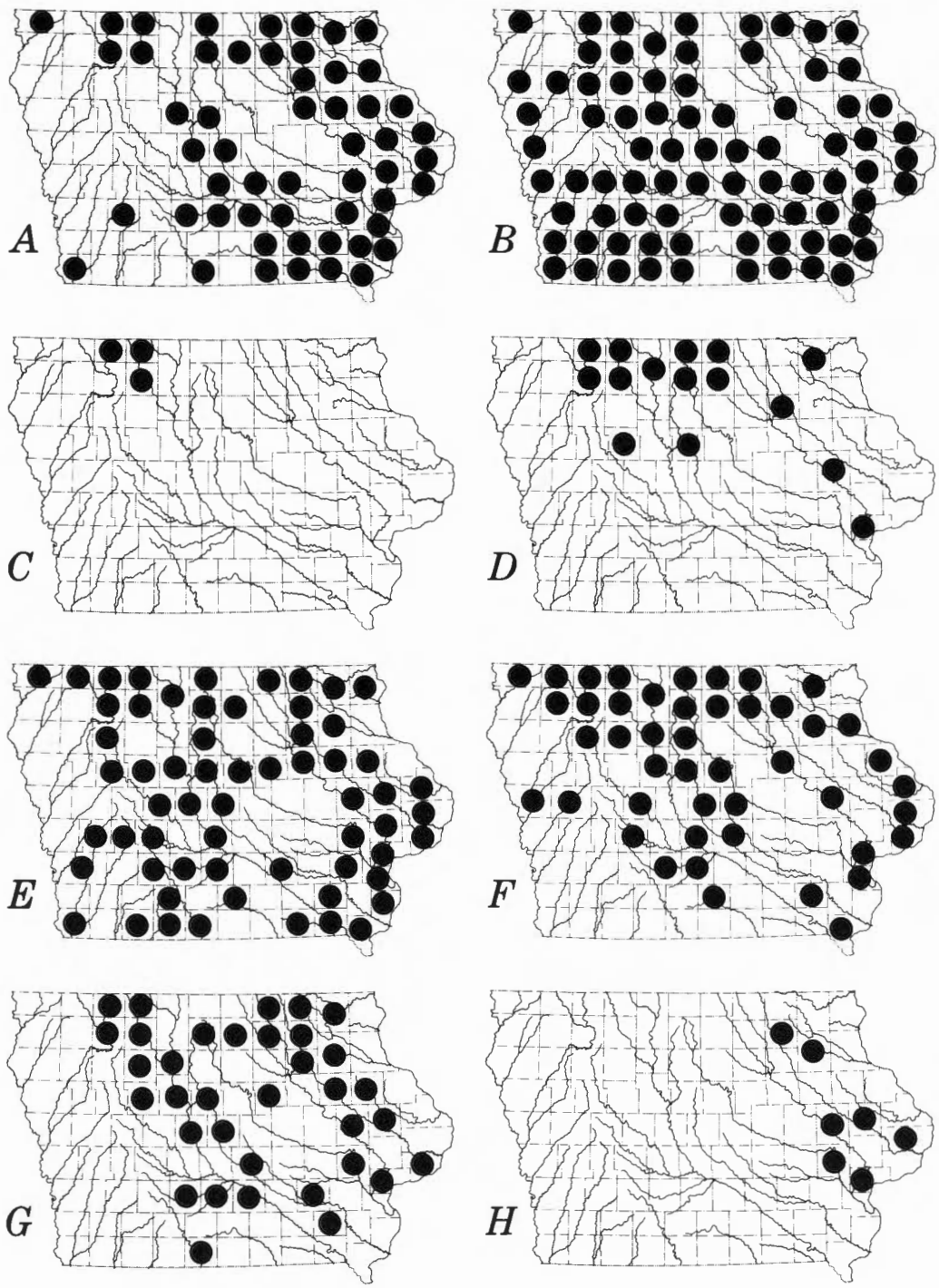

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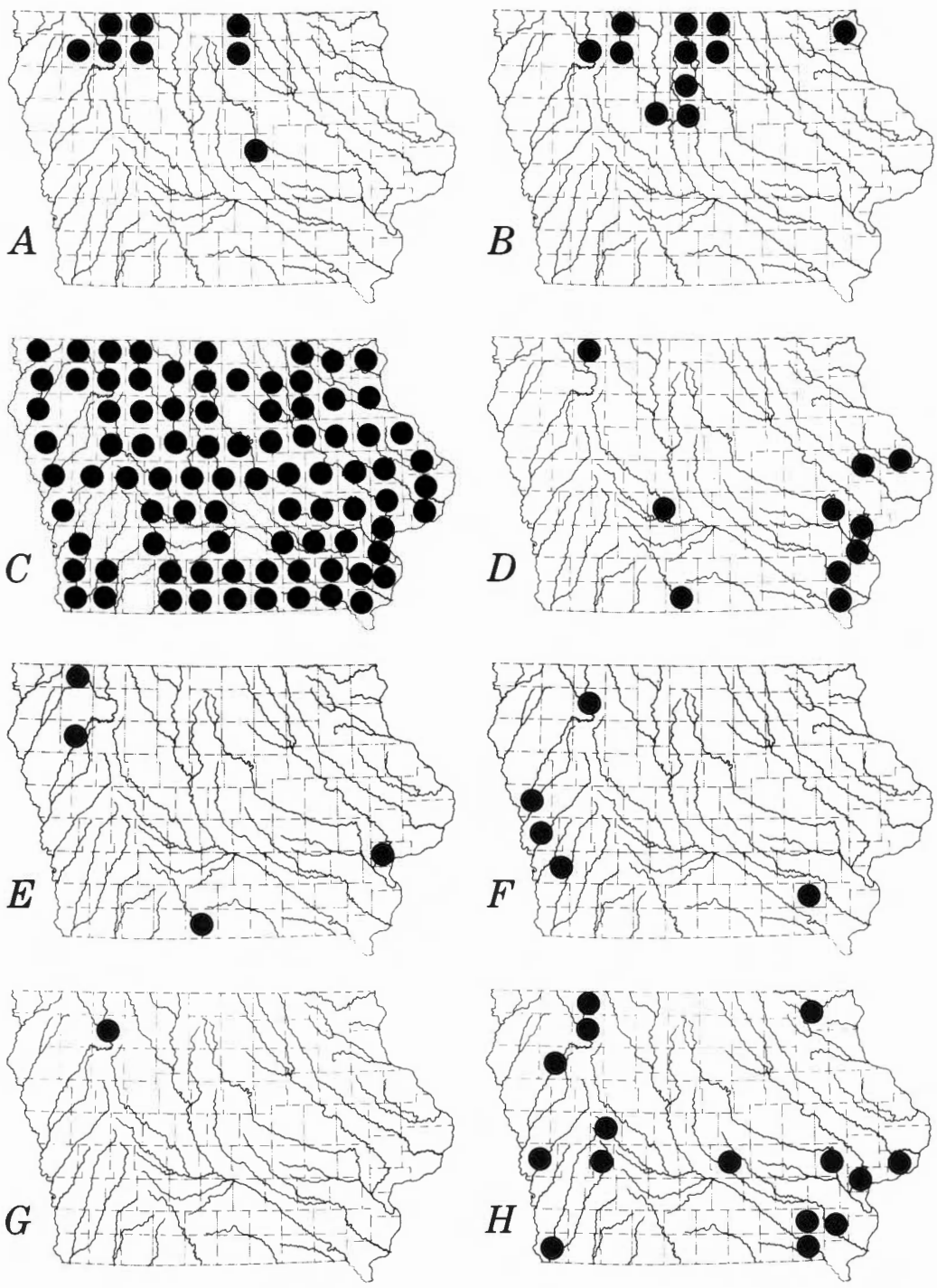

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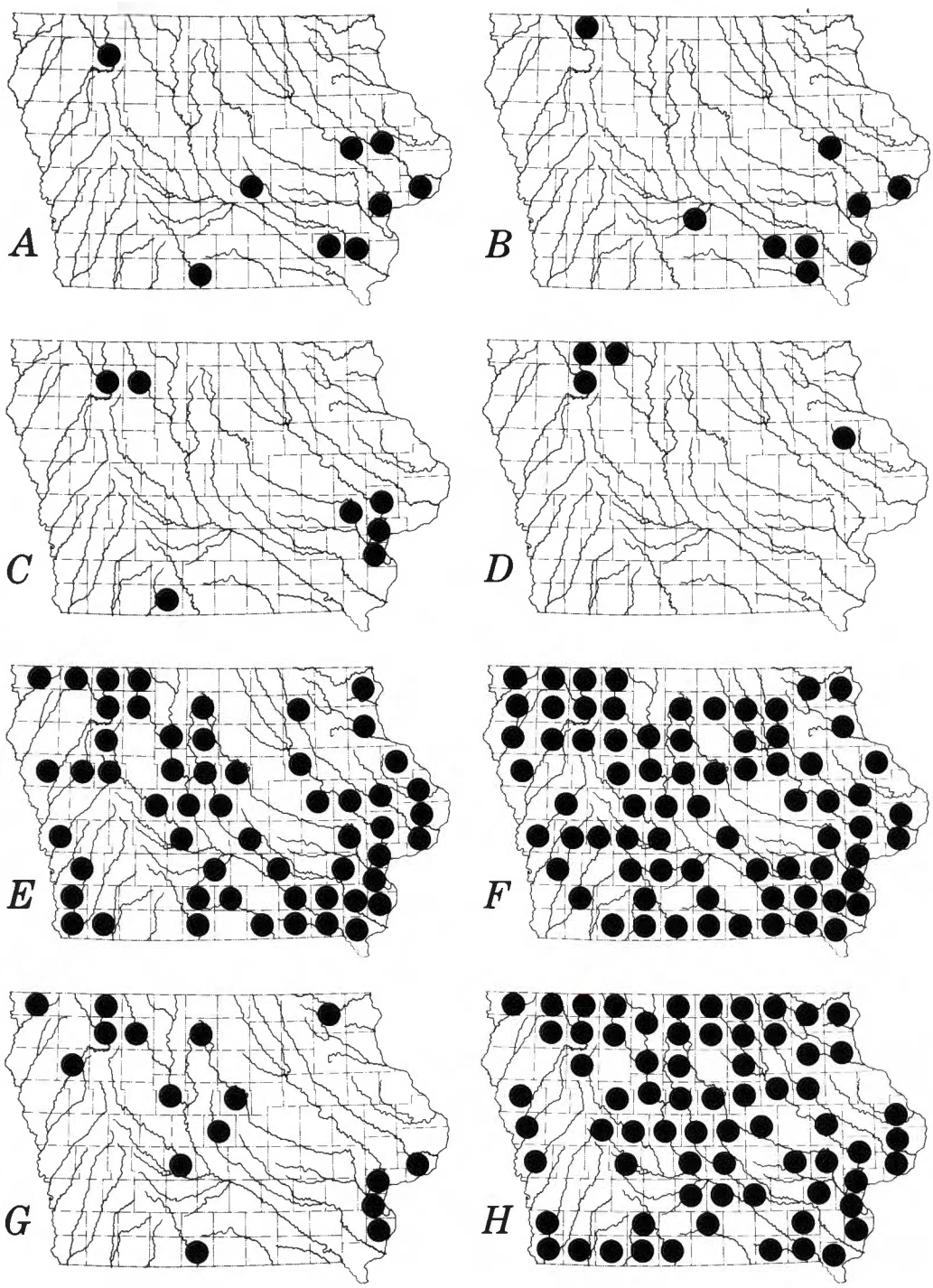

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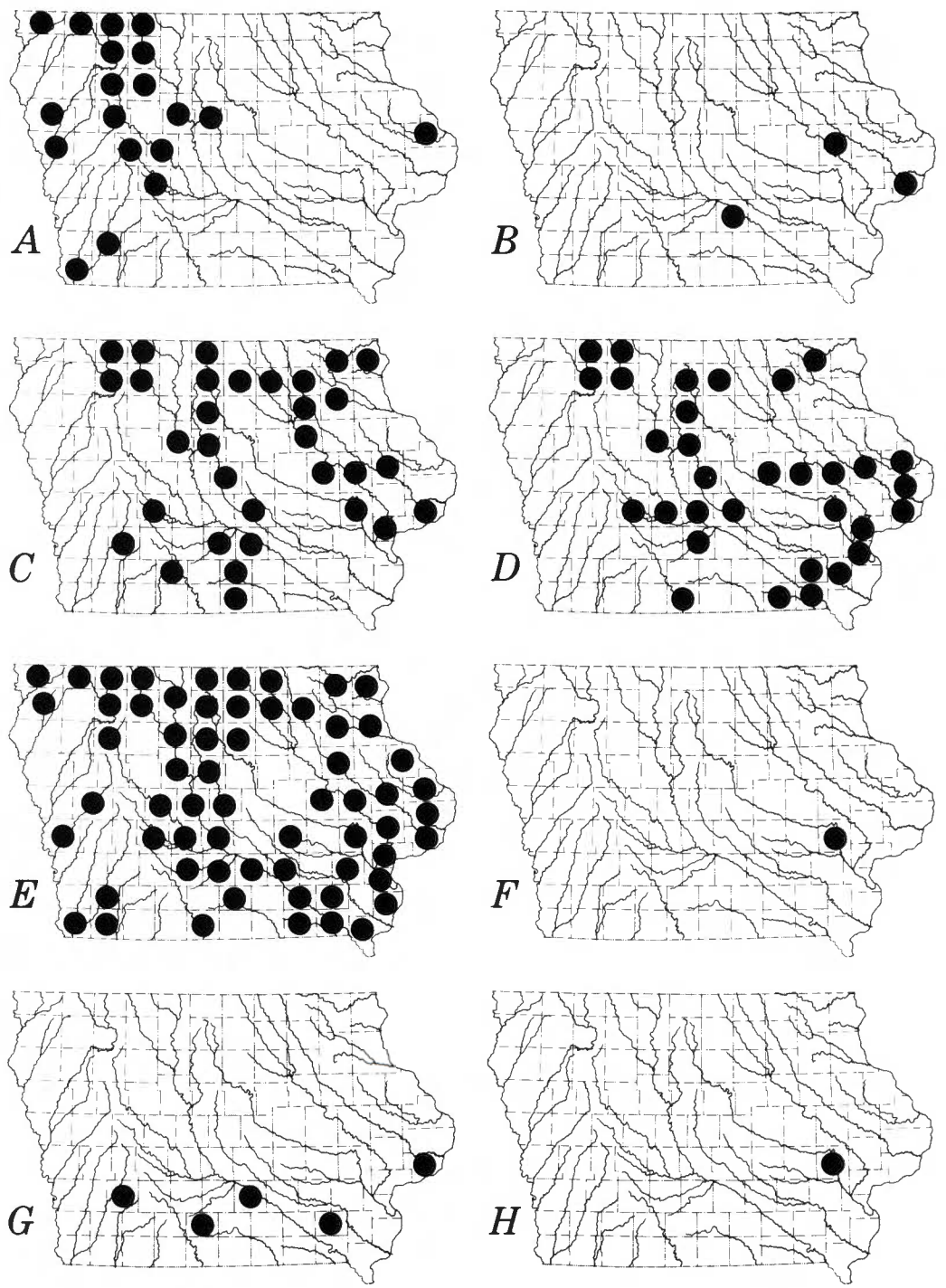

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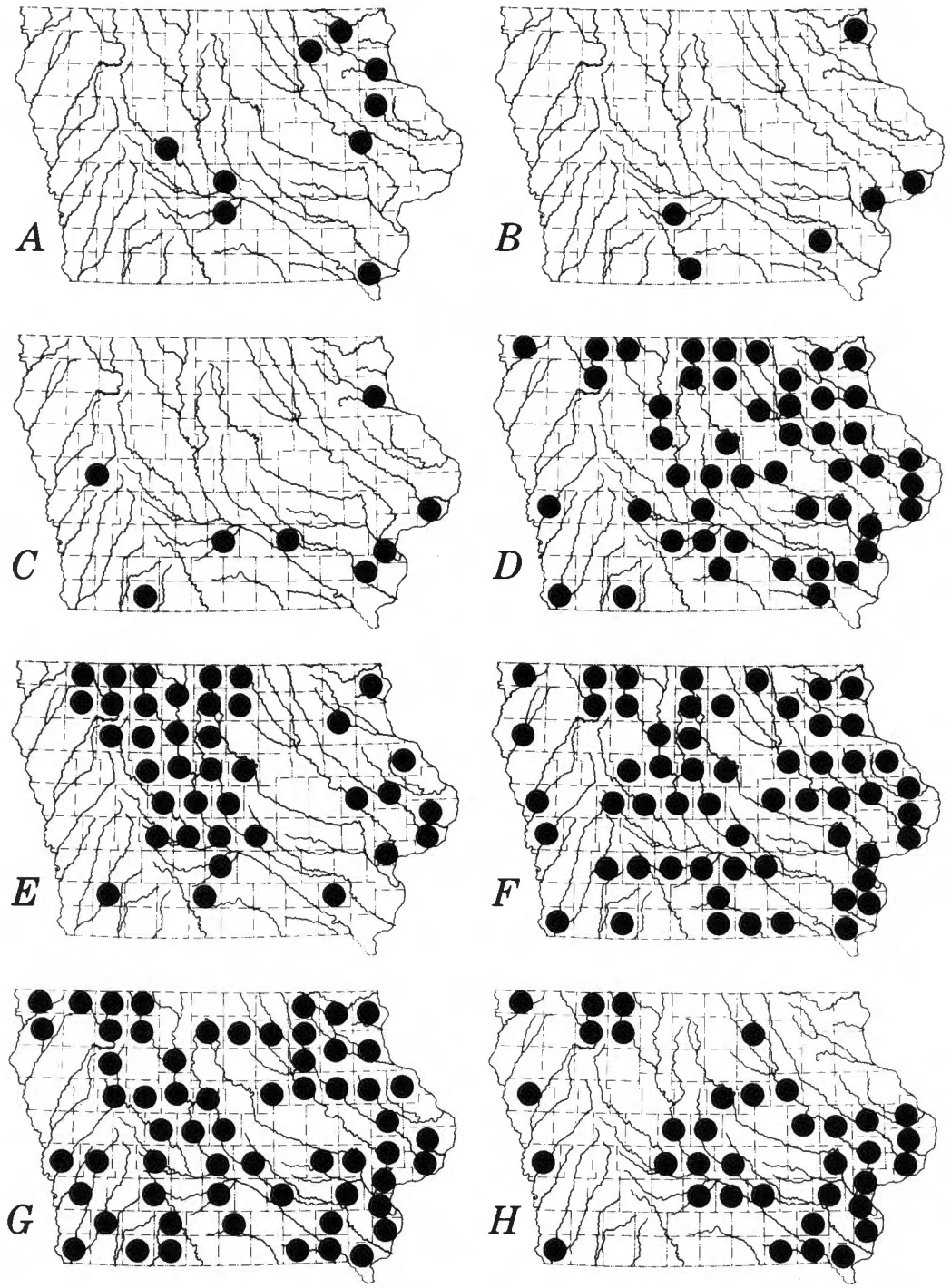

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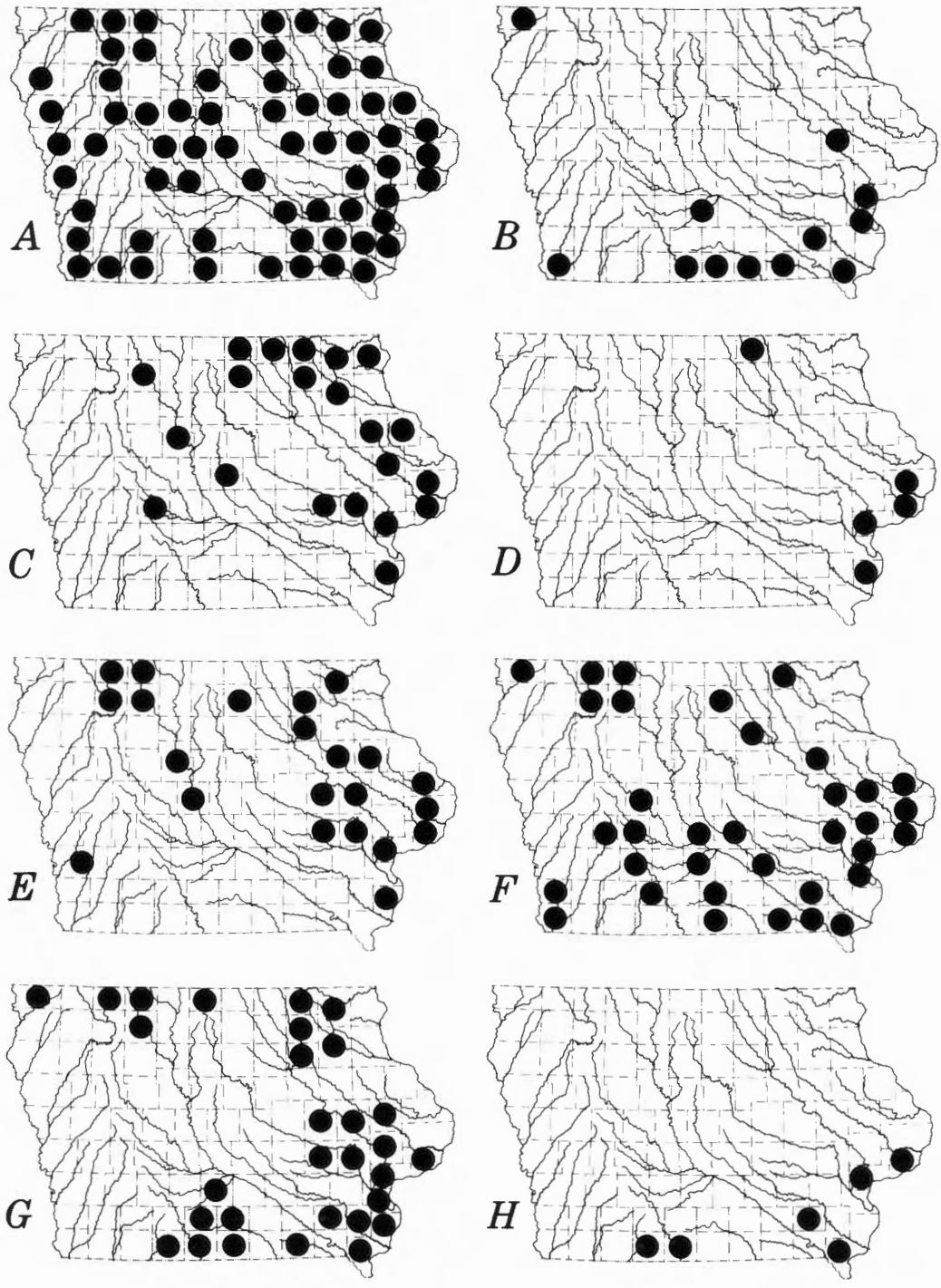

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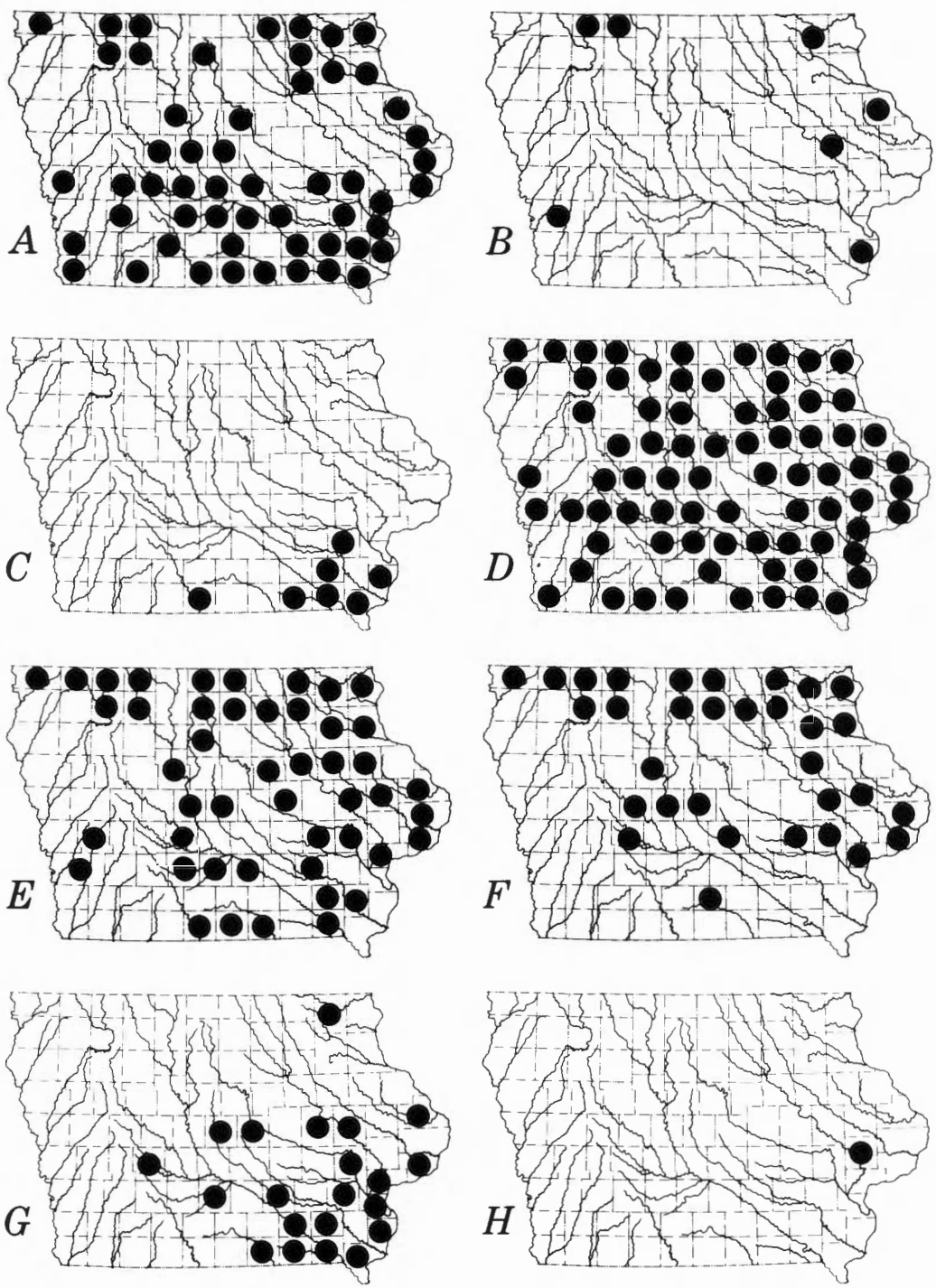

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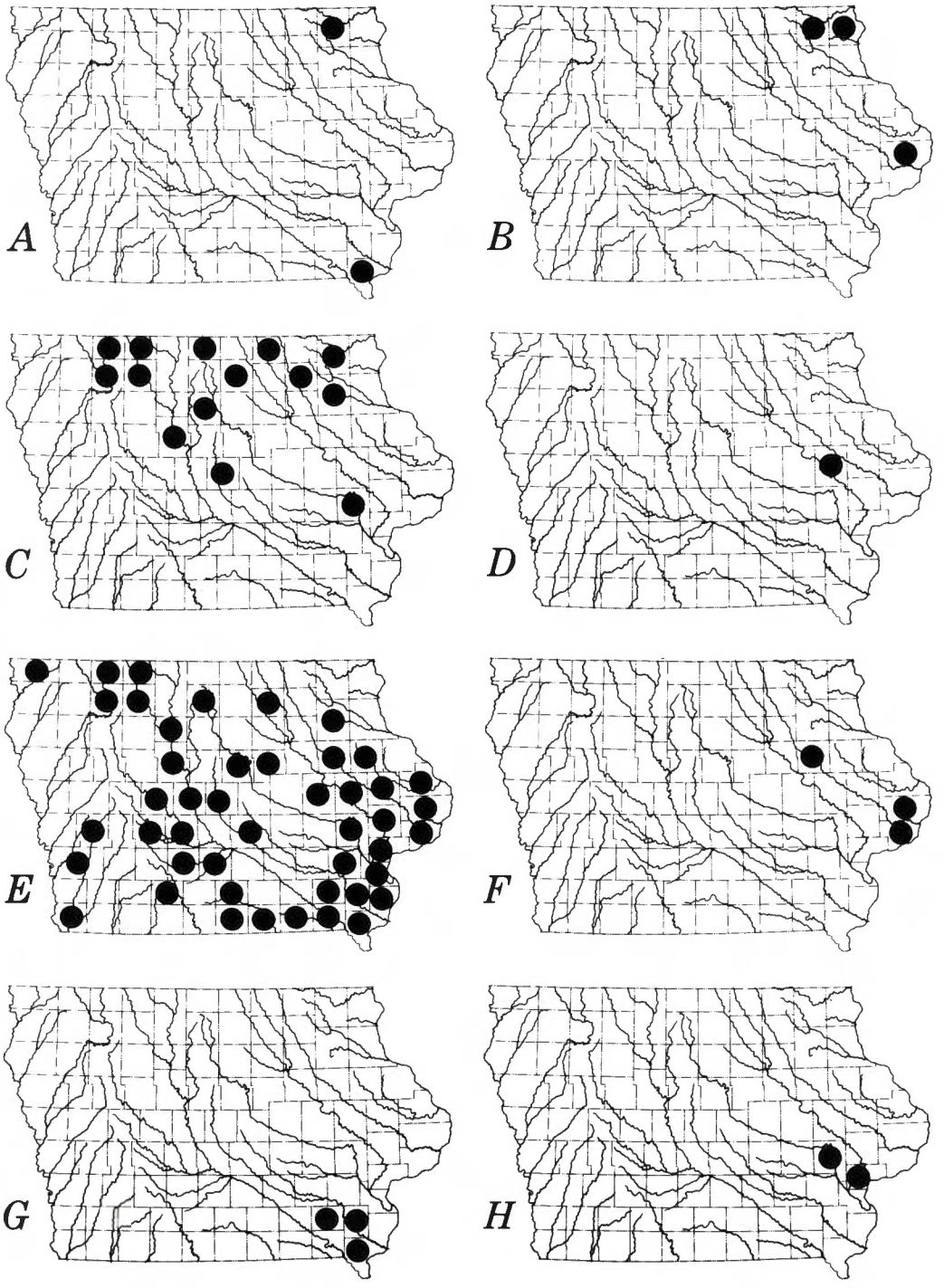

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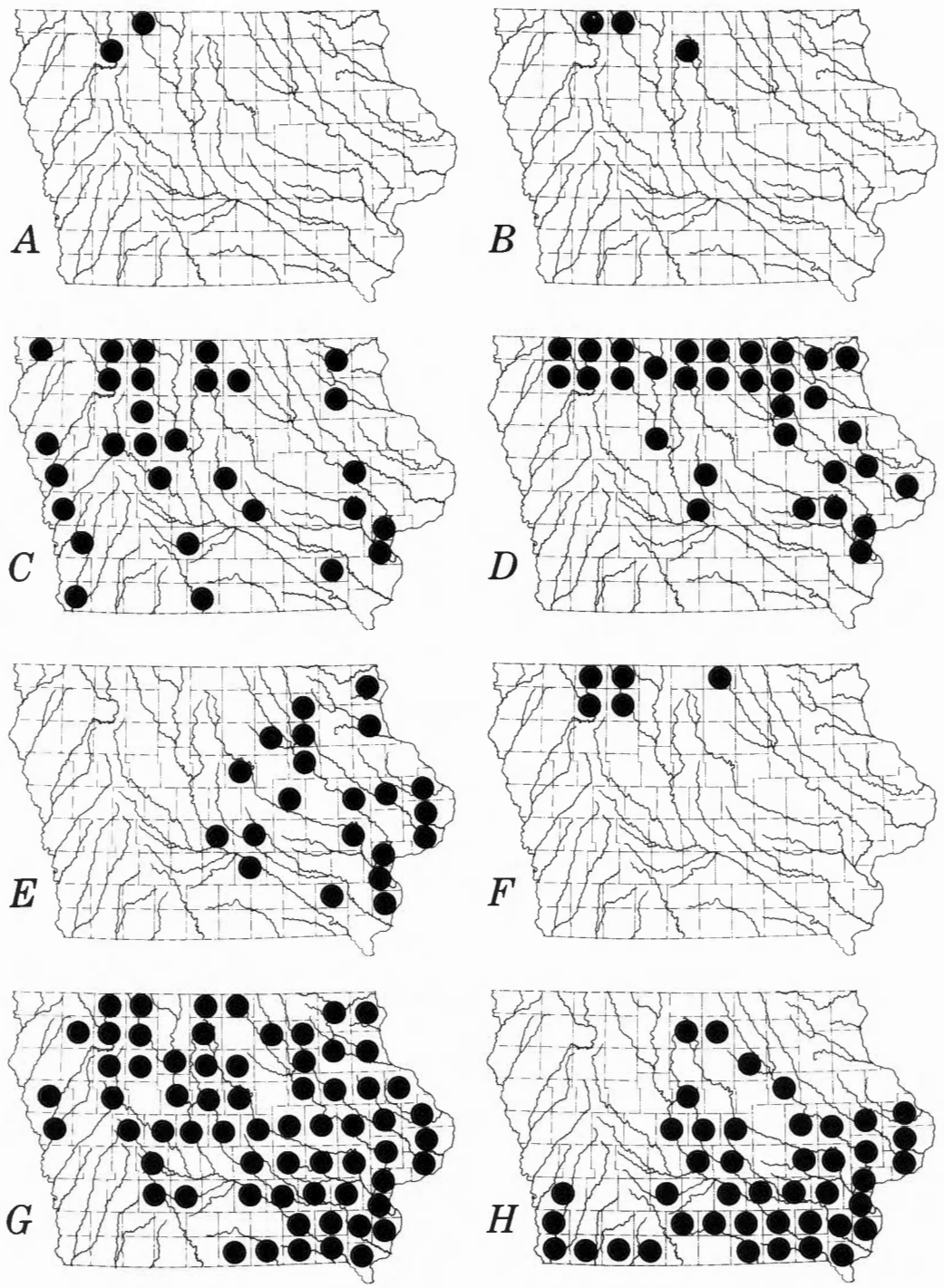

Plate 31. (A) *Utricularia intermedia*, (B) *Utricularia minor*, (C) *Utricularia vulgaris*, (D) *Campanula aparinoides*, (E) *Lobelia cardinalis*, (F) *Lobelia kalmii*, (G) *Lobelia siphilitica*, and (H) *Cephalanthus occidentalis*.

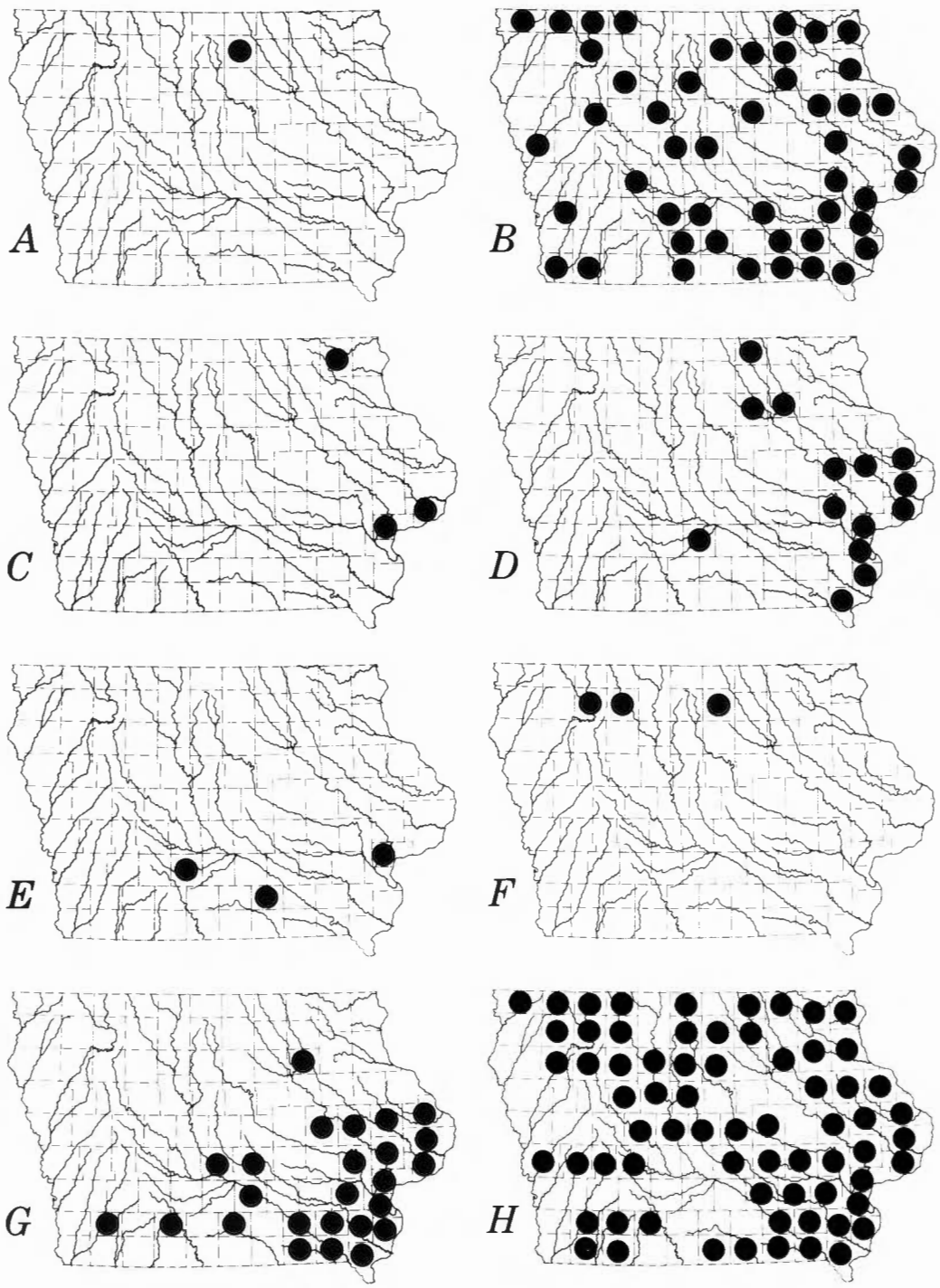

Plate 32. (A) *Galium labridoricum*, (B) *Galium obtusum*, (C) *Galium trifidum* var. *trifidum*, (D) *Galium trifidum* var. *tinctorium*, (E) *Aster furcatus*, (F) *Aster junciformis*, (G) *Aster lateriflorus*, and (H) *Aster novaeangliae*.

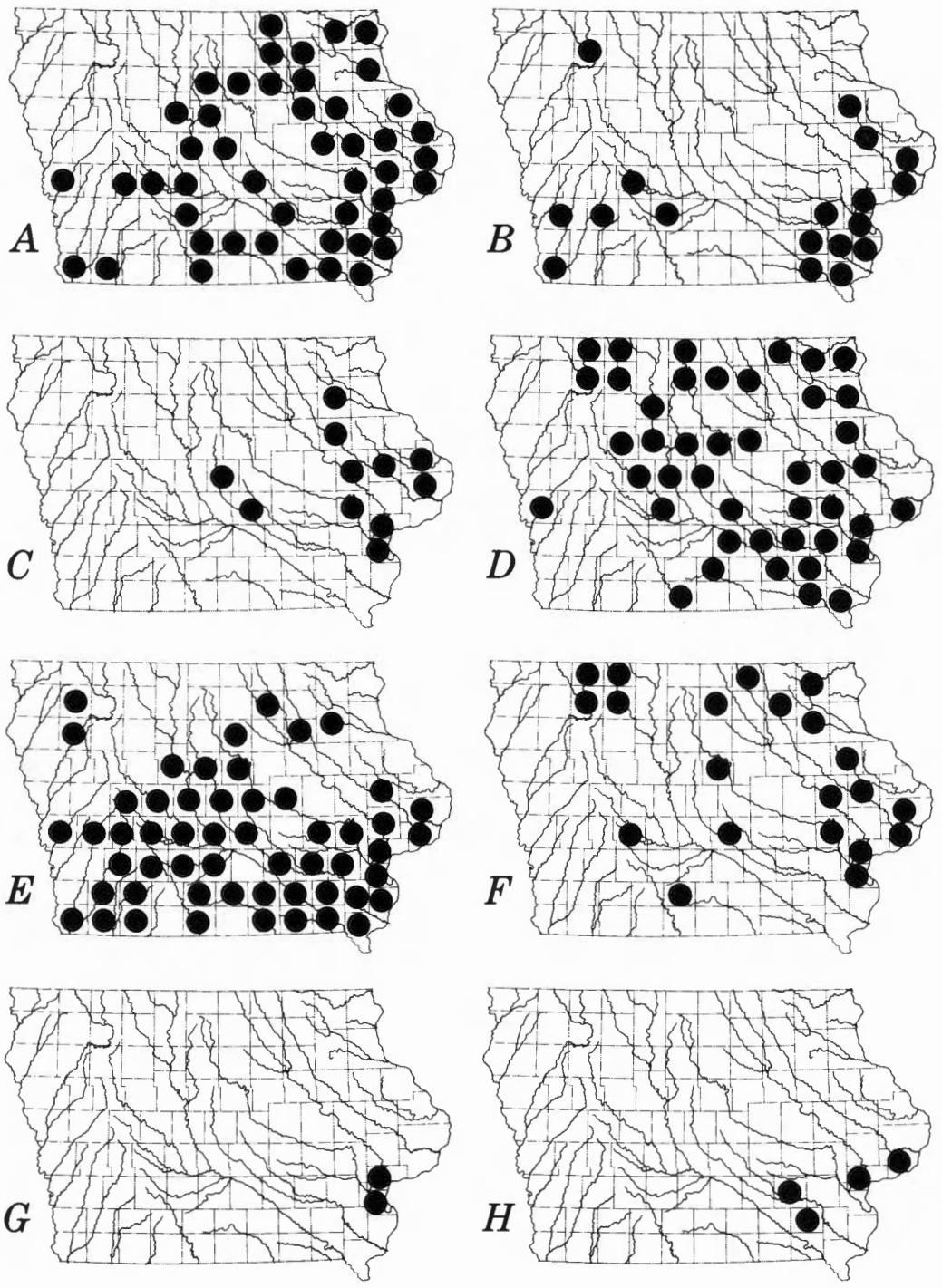

Plate 33. (A) *Aster ontarionis*, (B) *Aster prealtus*, (C) *Aster prenanthoides*, (D) *Aster puniceus*, (E) *Aster simplex*, (F) *Aster umbellatus*, (G) *Aster vimineus*, and (H) *Bidens aristosa*.

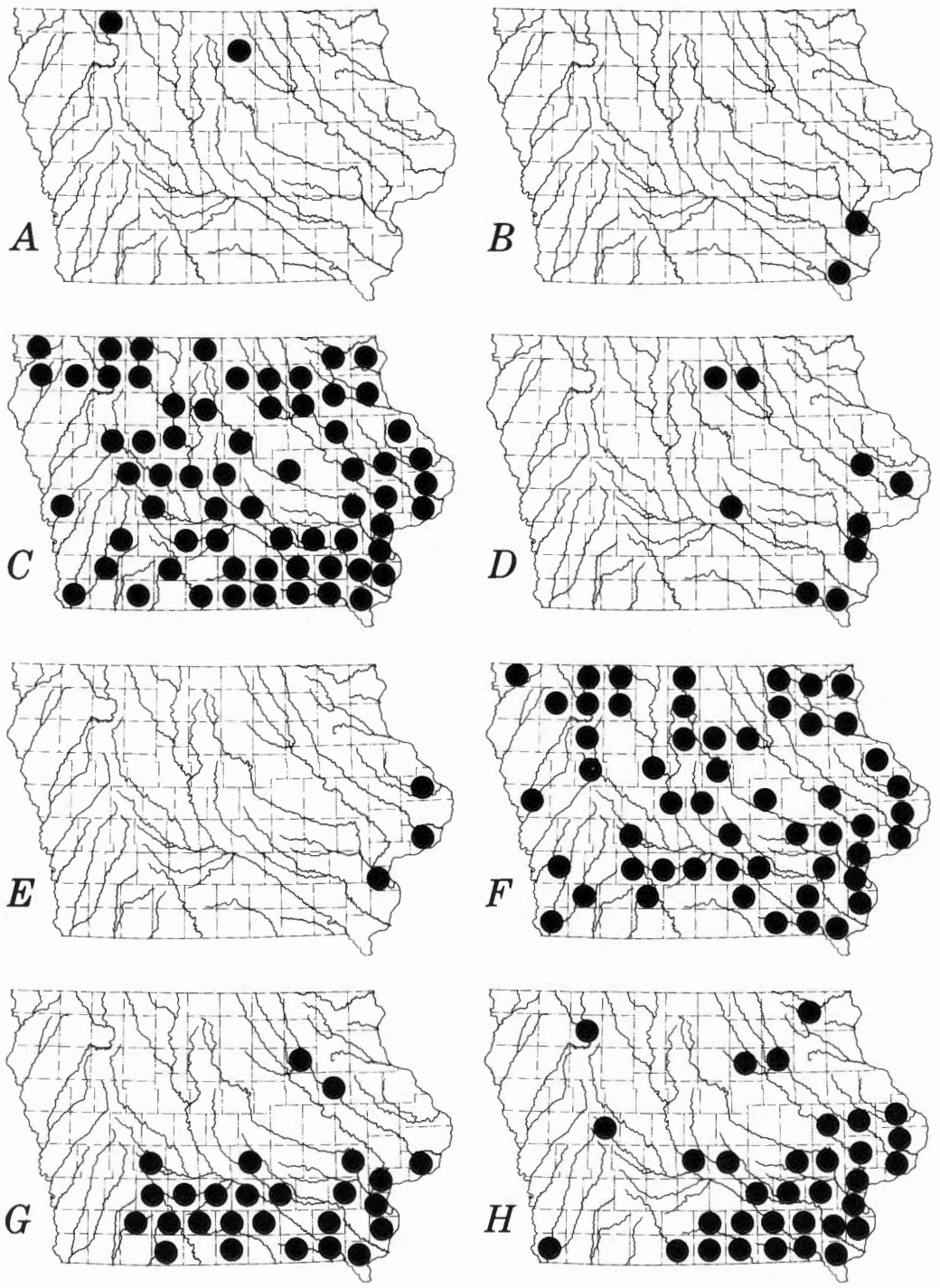

Plate 34. (A) *Bidens beckii*, (B) *Bidens bipinnata*, (C) *Bidens cernua*, (D) *Bidens coronata*, (E) *Bidens discoidea*, (F) *Bidens frondosa*, (G) *Bidens polylepis*, and (H) *Bidens tripartita*.

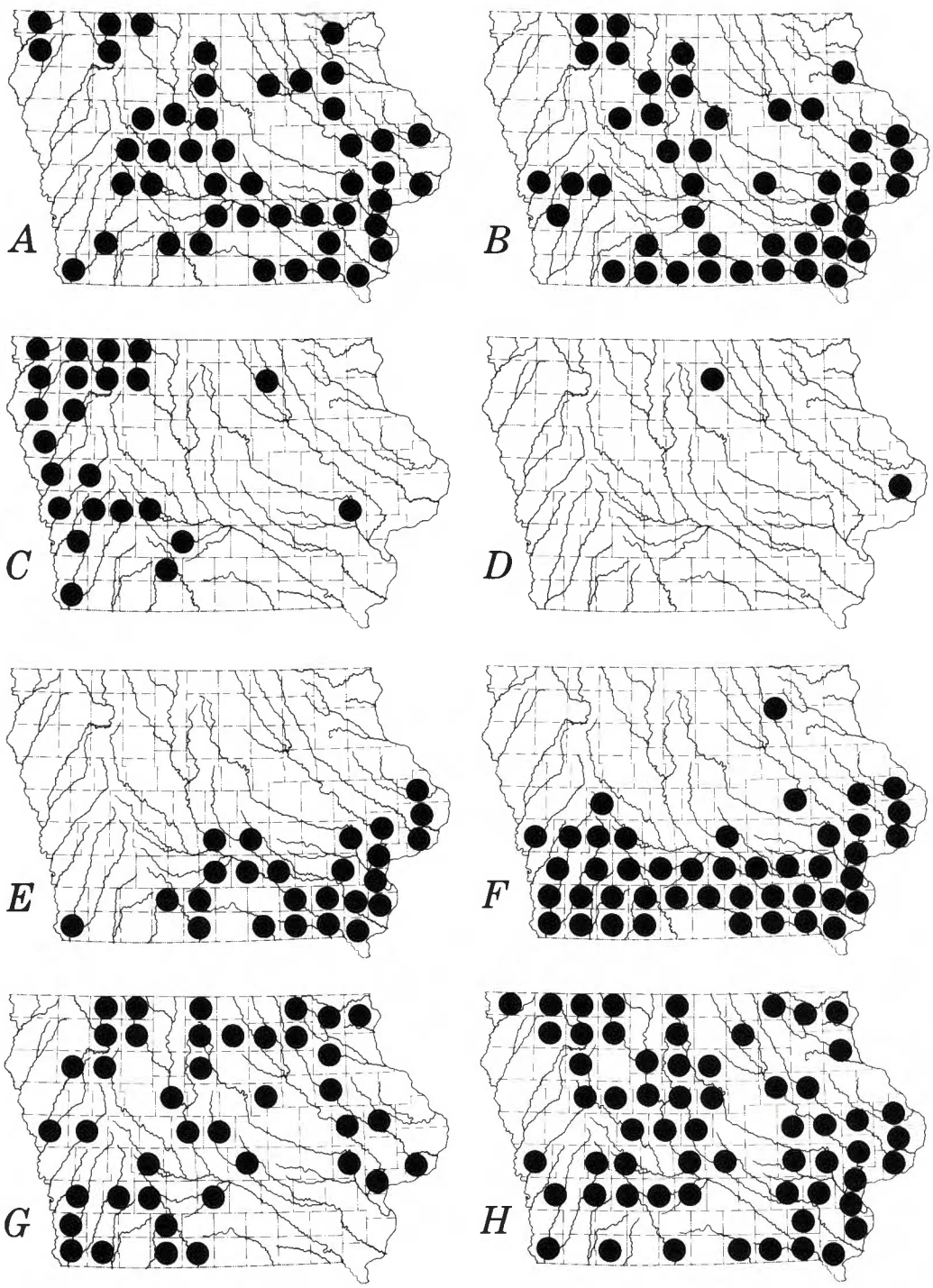

Plate 35. (A) *Bidens vulgata,* (B) *Boltonia asteroides,* (C) *Cirsium flodmanii,* (D) *Cirsium muticum, (E) Eclipta alba,* (F) *Erechtites hieracifolia,* (G) *Eupatorium maculatum,* and (H) *Helenium autumnale.*

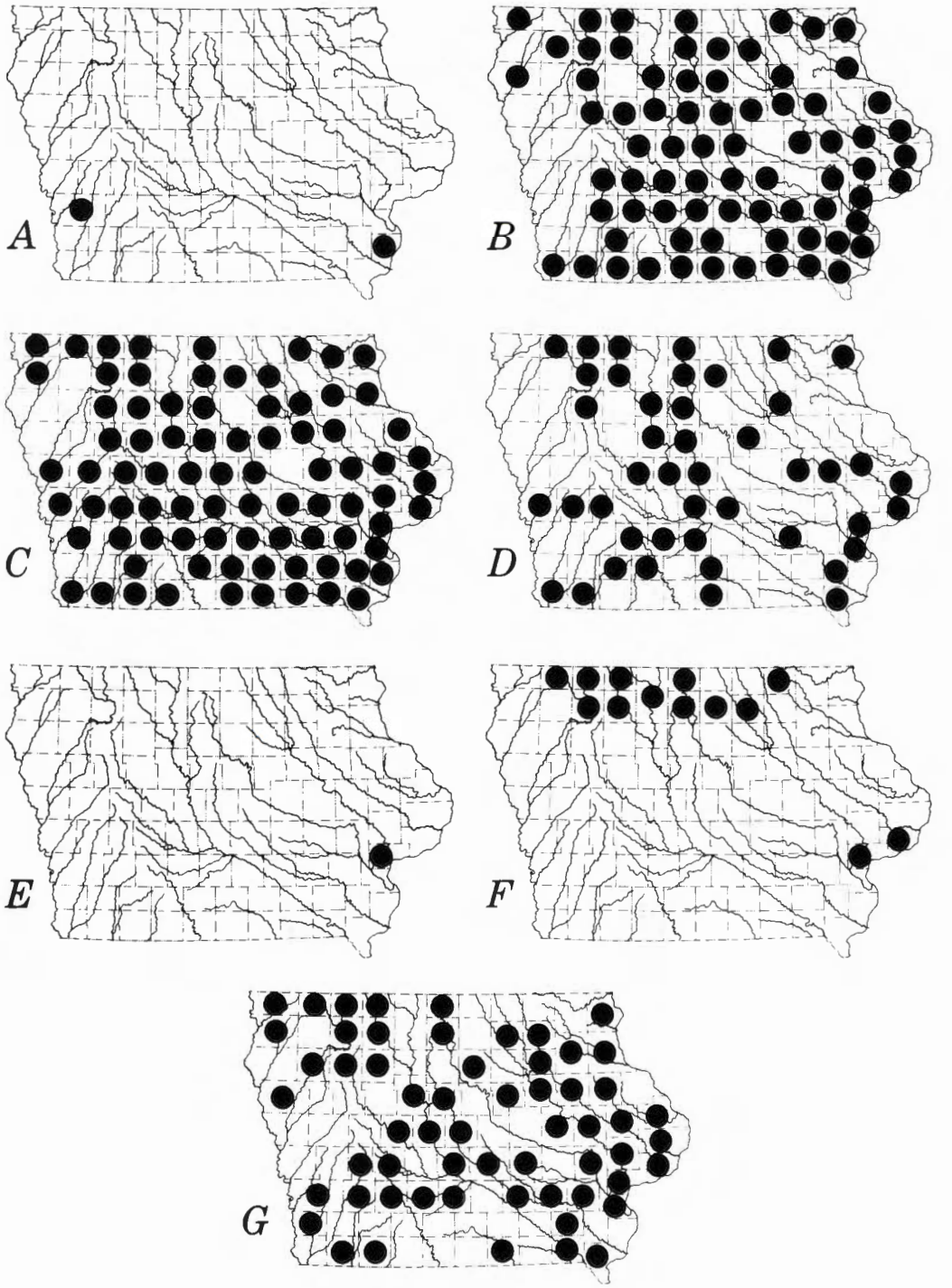

Plate 36. (A) *Iva ciliata*, (B) *Silphium perfoliatum*, (C) *Solidago gigantea*, (D) *Solidago graminifolia*, (E) *Solidago patula*, (F) *Solidago riddellii*, and (G) *Vernonia fasciculata*.

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