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THE VASCULAR FLORA AND PLANT COMMUNITIES OF SEWARD COUNTY, NEBRASKA

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A recent botanical survey of Seward County in southeastern Nebraska recognizes ten representative plant communities including four major vegetation zones (tall-grass prairie, eastern deciduous forest, floodplain woodland and lowland [floodplain] prairie), and a total of 599 species of vascular plants representing 324 genera in 95 families. Three hundred seventy-five species were not previously reported for the county. Although the study area includes an interesting topographic and perhaps physiographic boundary formed by the terminal moraine of the Kansan glaciation, no evidence supporting an analogous floristic boundary was found.

† † †

INTRODUCTION

The foremost objective of this study was to compile as complete a list as possible of all species of seed-bearing plants and ferns, native and introduced, that were not under cultivation within Seward County, Nebraska, and to document these with voucher specimens. In addition, the habitat of each species was observed and recorded, with information about habit, provenance, and frequency of occurrence, to gain a better understanding of the distribution of each plant in its environment and of the overall character of the flora. From this information, the plant communities or species associations occurring in the county were described. Furthermore, it is hoped that the study will provide incentive for further floristic and ecological studies in this area.

This is the first published botanical survey of a southeastern Nebraska county, and only the third published county flora survey for the state, the others being that of Urbatsch and Eddy (1973) for Dawes County in northwestern Nebraska, and Churchill (1977) for Cuming County in northeastern Nebraska. My study was conducted over the flowering seasons of 1983–1988. About 100 sites throughout the county, representing all possible vegetation zones, were studied, and a dozen were sampled throughout the growing season. In addition, surveys of the herbaria of the University of Nebraska–Lincoln (*NEB*); Concordia Teachers College, Seward; and the Seward Senior High School were undertaken, and information from several collections at the herbarium of the University of Kansas (*KANU*), Lawrence, is included. A total of 599 species and 12 subspecies or varieties, representing 324 genera in 95 families, is reported, along with four plants new to the State (*Arabidopsis thaliana, Fumaria vaillentii, Leonurus sibiricus,* and *Potentilla argentea*). Several rare species and noteworthy range extensions are reported, including *Acorus calamus, Agrimonia pubescens, Carya cordiformis, Cassia marilandica, Clematis terniflora, Cryptotaenia canadensis, Delphinium tricorne, Echinodorus rostratus, Elymus virginicus* var. *glabriflorus, Erechtites hieracifolia, Habenaria leucophaea, Haplopappus ciliatus, Leonurus marrubiastrum, Lespedeza cuneata, Mentha spicata, Penstemon cobaea, Pilea fontana,* and *Rorippa austriaca*. Many of these are accounted for in detail in Sutherland and Kaul (1986), Rolfsmeier et al. (1987), and Rolfsmeier et al. (1988). All voucher specimens from this study are deposited at the University of Nebraska–Lincoln Herbarium (*NEB*) unless otherwise noted.

The earliest known botanical records from Seward County are several collections now in *NEB* made by Samuel Aughey in the fall of 1873; two (*Agalinis aspera* and *Mirabilis* cf. *albida*) have never been recollected in the county. The earliest published record of plants in the county was that of H. J. Webber (1890), which indicated 22 species based on Aughey's specimens and his own collections. N. F. Petersen (1923) noted 12 species, including four not published by Webber, based on material in *NEB* at that time. The flora was sporadically collected for the next 65 years, the most active collectors being, chronologically,

W. Tolstead, W. Kiener, R. J. Lemaire, R. Koch, and S. Churchill. Two hundred thirty-six species, including most of those cited by Webber and Petersen, were mapped for the county in Great Plains Flora Association (1977), representing the most complete record of vascular plants available prior to this study.

LOCATION AND SIZE

Seward County is in southeastern Nebraska, in the third tier of counties north of the Kansas border, and in the third tier west of the Missouri River (Fig. 1). It is bordered on the south by Saline County, on the west by York County, by Butler County to the north, and by Lancaster County to the east. The county is approximately 38.6 km (24 miles) square, with a total area of 148,262 ha (366,080 acres) (Quandt, 1974).

Physiographically, the county is situated in the vast "Interior Plains" of central North America at the transition between the Central Lowlands of the east and the Great Plains, this vaguely-defined boundary being formed in part by the Big Blue River (Fenneman, 1931).

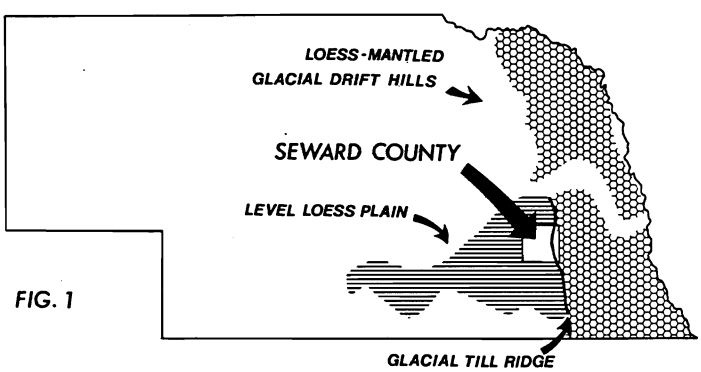

FIG. 1

GEOLOGY AND SOILS

The uppermost bedrock in Seward County consists of rocks of the Cretaceous Age underlain by limestone and shale of the Permian and Pennsylvanian. Bedrock of the early Cretaceous consists of interbedded shales and sandstone of the Dakota group, which underly the entire county. In the northwestern and south central portions, the Dakota is immediately overlain by rocks of the later Cretaceous, namely Graneros Shale and Greenhorn Limestone, which are in turn overlain by Carlisle Shale to a lesser extent. Large valleys were apparently formed through erosion prior to the Ice Age, resulting in a rolling topography of large hills in which the upper Cretaceous bedrock is found. These features, however, have scarcely affected the present terrain of the county (Goll, 1961).

The advent of continental glaciers during the Pleistocene Epoch had a much more profound effect upon Seward County's present topography. The east-central portion of the county was covered by the earliest (Nebraskan) glaciation, and the entire county was covered by the maximum advance of the succeeding glaciation (Kansan). The final advance of the Kansan covered the eastern one-fifth of the county and resulted in formation of drift hills in this area. The terrain from this portion of the county west to the Blue River consists of glacial till overlain by Loveland loams and Peoria loess. West of the Blue River, the material above the bedrock is primarily glacial outwash (Pleistocene sand and gravel), also covered by loam and loess. The exact sequence of sedimentary deposition during the melting of the glaciers, which is quite complicated and not fully understood, is hypothesized by Goll (1961) and Wayne (1981).

Six major soil associations are recognized in the county, coinciding approximately with the major vegetation zones: Pawnee-Sharpsburg and Burchard-Steinauer soils (silt and loam, mantled by loess and glacial till) are associated with upland tall-grass prairie and oak woodland in the extreme eastern portion; Hastings-Wymore (silty soil covered by loess) occurs in the moderately rolling prairie between the glacial moraine and the Blue River; Hastings-Fillmore-Butler (silty, loess-mantled soil) is found in the high, nearly level plain in the western half; and Hastings-Geary and Hobbs-Hall silty soils comprise most of the river and creek bottoms and floodplains (Quandt, 1974).

TOPOGRAPHY AND DRAINAGE

The highest elevation in Seward County is 445 m near the northwest corner of the county; the lowest is 378 m along the south branch of Middle Creek northeast of Pleasant Dale, giving a total relief of 67 m. The landscape slopes generally to the southeast, the uplands consisting of somewhat steep to moderately rolling drift hills in the east, and high, nearly level loess plains in the west half of the county (Fig. 1 [adapted after Dreeszen, 1973]). Lowlands, consisting of bottomlands and stream terraces associated with floodplain of the Blue River and its tributaries, separate the two landscape types, and are also interspersed throughout the uplands elsewhere in the county.

The glacial till ridge in the eastern part of the county is the major stream divide. Streams west of this divide flow eastward and southward into the Blue River; those to the east continue eastward, eventually draining into Salt Creek in Lancaster County; and those between the moraine and the Blue River flow to the south and west (Fig. 2). Most of the county is well drained, except portions of the level loess plains in the west-central part, where several large seasonal marshes and basins are found. Two large, natural rainwater basins are north of Utica; these appear to have been formed by wind erosion during the late Pleistocene or more recently (Goll, 1961).

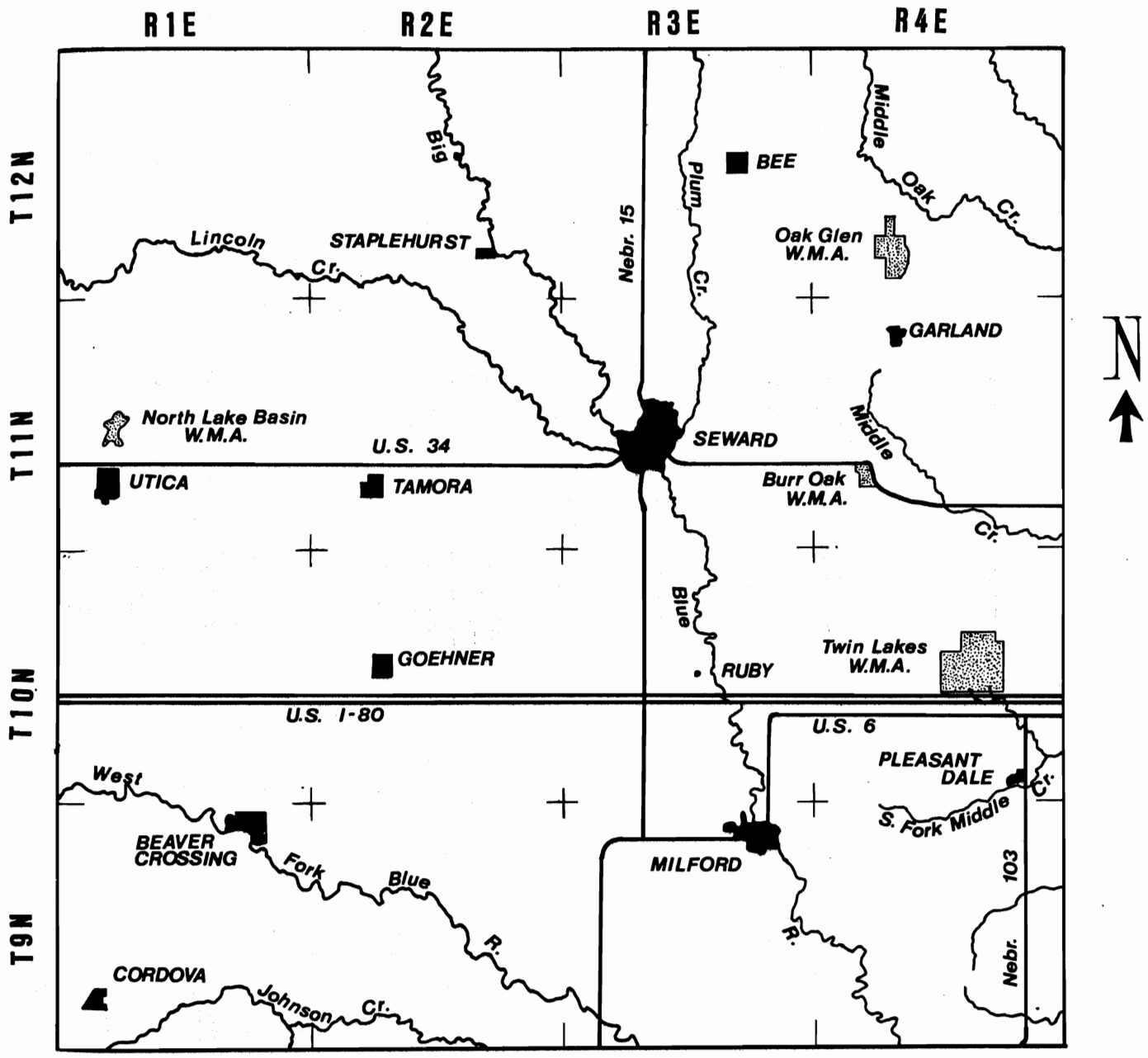

FIG. 2 **POLITICAL MAP OF SEWARD COUNTY, NEBR.**

WITH FREQUENTED COLLECTING SITES

CLIMATE

Seward County, and Nebraska as a whole, are typified as having a continental climate, characterized by warm summers punctuated by intermittent thundershowers, and cold, dry winters (U.S. Department of Commerce, 1963). The long-term mean temperature reported for Seward from 1891 to 1960 was 11.1° C, and the mean annual precipitation for this same period was 68.20 cm (Goll, 1961). Table I provides average monthly temperatures and precipitation totals for Seward.

The average dates of the last 0-degree frost in Spring and the first in Fall are 30 April and 12 October, giving a frost-free growing season of 164 days.

TABLE I. Mean monthly temperature and precipitation at Seward, 1934–1980*

	Temperature (°C)	Precipitation (cm)
January	−5.4	1.75
February	−2.3	2.26
March	3.5	4.11
April	11.1	6.50
May	16.9	9.45
June	22.4	11.20
July	25.6	7.75
August	24.2	8.41
September	18.9	7.24
October	12.9	4.57
November	4.0	2.74
December	−2.1	1.85
Annual mean	10.8	67.84

*Compiled from climatological summaries (U.S. Dept. of Commerce, 1963 and 1980)

PLANT COMMUNITIES

The native plant communities of Seward County can be divided into three broad categories: wetlands, prairie, and woodlands. Each of these vegetation zones has a considerable amount of species diversity influenced by such factors as slope, drainage, soil type, water level, and degree of disturbance. This variability is taken into account by delineating these vegetational types into more specific, workable associations based on species composition. Since many species occur along gradual environmental gradients, the boundaries of these habitat associations are not always well-defined (particularly in the wetlands category), and a single species may be common in several communities.

Ten representative plant communities are described here, based upon dominant species and other associated plants. These include four major "vegetation zones" (tall-grass prairie, floodplain prairie/meadow, eastern deciduous forest, and floodplain woodland) that once covered major portions of the county, as indicated by the vegetation map (Fig. 3). These zones generally coincide with those indicated by the vegetation map of Nebraska (Kaul, 1975).

Wetland communities

Aquatic community

The aquatic habitat includes vegetation of standing water that remains throughout the growing season, such as lakes and ponds, and consists of rooted or free-floating, submersed and floating-leaved plants. The most common are the submersed, rooted plants, such as pondweeds (*Najas guadalupensis, Potamogeton foliosus, P. nodosus, P. pectinatus, P. pusillus,* and *Zannichellia palustris*) and the submersed, free-floating *Ceratophyllum demersum*. Free-floating, non-submersed plants such as the duckweeds (*Lemna minor, L. perpusilla, Spirodela polyrhiza,* and *Wolffia columbiana*) are often abundant, particularly in still water of quiet bays. In addition, some normally emergent plants may grow submersed, where they remain sterile; *Echinodorus rostratus,* which produces linear submersed leaves and large, heart-shaped floating leaves in deep water, is a good example of this.

Seepage community

The seepage area is permanent wetland associated with spring beds or ponds in wooded areas or prairie ravines. It is characterized by saturated, springy soil and cold, clear, often running water. Several aquatic species, particularly *Lemna minor* and *Potamogeton foliosus,* may be present here, along with several hydrophytic herbs that are unique to this community in the county, such as *Cyperus strigosus, Glyceria striata, Pilea fontana,* and *Veronica catenata*. A number of plants that are encountered occasionally along the margins of ponds and marshes may occur more commonly in the seepage habitat: *Carex stipata, Cicuta maculata, Epilobium coloratum, Equisetum arvense, Lobelia siphilitica, Lysimachia ciliata, Mimulus ringens, Penthorum sedoides,* and *Sagittaria latifolia*.

Marsh/riparian community

This habitat consists of seasonally flooded streambanks, temporary ponds, and somewhat saturated flatlands that contain standing water for part of the growing season. This is a rather broad designation that could perhaps be better treated as separate associations based on more specific vegetational and hydrologic characteristics; however, it is treated here as a single entity because of a general similarity in overall species composition.

The array of species is highly dependent on the water level and frequency of flooding, and different dominant species may form distinct zones representing various degrees of succession, the species makeup of each being determined by underlying

environmental conditions (Mitsch and Gosselink, 1986). A few aquatic plants are likely to occur in marshes that remain saturated through much of the growing season, but emergent hydrophytes are the most common constituents of this community.

Freshly-exposed mud at the edge of ponds and shallow marshes often abounds with annual emergents. The most common are *Alopecurus carolinianus, Ammannia coccinea, Bidens cernua, Cyperus erythrorhizos, C. odoratus, Eleocharis obtusa, Lindernia dubia, Myosurus minimus, Ranunculus sceleratus,* and *Sagittaria calycina*. Perennial emergent herbs may also be found here, but are more common in shallow water or on less freshly-exposed mud farther from the shore. This group is dominated by a number of monocot species, including *Agrostis hyemalis, Alisma triviale, Eleocharis erythropoda, E. macrostachya, Leersia oryzoides, Sagittaria brevirostra, S. latifolia, Scirpus validus, S. pallidus,* and *Sparganium eurycarpum*. A number of dicot herbs are often scattered through this zone as well, such as *Asclepias incarnata, Lycopus americanus, Mentha arvensis, Polygonum hydropiper, P. amphibium, P. lapathifolium, P. punctatum, Rorippa palustris, Rumex stenophyllus, Scutellaria lateriflora,* and others.

Areas along marshes and particularly shorelines that have been free of substantial flooding for several years are likely to be invaded by aggressive perennial species that push out competitors almost completely. The most common are *Phalaris arundinacea, Typha angustifolia, T. latifolia,* and *Salix exigua*. *Lythrum salicaria,* a very aggressive, recently-introduced wetland invader that is becoming a major weed in some parts of the state, is known from just outside the county at Branched Oak Lake in northwestern Lancaster County (Sutherland and Kaul, 1986), but has not yet been found in Seward County.

Prairie communities

Tall-grass prairie community

The tall-grass prairie is an upland community dominated by the warm-season grass *Andropogon gerardii,* which in drier uplands and hilltops may be occasionally codominant with *Andropogon scoparius* or *Sporobolus heterolepis*. Other major grasses in this community include *Agropyron smithii, Bouteloua curtipendula, Dichanthelium oligosanthes, Elymus canadenis, Koeleria pyramidata, Panicum virgatum, Sorghastrum nutans,* and *Stipa spartea*. Other grass-like plants (sedges and rushes) which are sometimes common in the prairie include *Carex brevior, C. gravida, C. meadii,* and *Juncus interior. Equisetum laevigatum,* which may appear grass-like, is the only pteridophyte common to prairies in the county.

Other species associated with tall-grass prairie in the county include a number of important leguminous plants, the most common of which are *Amorpha canescens, Dalea candida, D. purpurea, Desmodium illinoense, Lespedeza capitata, Psoralea argophylla,* and *P. tenuiflora*.

Forb species from a variety of families occur throughout the year in the tall-grass prairie, and the major forb constituents appear to vary throughout the growing season. In the spring (late March through May), *Antennaria neglecta, Astragalus crassicarpus, Comandra umbellata, Lithospermum incisum, Lomatium foeniculaceum, Oxalis violacea, Senecio plattensis, Sisyrinchium campestre,* and *Viola pedatifida* may be commonly found in flower in various upland prairies in the county. In early to mid-summer (June–July), most of the aforementioned legume species may be found in full bloom, along with a variety of other forbs such as *Allium canadense, Asclepias viridiflora, Astragalus canadensis, Cacalia plantaginea, Calystegia macounii, Delphinium virescens, Echinacea angustifolia, Erigeron strigosus, Lactuca ludoviciana, Linum sulcatum, Penstemon grandiflorus, Physalis heterophylla, P. virginiana, Potentilla arguta,* and *Rudbeckia hirta*. Late summer and fall forbs (those that may begin to flower in July, but reach a flowering peak in August and September) are predominately composites. Goldenrods are usually the most common wildflowers in the tall-grass prairie uplands of Seward County at this time of the year; the most common species are *Solidago canadensis, S. gigantea, S. missouriensis, S. rigida,* and *S. speciosa*. Other common composite species include *Ambrosia psilostachya, Artemisia ludoviciana, Aster ericoides, Cirsium flodmanii, Helianthus rigidus, Heliopsis helianthoides, Hieracium longipilum, Kuhnia eupatorioides,* and *Liatris punctata*. Non-composite forbs are not as floriferous at this time of the year, but *Salvia azurea* is commonly found. Others, such as *Desmodium canadense, Gaura longiflora, Gentiana puberulenta,* and *Lotus purshianus,* may be locally common.

In addition to herbaceous forbs, several woody species may be found in the prairie, particularly when a site has been free of fire for a number of years. *Juniperus virginiana* is the only native tree found commonly in many prairies, particularly in areas where grazing is frequent. *Rhus glabra* is usually the most common shrub, often forming a broad transition zone between prairie and adjacent woodlands. *Symphoricarpos occidentalis* and *S. orbiculatus* are other common constituents of this zone of shrubby plants. Several shrub-like plants are also found in the prairie proper — *Amorpha canescens, Ceanothus herbaceus,* and *Rosa arkansana* — though they rarely attain the size of their transition zone counterparts. *Toxicodendron radicans* is an example of a woody vine found in prairies bordering woodlands, but it occasionally assumes a more upright habit in this community.

Disturbed areas in prairies, such as gopher mounds, exposed ridgetops, and cowpaths, tend to have a flora somewhat distinct from their surroundings, and form a somewhat separate community within this habitat. Annual and biennial "fugitive species" make up the bulk of this vegetation, which includes more-or-less weedy species such as *Cassia chamaecrista, Conyza canadensis, Euphorbia dentata, E. maculata, E. nutans, Lepidum*

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Woody vines are best represented in the oak woodland community and occasionally make up the greater part of the ground cover. *Parthenocissus vitacea* is particularly abundant, along with *Celastrus scandens, Menispermum canadense, Smilax hispida,* and *Toxicodendron radicans.*

Grasses and sedges are not major components of the woodland floor vegetation. *Carex cf. aggregata, C. amphibola, C. blanda, Elymus villosus, Festuca obtusa,* and *Muhlenbergia mexicana* are a few of the more common of this group, but none is ever found in particular abundance.

The forb flora of the eastern deciduous forest, on the other hand, is quite rich and diverse. In the early spring, *Dicentra cucullaria* and *Erythronium albidum* occasionally form an extensive ground cover on deep woodland slopes. *Arisaema triphyllum, Osmorhiza longistylis, Polygonatum biflorum, Smilacina stellata,* and *Viola sororia* are other frequently-found constituents of the spring woodland flora. Late spring to early summer brings a peak in flowering plants in the oak woodland. Along with most of the shrubs and vines, a number of herbaceous species, including *Botrychium virginianum, Cryptotaenia canadensis, Desmodium glutinosum, Galium circaezans, Phryma leptostachya, Sanicula canadensis, S. gregaria, Silene stellata, Smilax herbacea, Teucrium canadense* var. *canadense, Thalictrum dasycarpum* and *Triosteum perfoliatum* may be found in flower at this time. In the late summer and fall, the understory flora becomes relatively sparse, with a few sturdy herbaceous forbs such as *Agastache nepetoides, Agrimonia pubescens, Campanula americana, Laportea canadensis, Scrophularia marilandica* and *Verbesina alternifolia* present, along with more delicate annuals such as *Acalypha rhomboidea, Amphicarpaea bracteata,* and *Chenopodium standleyanum.*

Floodplain forest community

Floodplain woodlands occur in poorly drained lowlands along streams and creeks throughout the county, and are subject to seasonal flooding. The dominant trees in this community include *Acer negundo, Acer saccharinum, Celtis occidentalis, Fraxinus pennsylvanica;* occasional stands of *Gleditsia triacanthos, Juglans nigra, Ulmus americana,* and the introduced *Morus alba* are also present. In particularly low, disturbed places closer to the water's edge, *Populus deltoides, Salix amygdaloides,* and *S. exigua* may be common or even dominant. Other typical woody vegetation includes shrubby plants such as *Euonymus atropurpureus, Prunus virginiana, Ribes missouriense,* and *Sambucus canadensis,* along with vines such as *Parthenocissus vitacea* and *Vitis riparia.*

Grasses and sedges are far better represented in this community than in the previous one. In some floodplain forests, *Leersia virginica* forms a thick and extensive ground cover. Other frequent species include *Carex amphibola, C. blanda, C. davisii, Cinna arundinacea, Elymus virginicus* var. *virginicus, Muhlenbergia bushii, Muhlenbergia frondosa,* and *Muhlenbergia racemosa.*

As floodplain forests are characterized by a great degree of disturbance, much of the understory forb flora is typified by weedy annual and biennial species of shaded places, such as *Acalypha rhomboidea, A. virginica, Chenopodium gigantospermum, Hackelia virginiana, Pilea pumila, Ranunculus abortivus,* and *Sicyos angulatus.* Perennial, non-weedy herbs are well-represented in this community too, and include *Eupatorium rugosum, Leonurus cardiaca, Rudbeckia laciniata, Teucrium canadense* var. *canadense, Verbena urticifolia* and *Viola pratincola. Urtica dioica* is a very aggressive weedy perennial that often forms large colonies in this habitat.

The floras of the floodplain and eastern deciduous forests frequently intergrade. Patches of oak often occur on high bluffs above floodplain woodland along the Blue River and its west fork, particularly in sites associated with glacial till. In other better-drained riparian woodlands, oak and hickory may be absent, yet many of the oak understory components are present. Additionally, the bottomlands of oak woodland often contain a flora typical of less-disturbed riparian woodlands. If a particular plant is found frequently in both habitats, it is included in oak forest (OF) in Table II if it is most frequently encountered on upland banks or slopes, or in floodplain forest (FF) if it is usually found in more mesic bottoms.

"Man-made" habitats (disturbed ground)

"Disturbed ground" includes all areas in which the ground cover has been primarily affected by human activity. This is an extremely broad designation including roadside ditches, lawns, gardens, abandoned fields, feedlots, pastures, overgrazed rangeland, thickets, shelterbelts, waste areas, and the like.

Many plants typical of prairie habitats occur commonly in these areas, particularly in roadside ditches that bordered prairies at one time. In many cases, the adjacent prairie may have been destroyed or become overgrazed, and these ditches are the only clue as to what the native vegetation in the area was like. In cases such as this, a species occurring in a relatively undisturbed roadside ditch is recorded as a member of the natural habitat from which it originated. All other species of disturbed places are designated by "DG" in the annotated list.

The ground cover of most disturbed habitats is typically seeded grasses such as *Agropyron intermedium* or *Bromus inermis* and/or a bevy of native and introduced, annual and perennial grasses and "weeds." The range of vegetation types and species common to each type of disturbance is extensive and therefore, aside from the following category, no attempt has been made to provide more than a general description of this community, which presently characterizes the vast majority of the land in Seward County.

Prairie restorations

Three small (several-hectare) prairie re-seedings are known in the county (SE ¼ S34, T11N R3E; NW ¼ S8, T10N R4E; and NW ¼ S22, T10N R4E). The first two are on private land and are approximately 30 years old. The forb flora of the two is very similar, and has spread to a limited degree outside the bounds of these restorations. The third is at the Twin Lakes Wildlife Management Area and is apparently younger, with a more limited array of forb species.

Some species known infrequently elsewhere in the county, such as *Desmodium canadense, Lotus purshianus,* and *Rudbeckia hirta,* are common in some of the restorations. Other species are found here that are native to the Great Plains, but are not known to occur naturally in the county. *Baptisia lactea, Eryngium yuccifolium, Helianthus mollis, Liatris pycnostachya,* and *Penstemon digitalis* and are among the most conspicuous examples. The two older restorations appear to be wildflower-rich native prairie remnants upon first glance, but a closer examination reveals large populations of cultivated legumes such as *Lotus corniculatus* and *Trifolium pratense*. Nevertheless, because the species of these tracts are likely to persist and even spread, and could be mistaken for relicts by those not familiar with the flora of the county, they are afforded a separate category here.

ASSESSING THE VEGETATION

Because no botanical records have been kept for Seward County, the original flora is not easily determined. A few old collections have given a very sketchy picture of what flora was here before the advent of European settlers, but the record is far from complete. The vegetation map (Fig. 3, page 111) is an attempt to present the flora of the county as it was prior to the arrival of the early settlers, and is based on the remaining natural flora and on accounts by the early surveyors from about 1850 (on microfilm at the Nebraska State Historical Society). The modern flora of this map differs from the original flora in that the zone of floodplain woodland was probably less extensive and the oak woodlands were probably more widespread. The surveyors' reports indicate that certain stretches of the Blue River and its tributaries were at one time virtually treeless. Most of this area is bordered by floodplain woodland today, due no doubt to the absence of prairie fires in recent times. A large amount of lumbering apparently occurred in the oak woodlands in the county, particularly those near Garland, from which firewood was taken for use at the salt works in Lincoln one hundred years ago (Olney, 1887). Despite this, much of the original woodland remains intact, though the ratio of oak to hickory is presently much greater than the 3:1 suggested by Weaver (1965) for typical, undisturbed oak-hickory woodlands. A small area of uncut gallery forest is known from S28, T12N R4E. Several old-growth hickories are found nearby.

As noted earlier, the vast majority of the native vegetation in Seward County, particularly the prairies, has disappeared as a result of agriculture. The Nebraska Conservation Needs Committee (1969) reported 14,859 ha, or about 10% of the county, was in native grass (rangeland) in 1967, but over 12,000 of these were noted as having a plant composition "in need of improvement." Only about 12% of the native grassland in the county was reported as undisturbed or grazed in accordance with good range management practices. The inventory also reported 2436 ha (ca 1.6% of the county) in woodland, about a third of which was grazed. All in all, representative stands of native vegetation in Seward County, as in much of southeastern Nebraska, are few and far between.

The majority of the remaining native stands of grassland and oak forest in the county are located in the loess hills east of the glacial moraine, where the topography often makes farming unsuitable. Virtually all native prairie in the relatively flat loess plain west of the Blue River has been annihilated. Consequently, most of the habitat descriptions and the species list in this paper are compiled from collections of the eastern half of the county.

Though few data are available for the western half of Seward County, it is assumed that the prairie that existed there was not appreciably different in species composition from the prairie remnants in the eastern part. A small prairie remnant in S17, T11N R2E is being studied, and so far no species that are unknown in the eastern half of the county have been found. Because few suitable relicts have been located west of the Blue River, no indices of similarity have yet been calculated to compare the flora of these two halves, though sampling is currently being carried out in several prairies in hope of resolving this problem. Edaphic differences may be responsible for a few differences observed in the flora of the two halves, such as the presence of (*Buchloë dactyloides*), a species of western phytogeographic affinity, in only the west half of the county, where it is apparently native and was probably quite extensive at one time. Two prairie remnants just over the county line in southeastern York County have a forb composition similar to that of several prairies in eastern Seward County.

The wetland flora of the western half of county, on the other hand, is far better represented than in the county as a whole. Collections from marshes and other wetlands throughout the county indicate a stronger separation between east and west than is evident in the prairie flora, though this may be due to topographic rather than biogeographic factors.

East of the Blue River, the wetland flora is basically riparian, and its components are those described in the marsh/riparian section of this paper. Most of these plants are also present in two marshes studied near Goehner and Utica, in addition to a number of species not present in the eastern wetlands. This may be due to the fact that extensive marshland is found only in the most poorly drained parts of the county (i.e., in the western half), and many wetland habitats in the eastern half are man-made and

relatively young. The additional species in the western half include *Bacopa rotundifolia, Elatine triandra, Eleocharis acicularis, Heteranthera limosa, Marsilea vestita, Sagittaria graminea, Stachys palustris,* and *Teucrium canadense* var. *boreale*. Additionally, several collections made from the Utica site in the early 1950's document that *Sagittaria rigida* and *Utricularia vulgaris* were once components of this flora. Despite this, there is no conclusive evidence that supports a natural west-east phytogeographic separation of the wetland flora, even though some of these species (*Marsilea vestita, Sagittaria graminea*) appear nearly restricted in range in Nebraska to marshes of the loess plain region.

Lacking substantial specimen evidence for the west half of the county, it is difficult to determine whether a floristic boundary exists that is analogous to the physiographic boundary proposed by Fenneman (1931), but it is likely that there is not. It is not difficult, however, to assess the future of native vegetation tracts in Seward County. Several sites have been destroyed since the beginning of this study, and others continue to lose species due to poor management. The county's spraying program has caused some roadside prairie refugia to disappear. Attempts have been made to preserve some habitats; the State Game and Parks Commission has purchased a large tract of oak woodland north of Garland and a portion of the Utica rainwater basins within the last five years (Fig. 2). Despite these efforts, the native flora is disappearing. It is hoped that this paper will serve as a record of the vegetation of Seward County as it once existed, and will assist in future studies of the changes in the vegetation zones of this area and their components.

THE VASCULAR FLORA OF SEWARD COUNTY, NEBRASKA

The following list (Table II) contains all species of vascular plants occurring in Seward County, except for cultivated species that do not escape or reproduce significantly in the wild. Plants are arranged alphabetically by family and species, and are grouped according to division. Nomenclature conforms to Great Plains Flora Association (1986), referred to as *"Flora GP"* from here on. Subspecies and varieties are included where these entities are considered distinct by the author.

Along with the species name, information concerning collection status, habit, provenance, flowering phenology, habitats, and abundance within the habitat is included. To conserve space, a series of symbols has been employed for each of these categories. Categories and their symbols are explaind below:

Name

When available, common names are included after the Latin name for each species in the list, and are taken from the Great Plains Flora Association (1977) [*"Atlas"*], *Flora GP,* and other regional keys. If a plant in the list appears under a different name than that given in the *Atlas,* the *Atlas* synonym is provided in parentheses.

Collection Status (S)

1 Species reported for Seward County in the *Atlas* and recollected by the author.
2 Species not reported for Seward County, but collected by author and specimen deposited at *NEB*.
3 Species reported in the *Atlas*, not recollected by author.
4 Species not reported for Seward County in the *Atlas*, or reported under an erroneous name, collected by someone other than the author.

Habit (H)

A	Annual herb	**T**	Tree
B	Biennial herb	**S**	Shrub
P	Perennial herb	**V**	Woody Vine

Provenance (P)

N	Native	**I**	Introduced

Flowering phenology (Fl)

This is represented by two numbers, indicating months in which the plant begins to flower (or bear reproductive structures in the case of non-flowering plants) and ends flowering. The months of February through September are represented by the numerals 2-9; October is "0" and November "1", hence "71" is interpreted as "plant flowering July through November." Anthesis data is from the *Flora GP* and other regional floras, and is modified, when possible, to fit local field observations.

Habitat (Hbtat)

AQ	Aquatic	**FM**	Floodplain Prairie and Meadow
SA	Seepage Area	**OF**	Eastern Deciduous (Oak) Forest
MR	Marsh/Riparian	**FF**	Floodplain Forest
TP	Tall-grass Prairie	**DG**	Disturbed Ground
SP	Sandy Prairie	**PR**	Prairie Restoration

Abundance (ab)

This follows the primary habitat designation in the list, and indicates the frequency of occurrence for this plant in this particular habitat.

c Common, relatively abundant in most of the appropriate sites in the county.
o Occasional, may be locally common in some sites, but not all sites in the county.
i Infrequent, known to occur sporadically at a few sites in the county, or rarely encountered in the study but possibly more widespread and overlooked.
r Rare, known only from one or two stations in the county and likely not much more widespread.

Other habitats in which a plant is frequently found are included after the primary habitat in the list. If habitat data was not provided for a plant of status 3 or 4, the most likely habitat is given, followed by a question mark.

(TABLE II *on next page*) **(TEXT** *continued on page 112*)

TABLE II. Vascular flora of Seward County, Nebraska

	S	H	Pr	Fl	Hbtat/ab
DIVISION SPHENOPHYTA					
EQUISETACEAE (Horsetail Family)					
Equisetum arvense L., field horsetail	1	P	N	4	SAo, MR
Equisetum hyemale L., common scouring rush	2	P	N	40	MRi
Equisetum laevigatum A. Br., smooth scouring rush	2	P	N	58	TPc, FM, DG
DIVISION PTERIDOPHYTA					
MARSILEACEAE (Pepperwort Family)					
Marsilea vestita Hook. & Grev., western water clover	2	P	N	80	MRr
OPHIOGLOSSACEAE (Adders's-tongue Family)					
Botrychium virginianum (L.) Sw., rattlesnake fern	2	P	N	46	OFo
POLYPODIACEAE (True Fern Family)					
Cystopteris fragilis (L.) Bernh., fragile fern	1	P	N	69	OFr
SALVINIACEAE (Water Fern Family)					
Azolla mexicana Presl, mosquito fern	3	A	N	71	MRr
DIVISION PINOPHYTA					
CUPRESSACEAE (Cypress Family)					
Juniperus virginiana L., eastern red cedar	2	T	N	45	TPo, DG
DIVISION MAGNOLIOPHYTA					
ACERACEAE (Maple Family)					
Acer negundo L., box elder	2	T	N	45	FFc
Acer saccharinum L., silver maple	1	T	N	24	FFo
ALISMATACEAE (Water-plantain Family)					
Alisma cf. *subcordatum* Raf., water plantain	3	P	N	69	MRr
Alisma triviale Pursh, water plantain (*A. plantago-aquatica*)	2	P	N	69	MRo
Echinodorus rostratus (Nutt.) Engelm., burhead	2	A	N	70	MRi
Sagittaria brevirostra Mack. & Bush (*S. engelmanniana*), arrowhead	1	P	N	69	MRc
Sagittaria calycina Engelm. (*S. montevidensis, misapplied*), arrowhead	1	A	N	50	MRo
Sagittaria graminea Michx.	1	P	N	69	MRi
Sagittaria latifolia Willd., arrowhead	2	P	N	69	SAo, MR
Sagittaria rigida Pursh	3	P	N	69	MRr
AMARANTHACEAE (Pigweed Family)					
Amaranthus albus L., tumbleweed	1	A	N	60	DGi
Amaranthus graecizans L., prostrate pigweed	2	A	N	70	DGo
Amaranthus hybridus L., slender pigweed	3	A	I	60	DGi
Amaranthus retroflexus L., rough pigweed	2	A	N	70	DGc
Amaranthus rudis Sauer, water hemp	1	A	N	60	DGc, MR
ANACARDIACEAE (Cashew Family)					
Rhus glabra L., smooth sumac	2	S	N	56	TPo
Toxicodendron radicans (L.) O. Ktze. ssp. *negundo* (Greene) Gillis, poison ivy	2	V	N	5	OFc, DG, TP
Toxicodendron rydbergii (Small) Greene	2	S	N	56	TPi
APIACEAE (Parsley Family)					
Cicuta maculata L., water hemlock	2	P	N	70	SAi
Conium maculatum L., poison hemlock	2	B	I	57	DGo, OF
Cryptotaenia canadensis (L.) DC., honewort	2	P	N	57	OFo
Daucus carota L., wild carrot, Queen Anne's lace	2	B	I	58	DGi
Eryngium yuccifolium Michx., button snakeroot	2	P	I	70	PRo
Lomatium foeniculaceum (Nutt.) Coult. & Rose var. *daucifolium* (T. & G.) Cronq., wild parsley	2	P	N	35	TPo
Osmorhiza longistylis (Torr.) DC. var. *longistylis*, anise root	2	P	N	46	OFr
Osmorhiza longistylis (Torr.) DC. var. *villicaulis* Fern., anise root	2	P	N	46	OFo, FF
Pastinaca sativa L., parsnip	2	B	I	57	DGi
Sanicula canadensis L.	1	B	N	57	OFc, FF, DG
Sanicula gregaria Bickn., black snakeroot	2	P	N	57	OFo
APOCYNACEAE (Dogbane Family)					
Apocynum cannabinum L. (including *A. sibiricum*), hemp dogbane	2	P	N	68	DGc, FM, TP
ARACEAE (Arum Family)					
Acorus calamus L., sweet flag, calamus	2	P	I	58	MRr
Arisaema triphyllum (L.) Schott, Jack-in-the-pulpit	1	P	N	46	OFo
ASCLEPIADACEAE (Milkweed Family)					
Asclepias incarnata L., swamp milkweed	1	P	N	69	FMo, MR
Asclepias lanuginosa Nutt., woolly milkweed	2	P	N	57	TPr
Asclepias stenophylla A. Gray narrow-leaved milkweed	2	P	N	68	TPi
Asclepias sullivantii Engelm., smooth milkweed	2	P	N	68	FMo, TP, DG
Asclepias syriaca L., common milkweed	1	P	N	58	DCc, TP
Asclepias tuberosa L. ssp. *interior* Woods., butterfly milkweed	1	P	N	68	TPi
Asclepias verticillata L., whorled milkweed	2	P	N	68	TPc
Asclepias viridiflora Raf., green milkweed	2	P	N	68	TPo

TABLE II—*(Continued from page 100)*

	S	H	Pr	Fl	Hbtat/ab
ASTERACEAE (Sunflower Family)					
Achillea millefolium L., yarrow	2	P	N	56	DGo, TP
Ambrosia artemisiifolia L., common ragweed	1	A	N	70	DGc
Ambrosia psilostachya DC., western ragweed	1	P	N	70	TPc
Ambrosia trifida L., giant ragweed	1	A	N	80	DGc
Antennaria neglecta Greene, field pussytoes	1	P	N	35	TPo
Arctium minus, Bernh., burdock	2	B	I	79	DGo
Artemisia dracunculus L., silky wormwood	2	P	N	89	TPi
Artemisia ludoviciana Nutt. var. *ludoviciana*, white sage	1	P	N	80	TPc
Artemisia ludoviciana Nutt. var. *mexicana* (Willd.) Fern., white sage	2	P	I?	80	TPi, PR
Aster ericoides L., heath aster	1	P	N	90	TPc
Aster hesperius Gray, panicled aster	1	P	N	80	TPr
Aster oblongifolius Nutt., aromatic aster	2	P	N	90	TPo
Aster sericeus Vent., silky aster	2	P	N	90	TPi
Aster simplex Willd. var. *ramosissimus* (T. & G.) Cronq., panicled aster	1	P	N	80	TPi
Aster simplex Willd. var. *simplex*, panicled aster	1	P	N	80	DGc, TP, FM
Bidens cernua L., nodding beggar-ticks	1	A	N	80	MRo, SA, FF
Bidens comosa (A. Gray) Wiegand, begger-ticks	2	A	N	80	MRi
Bidens cf. *connata* Muhl. *ex* Willd., sticktight	3	A	N	90	MRr
Bidens frondosa L., beggar-ticks	1	A	N	80	MRo
Bidens vulgata Greene, beggar-ticks	1	A	N	80	MRo, FF
Boltonia asteroides (L.) L'Her. var. *latisquama* (A. Gray) Cronq., boltonia	1	P	N	80	DGi
Cacalia plantaginea (Raf.) Shinners (*C. tuberosa*), Indian plantain	1	P	N	68	TPo, FM
Carduus nutans L., musk thistle	1	B	I	57	DGc
Centaurea cyanus L., bachelor's button	4	A	I	58	DGr
Chrysanthemum leucanthemum L., ox-eye daisy	2	P	I	57	DGi
Cichorium intybus L., chicory	2	P	I	60	DGo
Cirsium altissimum (L.) Spreng., tall thistle	1	B	N	89	DGo, TP, FF
Cirsium arvense (L.) Scop., Canada thistle	2	P	I	57	DGr
Cirsium flodmanii (Rybd.) Arthur, Flodman's thistle	1	P	N	79	TPo
Cirsium undulatum (Nutt.) Spreng., wavyleaf thistle	1	P	N	67	TPi
Cirsium vulgare (Savi) Ten., bull thistle	2	B	I	79	DGo, OF
Conyza canadensis (L.) Cronq., horseweed	1	A	N	69	DGc, TP
Conyza ramosissima Cronq., spreading fleabane	2	A	N	69	DGi
Coreopsis tinctoria Nutt., plains coreopsis	1	A	N	69	DGo, MR
Dyssodia papposa (Vent.) Hitchc., fetid marigold	1	A	N	79	DGo
Echinacea angustifolia DC., purple coneflower	1	P	N	67	TPo
Eclipta prostrata (L.) L. (*E. alba*), yerba-de-tajo	2	A	N	80	MRi
Erechtites hieracifolia (L.) Raf. *ex* DC., burnweed	2	A	N	80	FMo, FF
Erigeron annuus (L.) Pers., annual fleabane	2	A	N	58	DGo, TP
Erigeron philadelphicus L., Philadelphia fleabane	2	B	N	57	FMi
Erigeron strigosus Muhl. *ex* Willd., daisy fleabane	2	A	N	58	TPc, DG
Eupatorium altissimum L., tall joe-pye-weed	2	P	N	89	DGi
Eupatorium rugosum Houtt., white snakeroot	1	P	N	79	FFc
Gnaphalium obtusifolium L., fragrant cudweed	2	A	N	70	TPr, DG
Grindelia squarrosa (Pursh) Dun. var. *squarrosa*, gumweed	1	B	N	70	DGo
Haplopappus ciliatus (Nutt.) DC., goldenweed	2	A	I?	80	DGr
Helenium autumnale L., sneezeweed	4	P	N	80	FM?
Helianthus annuus L., common sunflower	2	A	N	79	DGc
Helianthus grosseserratus Martens, sawtooth sunflower	2	P	N	70	FMo, TP, DG
Helianthus maxmilianii Schrad., Maximilian sunflower	2	P	N	80	FMo, TP, DG
Helianthus mollis Lam., ashy sunflower	2	P	I	70	PRo
Helianthus rigidus (Cass.) Desf., ssp. *rigidus*, stiff sunflower	2	P	N	79	TPc
Helianthus tuberosus L., Jerusalem artichoke	1	P	N	80	FMo, DG
Heliopsis helianthoides (L.) Sweet var. *scabra* (Dun.) Fern., ox-eye	1	P	N	70	TPo
Hieracium longipilum Torr., longhair hawkweed	2	P	N	79	TPo
Iva annua L., marsh elder	1	A	N	80	FMr
Kuhnia eupatorioides L. var. *corymbulosa* T. & G., false boneset	1	P	N	79	TPc
Lactuca canadensis L., wild lettuce	2	B	N	79	DGo, FF
Lactuca ludoviciana (Nutt.) Ridd., western wild lettuce	1	B	N	69	TPo
Lactuca oblongifolia Nutt., blue lettuce	2	P	N	69	DGi
Lactuca serriola L., prickly lettuce	1	A	I	69	DGc
Liatris aspera Michx., rough gayfeather	1	P	N	80	TPo
Liatris punctata Hook., dotted gayfeather	1	P	N	70	TPc, SP
Liatris pycnostachya Michx., tall blazing star	2	P	I	79	PRo

ASTERACEAE (Sunflower Family)—*(Continued on page 102)*

TABLE II—*(Continued from page 101)*

	S	H	Pr	Fl	Hbtat/ab
ASTERACEAE (Sunflower Family)—*(Continued)*					
Liatris squarrosa (L.) Michx. var. *glabrata* (Rydb.) Gaiser, gayfeather	2	P	I	79	PRr
Matricaria matricarioides (Less.) Porter, pineapple weed	2	A	I	47	DGi
Microseris cuspidata (Pursh) Sch.-Bip., false dandelion	2	P	N	45	TPi
Prenanthes aspera Michx., white rattlesnake root	1	P	N	80	TPi
Ratibida columnifera (Nutt.) Woot. & Standl., prairie coneflower	2	P	N	69	DGi, TP, PR
Ratibida pinnata (Vent.) Barnh., grayhead prairie coneflower	4	P	I?	69	DGr
Rudbeckia hirta L., black-eyed susan	2	B	N	59	TPo, PR
Rudbeckia laciniata L., goldenglow	1	P	N	79	FFi
Rudbeckia triloba L., brown-eyed susan	2	P	I?	70	DGi
Senecio plattensis Nutt., prairie ragwort	1	B	N	46	TPo
Silphium integrifolium Michx. var. *laeve* T. & G. (*S. speciosum*), rosinweed	1	P	N	69	DGo, TP, FM
Silphium laciniatum L., compass plant	2	P	N	69	DGr, PR
Silphium perfoliatum L., cup plant	2	P	N	89	FMi
Solidago canadensis L. var. *gilvocanescens* Rydb., Canada goldenrod	1	P	N	89	TPi
Solidago canadensis L. var. *hargeri* Fern., Canada goldenrod	1	P	N	89	TPi
Solidago canadensis L. var. *scabra* T. & G., Canada goldenrod	1	P	N	89	TPc
Solidago gigantea Ait., late goldenrod	1	P	N	80	FMo, TP
Solidago missouriensis Nutt., Missouri goldenrod	1	P	N	80	TPc
Solidago mollis Bartl., soft goldenrod	2	P	N	80	TPr
Solidago nemoralis Ait., gray goldenrod	2	P	N	80	TPi
Solidago rigida L. var. *rigida*, rigid goldenrod	1	P	N	80	TPo
Solidago speciosa Nutt. var. *rigidiuscula* T. & G., showy goldenrod	2	P	N	80	TPo
Sonchus asper (L.) Hill, prickly sow thistle	2	A	I	59	DGo
Taraxacum laevigatum (Willd.) DC., red-seeded dandelion	2	P	I	40	DGi
Taraxacum officinale Weber, dandelion	1	P	I	40	DGc
Tragopogon dubius Scop., goat's beard	2	B	I	57	DGc
Verbesina alternifolia (L.) Britt., wingstem	2	P	N	80	OFi
Vernonia baldwinii Torr. ssp. *interior* (Small) Faust, western ironweed	1	P	N	79	DGo
Vernonia fasciculata Michx. ssp. *fasciculata*, ironweed	1	P	N	70	FMo
Xanthium strumarium L., cocklebur	1	A	I	70	DGo
BIGNONIACEAE (Bignonia Family)					
Catalpa speciosa Warder, catalpa	2	T	I	57	FFi
BORAGINACEAE (Borage Family)					
Echium vulgare L., blueweed	2	B	I	68	DGi
Hackelia virginiana (L.) I. M. Johnst., stickseed	2	B	N	69	FFc, DG, OF
Lithospermum incisum Lehm., fringed puccon	1	P	N	45	TPo
Onosmodium molle Michx var. *occidentale* (Mack.) Jonst., false gromwell	2	P	N	67	TPi
BRASSICACEAE (Mustard Family)					
Arabidopsis thaliana (L.) Heynh., mouse-ear cress	2	A	I	46	DGr
Arabis hirsuta (L.) Scop. var. *pycnocarpa* (Hopkins) Rollins, rock cress	2	B	N	57	TPo
Barbarea vulgaris R. Br., winter cress	2	B	I	46	DGi, FM
Brassica kaber (DC.) Wheeler, charlock	4	A	I	57	DGr
Camelina microcarpa Andrz. *ex* DC., smallseed falseflax	2	A	I	46	DGr
Capsella bursa-pastoris (L.) Medic., shepherd's purse	1	A	I	30	DGc
Cardaria chalepensis (L.) Handel-Mazzetti, lens-padded hoary cress	2	P	I	48	DGi
Cardaria draba (L.) Desv., hoary cress	1	P	I	48	DGo
Chorispora tenella (Pall.) DC., blue mustard	2	A	I	46	DGi
Descurainia pinnata (Walt.) Britt. ssp. *brachycarpa* (Richards.) Detling, tansy mustard	1	A	N	38	DGo
Descurainia sophia (L.) Webb, flixweed	2	A	I	57	DGi
Draba reptans (Lam.) Fern., white whitlowort	2	A	N	35	TPo
Erysimum repandum L., bushy wallflower	1	A	I	57	DGo
Hesperis matronalis L., dame's rocket	2	P	I	58	DGo
Lepidium densiflorum Schrad., peppergrass	2	A	N	36	DGc
Lepidium virginicum L., peppergrass	2	A	N	60	TPi
Rorippa austriaca (Crantz) Bess., Austrian field cress	2	P	I	59	MRr
Rorippa palustris (L.) Bess. ssp. *glabra* (Schulz) Stuckey var. *fernaldiana* (Butt. & Abbe) Stuckey, bog yellow cress	1	A	N	50	MRc
Rorippa sessiliflora (Nutt.) Hitchc., yellow cress	1	A	N	50	MRi
Rorippa sinuata (Nutt.) Hitchc., spreading yellow cress	1	P	N	48	MRo, DG
Sisymbrium loeselii L., tall hedge mustard	2	A	I	58	DGo
Thlaspi arvense L., field penny cress	1	A	I	46	DGc

TABLE II—*(Continued from page 102)*

	S	H	Pr	Fl	Hbtat/ab
CACTACEAE (Cactus Family)					
Opuntia macrorhiza Engelm., prickly pear	2	P	N	56	TPr
CAESALPINIACEAE (Caesalpinia Family)					
Cassia chamaecrista L. (*C. fasciculata*), showy partridge pea	1	A	N	60	DGo, TP
Cassia marilandica L., Maryland senna	2	P	N	79	TPr
Gleditsia triacanthos L., honey locust	2	T	N	46	FFo, OF
CAMPANULACEAE (Bellflower Family)					
Campanula americana L., tall bellflower	2	A	N	69	OFo, FF
Lobelia siphilitica L., blue cardinal flower	2	P	N	80	SAi, MR
Triodanis leptocarpa (Nutt.) Nieuw.	1	A	N	56	TPi
Triodanis perfoliata (L.) Nieuw., Venus' looking glass	1	A	N	57	TPo, SP
CANNABACEAE (Hemp Family)					
Cannabis sativa L., hemp, marijuana	1	A	I	70	DGo
Humulus lupulus L. var. *pubescens* E. Small, hops	2	P	N	79	DGr
CAPPARACEAE (Caper Family)					
Polanisia dodecandra (L.) DC. ssp. *trachysperma* (T. & G.) Iltis, clammy weed	2	A	I?	50	DGr
CAPRIFOLIACEAE (Honeysuckle Family)					
Sambucus canadensis L., common elderberry	1	S	N	58	FMo, FF, TP
Symphoricarpos occidentalis Hook., wolfberry	1	S	N	67	OFc, TP
Symphoricarpos orbiculatus Moench, coralberry, buckbrush	1	S	N	78	TPo
Triosteum perfoliatum L., horse gentian	2	P	N	67	OFi
CARYOPHYLLACEAE (Pink Family)					
Arenaria serpyllifolia L., thyme-leaved sandwort	2	A	I	46	DGr
Cerastium vulgatum L., mouse-ear chickweed	2	P	I	46	DGi
Dianthus armeria L., Deptford pink	2	A	I	57	SPi, DG
Holosteum umbellatum L., jagged chickweed	2	A	I	45	DGi
Saponaria officinalis L., bouncing bet	2	P	I	69	DGo
Silene antirrhina L., sleepy catchfly	2	A	N	58	TPo, DG
Silene pratensis (Rafn.) Godr. & Gren. (*Lychnis alba*), white campion	2	P	I	59	DGr
Silene stellata (L.) Ait. f., starry campion	2	P	N	68	OFi
Stellaria media (L.) Cyr., common chickweed	1	A	I	30	DGc
CELASTRACEAE (Staff Tree Family)					
Celastrus scandens L., American bittersweet	1	V	N	57	OFo
Euonymus atropurpureus Jacq., wahoo, burning bush	2	S	N	57	FFi, OF
CERATOPHYLLACEAE (Hornwort Family)					
Ceratophyllum demersum L., hornwort	1	P	N	59	AQi
CHENOPODIACEAE (Goosefoot Family)					
Atriplex subspicata (Nutt.) Rydb., spearscale	2	A	N	69	DGr
Chenopodium berlandieri Moq., pitseed goosefoot	2	A	N	80	TPc, DG
Chenopodium gigantospermum Aellen (*C. hybridum*, misapplied), maple-leaved goosefoot	1	A	N	79	FFc, OF
Chenopodium missouriense Aellen	1	A	N	90	DGo
Chenopodium pratericola Rybd. (*C. desiccatum*, misapplied), narrow-leaved goosefoot	2	A	N	79	DGo
Chenopodium standleyanum Aellen	2	A	N	79	OFo, FF
Chenopodium cf. strictum Roth	2	A	I?	89	DGi
Kochia scoparia (L.) Schrad., summer cypress	1	A	I	70	DGc
Monolepis nuttalliana (R. & S.) Greene, poverty weed	2	A	N	49	DGr
Salsola iberica Senn. & Pau, Russian thistle	2	A	I	80	DGr
CLUSIACEAE (St. John's-wort Family)					
Hypericum perforatum L., St. John's wort	2	P	I	68	DGo, TP
COMMELINACEAE (Spiderwort Family)					
Commelina communis L., dayflower	2	A	I	79	DGi
Tradescantia bracteata Small, spiderwort	2	P	N	57	FMo
CONVOLVULACEAE (Morning Glory Family)					
Calystegia macounii (Greene) Brummitt (*Convolulus sepium*, in part)	2	P	N	56	TPo, DG
Calystegia sepium (L.) Br. ssp. *angulata* Brummitt (*Convolvulus sepium*, in part), hedge bindweed	2	P	N	68	DGo, FM
Convolvulus arvensis L., field bindweed	1	P	I	68	DGc
Ipomoea hederacea Jacq., ivyleaf morning glory	3	A	I	60	DGi
Ipomoea purpurea (L.) Roth, common morning glory	2	A	I	60	DGi
CORNACEAE (Dogwood Family)					
Cornus drummondii C. A. Mey., gray dogwood	1	S	N	47	DGo, OF, FM
CRASSULACEAE (Stonecrop Family)					
Penthorum sedoides L., ditch stonecrop	2	P	N	79	MRi, SA
CUCURBITACEAE (Cucumber Family)					
Echinocystis lobata (Michx.) T. & G., mock cucumber	2	A	N	60	FMo
Sicyos angulatus L., bur cucumber	1	A	N	59	FFc, OF

TABLE II—*(Continued from page 103)*

	S	H	Pr	Fl	Hbtat/ab
CUSCUTACEAE (Dodder Family)					
Cuscuta glomerata Choisy, cluster dodder	2	A	N	79	FMi
Cuscuta polygonorum Engelm., smartweed dodder	2	A	N	60	MRi
CYPERACEAE (Sedge Family)					
Carex cf. aggregata Mack., glomerate sedge	2	P	N	56	OFo
Carex amphibola Steud. var. *turgida* Fern.	2	P	N	47	FFc, OF
Carex atherodes Spreng., slough sedge	3	P	N	57	MRr
Carex bicknellii Britt., Bicknell's sedge	2	P	N	47	TPo
Carex blanda Dew., woodland sedge	1	P	N	47	OFo, FF
Carex brevior (Dew.) Mack. *ex* Lunell, fescue sedge	1	P	N	56	TPc, FM
Carex cephalophora Willd. var. *cephalophora*, woodbank sedge	2	P	N	58	TPo
Carex cristatella Britt.	2	P	N	57	FMo
Carex davisii Schwein. & Torr., Davis' sedge	2	P	N	57	FFo
Carex eleocharis Bailey, needleleaf sedge	2	P	N	46	SPr
Carex gravida Bailey var. *gravida*	2	P	N	57	TPc
Carex gravida Bailey var. *lunelliana* (Mack.) Herm.	2	P	N	57	TPo, FM
Carex heliophila Mack.	1	P	N	46	TPi, SP
Carex laeviconica Dew., smoothcone sedge	1	P	N	57	FMo
Carex lanuginosa Michx., woolly sedge	1	P	N	57	FMo
Carex meadii Dew., Mead's sedge	1	P	N	46	TPc
Carex molesta Mack.	1	P	N	57	FMo
Carex praegracilis W. Boott.	2	P	N	46	SPo
Carex stipata Muhl. *ex* Willd., saw-beak sedge	2	P	N	57	SAo
Carex stricta Lam.	2	P	N	57	FMo
Carex tribuloides Wahl.	2	P	N	58	FMi
Carex vulpinoidea Michx., fox sedge	1	P	N	57	FMc
Cyperus erythrorhizos Muhl.	1	A	N	80	MRo
Cyperus esculentus L., yellow nutsedge	1	P	N	60	DGo, MR
Cyperus lupulinus (Spreng.) Marcks. ssp. *lupulinus (C. filiculmis)*, fern flatsedge	2	P	N	60	TPi, DG
Cyperus odoratus L. *(C. ferruginescens)*	1	A	N	80	MRc, DG
Cyperus schweinitzii Torr.	2	P	N	60	SPo
Cyperus strigosus L., false nutgrass	2	P	N	60	SAi
Eleocharis acicularis (L.) R. & S., hairgrass	1	P	N	70	MRi
Eleocharis erythropoda Steud.	1	P	N	69	MRc
Eleocharis macrostachya Britt., spike rush	2	P	N	58	MRo
Eleocharis obtusa (Willd) J. A. Schult. var. *ovata* (Roth) Drapalik & Mohlenbrock	1	A	N	50	MRo
Scirpus fluviatilis (Torr.) Gray, river bulrush	1	P	N	59	FMi
Scirpus cf. georgianus Harper	2	P	N	68	MRi
Scirpus heterochaetus Chase, slender bulrush	2	P	N	69	MRr

	S	H	Pr	Fl	Hbtat/ab
CYPERACEAE (Sedge Family)—*(Continued)*					
Scirpus pallidus (Britt.) Fern. *(S. atrovirens* var. *pallidus)*, darkgreen bulrush	1	P	N	69	MRc, FM, SA
Scirpus pungens Vahl *(S. americanus*, misapplied)	2	P	N	69	FMi
Scirpus validus Vahl, soft-stem bulrush	1	P	N	69	MRc
ELAEAGNACEAE (Oleaster Family)					
Elaeagnus angustifolia L., Russian olive	2	T	I	56	DGo
ELATINACEAE (Waterwort Family)					
Elatine triandra Schkuhr, waterwort	1	A	N	68	MRr
EUPHORBIACEAE (Spurge Family)					
Acalypha rhomboidea Raf., rhombic copperleaf	2	A	N	70	OFc, FF, DG
Acalypha virginica L., three-seeded mercury	2	A	N	70	FFi, DG
Croton capitatus Michx., woolly croton	1	A	N	70	TPi, DG
Euphorbia cyathophora Murray, fire-on-the-mountain	1	A	N	69	FFi, OF
Euphorbia cyparissias L., cypress spurge	4	P	I	69	DGi
Euphorbia dentata Michx., toothed spurge	2	A	N	50	DGo, TP
Euphorbia glyptosperma Engelm.	1	A	N	50	TPo, DG
Euphorbia maculata L., prostrate spurge	1	A	N	60	DGc, TP
Euphorbia marginata Pursh, snow-on-the-mountain	1	A	N	60	DGo
Euphorbia nutans Lag.	2	A	N	50	DGc
Euphorbia prostrata Ait.	2	A	N?	60	DGi
Euphorbia × *pseudovirgata* (Schur) Soo (*E. podperae*), leafy spurge	2	P	I	57	DGi
Euphorbia serpens H.B.K., round-leaved spurge	4	A	N	70	DGi
Euphorbia spathulata Lam.	2	A	N	56	FMr
Euphorbia stictospora Engelm., mat spurge	2	A	N	60	TPr
FABACEAE (Bean Family)					
Amorpha canescens Pursh, leadplant	2	S	N	58	TPc
Amorpha fruticosa L., false indigo	1	S	N	56	FMo
Amphicarpaea bracteata (L.) Fern., hog peanut	2	A	N	80	OFc, FF
Astragalus canadensis L., Canada milk-vetch	2	P	N	68	TPo
Astragalus crassicarpus Nutt. var. *crassicarpus*, ground plum	1	P	N	36	TPo
Astragalus plattenis Nutt. *ex* T. & G., Platte milk-vetch	2	P	N	47	TPi
Baptisia bracteata Muhl. *ex* Ell. var. *glabrescens* (Larisey) Isely (*B. leucophaea*)	1	P	N	46	TPo
Baptisia lactea (Raf.) Thieret (*B. leucantha*), wild indigo	2	P	I	57	PRo
Coronilla varia L., crown vetch	2	P	I	58	DGi

TABLE II—*(Continued from page 104)*

	S	H	Pr	Fl	Hbtat/ab
FABACEAE (Bean Family)—*(Continued)*					
Dalea candida Michx. *ex* Willd. var. *candida (Petalostemon candidum),* white prairie clover	2	P	N	58	TPo
Dales leporina (Ait.) Bullock	1	A	N	79	DGr
Dalea purpurea Vent. var. *purpurea (Petalostemon purpureum),* purple prairie clover	2	P	N	58	TPo
Desmodium canadense (L.) DC., Canada tickclover	1	P	N	79	TPo, PR
Desmodium canescens (L.) DC., hoary tickclover	1	P	N	79	TPi
Desmodium glutinosum (Muhl. *ex* Willd.) Wood, large-flowered tickclover	2	P	N	68	OFo
Desmodium illinoense A. Gray, Illinois tickclover	1	P	N	69	TPo
Glycyrrhiza lepidota Pursh, wild licorice	2	P	N	58	FMo
Lespedeza capitata Michx., round-headed bush clover	2	P	N	68	TPo, SP
Lespedeza cuneata (Dumont) G. Don, sericea lespedeza	2	P	I	70	TPr
Lespedeza stipulacea Maxim., Korean lespedeza	2	A	I	70	DGi
Lotus corniculatus L., bird's-foot trefoil	1	P	I	59	DGo, PR
Lotus purshianus Clem. & Clem., prairie trefoil	2	A	N	70	TPi, PR
Medicago lupulina L., black medic	2	A	I	41	DGo
Medicago sativa L., alfalfa	2	P	I	59	DGo
Melilotus albus Medic., white sweet clover	2	A	I	50	DGo
Melilotus officinalis (L.) Pall., yellow sweet clover	2	A	I	50	DGc
Oxytropis lambertii Pursh, purple locoweed	2	P	N	58	TPi
Psoralea argophylla Pursh, silverleaf scurf pea	1	P	N	69	TPo
Psoralea esculenta Pursh, breadroot scurf pea	1	P	N	57	TPi
Psoralea tenuiflora Pursh var. *floribunda* (Nutt.) Rybd., wild alfalfa, many-flowered scurf pea	1	P	N	57	TPo
Robinia pseudo-acacia L., black locust	2	T	I	56	OFi
Strophostyles helvula (L.) Ell., wild bean	3	A	N	60	MR?
Strophostyles leiosperma (T. & G.) Piper, smoothseed wild bean	2	A	N	50	DGi
Trifolium hybridum L., alsike clover	1	P	I	50	FMr
Trifolium pratense L., red clover	2	P	I	59	DGc
Trifolium repens L., white clover	2	P	I	50	DGc
Vicia americana Muhl. *ex* Willd. var. *minor* Hook., American vetch	2	P	N	57	TPi
Vicia villosa Roth, hairy vetch	2	A	I	59	DGc
FAGACEAE (Oak Family)					
Quercus macrocarpa Michx., bur oak	1	T	N	45	OFc
FUMARIACEAE (Fumitory Family)					
Corydalis micrantha (Engelm.) A. Gray ssp. *micrantha,* slender fumewort	2	A	N	45	DGi, FF
Dicentra cucullaria L., dutchman's breeches	2	P	N	34	OFo
Fumaria vaillentii Lois *(F. officinalis,* misapplied), fumitory	4	A	I	56	DGr
GENTIANACEAE (Gentian Family)					
Eustoma grandiflorum (Raf.) Shinners, prairie gentian	4	A	N	79	TPr
Gentiana puberulenta Pringle, downy gentian	1	P	N	90	TPi
GERANIACEAE (Geranium Family)					
Geranium carolinianum L., Carolina cranesbill	2	A	I	59	DGr
GROSSULARIACEAE (Currant Family)					
Ribes missouriense Nutt., Missouri gooseberry	2	S	N	45	OFc, FF, DG
HYDROPHYLLACEAE (Waterleaf Family)					
Ellisea nyctelea (L.) L., waterpod	1	A	N	57	DGc, FF
IRIDACEAE (Iris Family)					
Iris pseudacorus L., yellow iris	1	P	I	57	MRr
Sisyrinchium campestre Bickn., white-eyed grass	2	P	N	46	TPc
JUGLANDACEAE (Walnut Family)					
Carya cordiformis (Wang.) K. Koch, bitternut hickory	2	T	N	5	OFi
Juglans nigra L., black walnut	2	T	N	45	OFo, FF
JUNCACEAE (Rush Family)					
Juncus balticus Willd., Baltic rush	2	P	N	68	FMi
Juncus dudleyi Wieg.	2	P	N	59	MRi
Juncus interior Wieg., inland rush	1	P	N	58	TPo, FM, MR
Juncus torreyi Cov.	2	P	N	60	FMc, MR
LAMIACEAE (Mint Family)					
Agastache nepetoides (L.) O. Ktze., catnip giant hyssop	2	P	N	79	OFi
Dracocephalum parviflorum Nutt., dragonhead	4	A	N	79	DGr
Glecoma hederacea L., ground ivy	2	P	I	46	DGi
Hedeoma hispida Pursh, false pennyroyal	2	A	N	57	TPo
Lamium amplexicaule L., henbit	2	A	I	35	DGo
Lamium purpureum L., purple dead nettle	4	A	I	45	DGr
Leonurus cardiaca L., motherwort	2	P	I	59	FFo
Leonurus marrubiastrum L.	4	B	I	68	FMr
Leonurus sibiricus L.	2	B	I	68	FFi
Lycopus americanus Muhl. *ex* Bart., American bugleweed	2	P	N	79	MRo
Lycopus asper Greene, rough bugleweed	2	P	N	79	MRr
Mentha arvensis L., field mint	2	P	N	79	MRo

TABLE II—*(Continued from page 105)*

	S	H	Pr	Fl	Hbtat/ab
LAMIACEAE (Mint Family)—*(Continued)*					
Mentha spicata L., spearmint	4	P	I	79	DGr
Monarda fistulosa L. var. *fistulosa*, wild bergamot	2	P	N	68	DGi, TP, OF
Nepeta cataria L., catnip	1	P	I	60	DGc
Physotstegia virginiana (L.) Benth., Virginia lionsheart	4	P	N	79	FMr
Prunella vulgaris L., self-heal	2	P	N	60	MRi
Salvia azurea Lam. *(S. pitcheri)*, Pitcher's sage	1	P	N	70	TPo
Salvia nemorosa L., *(S. sylvestris*, misapplied), sage	1	P	I	68	DGr
Salvia reflexa Hornem., lance-leaved sage	2	A	N	60	DGi
Scutellaria lateriflora L., blue skullcap	2	P	N	79	MRi
Scutellaria parvula Michx. var. *leonardii* (Epl.) Fern., small skullcap	2	P	N	46	TPi
Stachys palustris L. ssp. *pilosa* (Nutt.) Epling, marsh betony	2	P	N	68	MRi
Stachys tenuifolia Willd.	2	P	N	70	FFi
Teucrium canadense L. var. *boreale* (Bickn.) Shinners *(T. c.* var. *occidentale)*, wood sage	1	P	N	79	MRi, DG
Teucrium canadense L. var. *canadense (T. c.* var. *virginicum)*, wood sage	2	P	N	68	FFc, OF, FM
LEMNACEAE (Duckweed Family)					
Lemna minor L., duckweed	2	P	N		AQc
Lemna perpusilla Torr., duckweed	1	P	N	80	AQo
Spirodela polyrrhiza (L.) Schleid.	2	P	N		AQo
Wolffia columbiana Karst.	2	P	N	67	AQi
LENTIBULARIACEAE (Bladderwort Family)					
Utricularia vulgaris L., common bladderwort	3	P	N	68	AQr
LILIACEAE (Lily Family)					
Allium canadense L. var. *canadense*, wild onion	2	P	N	47	FMo, DG
Allium canadense L. var. *lavandulare* (Bates) M. Ownbey, wild onion	2	P	N	57	TPo, FM, SP
Asparagus officinalis L., asparagus	2	P	I	59	DGi
Erythronium albidum Nutt., trout lily	2	P	N	34	OFo
Polygonatum biflorum (Walt.) Ell., Solomon's seal	2	P	N	47	OFo, DG, FF
Smilacina stellata (L.) Desf., false Solomon's seal	1	P	N	56	OFo, FF
LINACEAE (Flax Family)					
Linum sulcatum Ridd., yellow flax	2	A	N	59	TPo
LYTHRACEAE (Loosestrife Family)					
Ammannia auriculata Willd.	3	A	N	70	MRr
Ammannia coccinea Rottb.	2	A	N	70	MRo
Lythrum alatum Pursh var. *alatum (L. dacotanum)*, winged loosestrife	2	P	N	69	FMi
MALVACEAE (Mallow Family)					
Abutilon theophrasti Medic., buttonweed	1	A	I	60	DGo
Callirhoe alcaeoides (Michx.) A. Gray, pink poppy mallow	2	P	N	48	TPi, FM
Callirhoe involucrata (T. & G.) A. Gray, purple poppy mallow	2	P	N	48	TPi
Hibiscus trionum L., Venice mallow	1	A	I	68	DGo
Malva neglecta Wallr., common mallow	2	A	I	40	DGc
Malva rotundifolia L., common mallow	3	A	I	51	DGi
MENISPERMACEAE (Moonseed Family)					
Menispermum canadense L., moonseed	2	V	N	56	OFc
MIMOSACEAE (Mimosa Family)					
Desmanthus illinoensis (Michx.) MacM., Illinois bundleflower	2	P	N	68	FMi, TP
MOLLUGINACEAE (Carpetweed Family)					
Mollugo verticillata L., carpetweed	2	A	I	69	DGo
MORACEAE (Mulberry Family)					
Maclura pomifera (Raf.) Schneid., Osage orange	2	T	I	5	DGi
Morus alba L., white mulberry	1	T	I	45	DGo, FF
NAJADACEAE (Naiad Family)					
Najas guadalupensis (Spreng.) Magnus, naiad	2	A	N	69	AQo
NYCTAGINACEAE (Four-o'clock Family)					
Mirabilis cf. *albida* (Walt.) Heimerl., white four-o'clock	4	P	N	50	TP?
Mirabilis hirsuta (Pursh) MacM., hairy four-o'clock	4	P	N	50	TPr
Mirabilis nyctaginea (Michx.) MacM., wild four-o'clock	2	P	N	50	DGc
OLEACEAE (Olive Family)					
Fraxinus pennsylvanica Marsh., green ash	1	T	N	45	FFc, OF
ONAGRACEAE (Evening Primrose Family)					
Calylophus serrulatus (Nutt.) Raven, yellow evening primrose	2	P	N	59	SPo, TP
Epilobium coloratum Biehler, purple willow herb	2	P	N	80	SAi
Gaura longiflora Spach, large-flowered gaura	2	A	N	70	TPi
Gaura parviflora Dougl., velvety gaura	2	A	N	50	DGo, TP
Oenothera laciniata Hill, cut-leaved evening primrose	2	A	N	40	SPc
Oenothera villosa Thunb., common evening primrose	2	B	N	70	DGc, TP
ORCHIDACEAE (Orchid Family)					
Habenaria leucophaea (Nutt.) A. Gray, prairie fringed orchid	2	P	N	67	TPr

TABLE II—*(Continued from page 106)*

	S	H	Pr	Fl	Hbtat/ab
OXALIDACEAE (Wood Sorrel Family)					
Oxalis dillenii Jacq., gray-green wood sorrel	1	P	N	31	DGc, TP
Oxalis stricta L., yellow wood sorrel	2	P	N	40	DGo, OF, FF
Oxalis violacea L., violet wood sorrel	2	P	N	46	TPo
PLANTAGINACEAE (Plantain Family)					
Plantago lanceolata L., English plantain	2	P	I	50	DGi
Plantago major L., common plantain	2	P	I	51	DGo
Plantago patagonica Jacq. var. *patagonica*	2	A	N	58	SPc, TP
Plantago rugelii Dcne.	2	P	N	51	DGo, FF, OF
Plantago virginica L., pale-seeded plantain	2	A	N	56	TPi
POACEAE (Grass Family)					
Aegilops cylindrica Host, jointed goatgrass	2	A	I	56	DGr
Agropyron cristatum (L.) Gaertn., crested wheatgrass	2	P	I	68	DGr
Agropyron intermedium (Host) Beauv., intermediate wheatgrass	2	P	I	69	DGo
Agropyron repens (L.) Beauv., quackgrass	2	P	I	58	DGi, FM
Agropyron smithii Rydb., western wheatgrass	1	P	N	59	TPo
Agrostis hyemalis (Walt.) B.S.P., ticklegrass	1	P	N	47	MRo
Agrostis stolonifera L., redtop	2	P	I	68	FMo
Alopecurus carolinianus Walt., Carolina foxtail	2	A	N	57	MRo
Alopecurus pratensis L., meadow foxtail	2	P	I	68	FMi, DG
Andropogon gerardii Vitman, big bluestem	1	P	N	70	TPc
Andropogon scoparius Michx., little bluestem	2	P	N	70	TPc
Aristida basiramea Engelm. *ex* Vasey var. *basiramea*, forktip three-awn	2	A	N	79	SPc
Aristida oligantha Michx., prairie three-awn	1	A	N	80	TPo, DG
Aristida purpurea Nutt. var. *robusta* (Merrill) A. Holmgren & N. Holmgren *(A. longiseta)*, red three-awn	4	P	N	79	TPr
Bouteloua curtipendula (Michx.) Torr., sideoats grama	1	P	N	68	TPo
Bouteloua gracilis (H.B.K.) Lag. *ex* Griffiths, blue grama	1	P	N	68	TPi, SP
Bouteloua hirsuta Lag., hairy grama	1	P	N	70	TPi
Bromus inermis Leyss. ssp. *inermis*, smooth brome	1	P	I	57	DGc, TP
Bromus japonicus Thunb. *ex* Murr., Japanese brome	2	A	I	57	DGo, TP
Bromus secalinus L., cheat	3	A	I	57	DGi
Bromus tectorum L., downy brome	2	A	I	56	DGc
Buchloë dactyloides (Nutt.) Engelm., buffalo grass	2	P	N	46	TPi
POACEAE (Grass Family)—*(Continued)*					
Cenchrus longispinus (Hack.) Fern., field sandbur	1	A	N	79	DGo
Chloris verticillata Nutt., windmill grass	2	P	N	59	DGi, TP
Cinna arundinacea L., woodreed	2	P	N	79	FFi
Dactylis glomerata L., orchard grass	2	P	I	50	DGo
Dichanthelium acuminatum (Sw.) Gould & Clark var. *villosum* (A. Gray) Gould & Clark *(Panicum praecocius)*	2	P	N	56	TPo
Dichanthelium leibergii (Vasey) Freckmann *(Panicum leibergii)*	2	P	N	56	TPi
Dichanthelium oligosanthes (Schult.) Gould var. *scribnerianum* (Nash) Gould *(Panicum oligosanthes)*	2	P	N	46	TPo, SP
Dichanthelium wilcoxianum (Vasey) Freckmann *(Panicum wilcoxianum)*, Wilcox panicum	2	P	N	56	TPi
Digitaria ciliaris (Retz.) Koel., southern crabgrass	2	A	I	70	DGi
Digitaria ischaemum (Schreb. *ex* Schweigg.) Schreb. *ex* Muhl., smooth crabgrass	2	A	I	80	DGi
Digitaria sanguinalis (L.) Scop., giant crabgrass	1	A	I	80	DGc
Echinochloa crusgalli (L.) Beauv., barnyard grass	2	A	I	69	MRo
Echinochloa muricata (Beauv.) Fern. var. *microstachya* Wieg., barnyard grass	1	A	N	60	DGc
Echinochloa muricata (Beauv.) Fern. var. *muricata*, barnyard grass	2	A	N	60	DGi, MR
Eleusine indica (L.) Gaertn., goosegrass	2	A	I	70	DGi
Elymus canadensis L., Canada wildrye	1	P	N	68	TPo
Elymus villosus Muhl. *ex* Willd., slender wildrye	1	P	N	57	OFi
Elymus virginicus L. var. *glabriflorus* (Vasey) Bush	2	P	N	67	FFr
Elymus virginicus L. var. *virginicus*, Virginia wild rye	1	P	N	56	FFc, DG
Eragrostis cilianensis (All.) E. Mosher, stinkgrass	1	A	I	70	DGc
Eragrostis hypnoides (Lam.) B.S.P., teal lovegrass	1	A	N	70	MRr
Eragrostis minor Host, little lovegrass	2	A	I	68	DGr
Eragrostis pectinacea (Michx.) Nees, Carolina lovegrass	1	A	N	60	DGo
Eragrostis spectabilis (Pursh) Steud., purple lovegrass	1	P	N	80	DGo, TP
Eragrostis trichodes (Nutt.) Wood, sand lovegrass	2	P	N	70	SPo
Eriochloa contracta Hitchc., prairie cupgrass	2	A	N	70	DGi
Festuca arundinacea Schreb., tall fescue	2	P	I	50	DGo, FM
Festuca obtusa Biehler, nodding fescue	2	P	N	68	OFo

TABLE II—*(Continued from page 107)*

	S	H	Pr	Fl	Hbtat/ab
POACEAE (Grass Family)—*(Continued)*					
Festuca octoflora Walt., sixweeks fescue	2	A	N	46	SPc, TP
Glyceria striata (Lam.) Hitchc., foul mannagrass	2	P	N	57	SAo
Hordeum jubatum L., foxtail barley	2	P	N	68	DGc
Hordeum pusillum Nutt., little barley	1	A	N	56	DGo
Koeleria pyramidata (Lam.) Beauv., junegrass	1	P	N	58	TPo
Leersia oryzoides (L.) Sw., rice cutgrass	1	P	N	70	MRc, SA
Leersia virginica Willd., whitegrass	1	P	N	60	FFc
Leptochloa fascicularis (Lam.) A. Gray, sprangletop	1	A	N	70	MRo, DG
Leptoloma cognatum (Schult.) Chase, fall witchgrass	2	P	N	50	SPc, TP
Lolium perenne L. var. *aristatum* Willd., ryegrass	2	P	I	57	DGi
Lolium perenne L. var. *perenne*	2	P	I	47	DGi
Muhlenbergia bushii R. Pohl	2	P	N	80	FFo
Muhlenbergia cuspidata (Torr.) Rydb., plains muhly	2	P	N	60	TPi
Muhlenbergia frondosa (Poir.) Fern., wirestem muhly	2	P	N	71	FFc, DG
Muhlenbergia mexicana (L.) Trin., wirestem muhly	2	P	N	80	OFi
Muhlenbergia racemosa (Michx.) B.S.P., marsh muhly	1	P	N	70	FFo, MR
Muhlenbergia schreberi J.F. Gmel., nimblewill	2	P	N	80	DGo, OF
Panicum capillare L., witchgrass	1	A	N	70	DGc
Panicum dichotomiflorum Michx., fall panicum	1	A	N	70	DGo
Panicum virgatum L., switchgrass	1	P	N	79	TPc
Paspalum setaceum Michx. var. *stramineum* (Nash) D. Banks	2	P	N	59	TPi, FM
Phalaris arundinacea L., reed canary grass	1	P	N	57	MRc, FM
Phleum pratense L., timothy	1	P	I	67	DGi
Poa annua L., annual bluegrass	2	A	I	40	DGi
Poa compressa L., Canada bluegrass	2	P	I	68	TPi
Poa palustris L., fowl bluegrass	2	P	I	58	OFr
Poa pratensis L., Kentucky bluegrass	1	P	I?	58	DGc, TP, FM, SP
Schedonnardus paniculatus (Nutt.) Trel., tumblegrass	2	P	N	68	DGi, TP
Setaria faberi Herrm., Chinese foxtail	2	A	I	70	DGi
Setaria glauca (L.) Beauv., yellow foxtail	1	A	I	79	DGc
Setaria verticillata (L.) Beauv., bristly foxtail	4	A	I	79	DGr
Setaria viridis (L.) Beauv., green foxtail	2	A	I	79	DGc
Sorghastrum nutans (L.) Nash *(S. avenaceum)*, Indian grass	1	P	N	80	TPo, SP
Spartina pectinata Link, prairie cordgrass	1	P	N	79	FMc
Sphenopholis obtusata (Michx.) Scribn. var. *obtusata*, prairie wedgegrass	2	P	N	58	TPo, MR
Sporobolus asper (Michx.) Kunth var. *asper*, tall dropseed	2	P	N	80	TPi, DG
POACEAE (Grass Family)—*(Continued)*					
Sporobolus cryptandrus (Torr.) A. Gray, sand dropseed	2	P	N	79	TPi
Sporobolus heterolepis (A. Gray) A. Gray, prairie dropseed	2	P	N	70	TPo
Sporobolus neglectus Nash *(S. vaginiflorus* var. *neglectus)*, poverty grass	2	A	N	80	DGi
Sporobolus vaginiflorus (Torr.) Wood, poverty grass	2	A	N	90	SPi, DG
Stipa spartea Trin., porcupine grass	1	P	N	67	TPo
Tridens flavus (L.) Hitchc., purpletop	1	P	N	80	DGi, TP
POLEMONIACEAE (Polemonium Family)					
Phlox divaricata L. ssp. *laphamii* (Wood) Wherry, blue phlox	4	P	I	46	DGi
POLYGALACEAE (Milkwort Family)					
Polygala verticillata L., whorled milkwort	2	A	N	50	MRr
POLYGONACEAE (Buckwheat Family)					
Polygonum achoreum Blake, knotweed	2	A	I	79	DGo
Polygonum amphibium L. var. *emersum* Michx. *(P. coccineum)*, swamp smartweed	1	P	N	79	MRo, FM, DG
Polygonum arenastrum Jord. *ex* Bor., knotweed	1	A	I	60	DGc
Polygonum bicorne Raf., pink smartweed	1	A	N	70	DGc, MR
Polygonum convolvulus L., black bindweed	2	A	I	69	DGo
Polygonum hydropiper L., water pepper	2	A	I	80	MRo
Polygonum lapathifolium L., nodding willow weed	1	A	N	70	MRc, DG
Polygonum pensylvanicum L., Pennsylvania smartweed	1	A	N	70	DGc, MR
Polygonum persicaria L., lady's thumb	2	A	I	70	MRo, DG
Polygonum punctatum Ell., water smartweed	1	P	N	70	MRo, SA
Polygonum ramosissimum Michx., knotweed	2	A	N	79	DGo, MR, TP
Polygonum scandens L., false buckwheat	1	P	N	60	DGo
Polygonum virginianum L.	2	P	N	89	FFi
Rumex acetosella L., sheep sorrel	2	P	I	48	SPc, DG
Rumex altissimus Wood., pale dock	2	P	N	47	MRc, DG
Rumex crispus L., curly dock	2	P	I	47	DGc, MR
Rumex stenophyllus Ledeb.	2	P	I	58	MRi
PONTEDERIACEAE (Pickerel-weed Family)					
Heteranthera limosa (Sw.) Willd., mud plantain	1	P	N	50	MRo
PORTULACACEAE (Purslane Family)					
Portulaca oleracea L., common purslane	1	A	I	51	DGo

TABLE II—*(Continued from page 108)*

	S	H	Pr	Fl	Hbtat/ab
POTAMOGETONACEAE (Pondweed Family)					
Potamogeton foliosus Raf., leafy pondweed	2	P	N	68	AQc
Potamogeton nodosus Poir., longleaf pondweed	2	P	N	60	AQc
Potamogeton pectinatus L., sago pondweed	2	P	N	69	AQo
Potamogeton pusillus L. var. *pusillus*	2	P	N	60	AQo
PRIMULACEAE (Primrose Family)					
Androsace occidentalis Pursh, western rock jasmine	1	A	N	36	DGo, TP
Lysimachia ciliata L., fringed loosestrife	2	P	N	68	SAi, MR
RANUNCULACEAE (Buttercup Family)					
Anemone canadensis L., meadow anemone	2	P	N	57	DGr
Anemone cylindrica A. Gray, candle anemone	1	P	N	67	TPo, OF
Aquilegia canadensis L., wild columbine	4	P	I?	46	OFr
Clematis ternifloria DC.	2	P	I	80	DGr
Clematis virginiana L., virgin's bower	1	P	N	78	DGo, FF
Delphinium ajacis L., rocket larkspur	2	A	I	78	DGi
Delphinium tricorne Michx., dwarf larkspur	4	P	N	46	OFr
Delphinium virescens Nutt., prairie larkspur	2	P	N	56	TPo, SP
Myosurus minimus L., mousetail	2	A	N	35	MRo
Ranunculus abortivus L., early wood buttercup	1	B	N	46	FFc, OF
Ranunculus sceleratus L., cursed crowsfoot	1	A	N	59	MRo
Thalictrum dasycarpum Fisch. & Ave-Lall., purple meadow rue	1	P	N	67	OFo, FF, DG
RHAMNACEAE (Buckthorn Family)					
Ceanothus herbaceus Raf. var. *pubescens* (T. & G.) Shinners, New Jersey tea	2	S	N	48	TPo
Rhamnus cathartica L., common buckthorn	2	S	I	56	DGi
ROSACEAE (Rose Family)					
Agrimonia pubescens Wallr., downy agrimony	2	P	N	78	OFi
Fragaria virginiana Duchn., wild strawberry	1	P	N	36	TPo, OF
Geum canadense Jacq., white avens	1	P	N	50	DGo
Potentilla argentea L., silvery cinquefoil	2	P	I	68	DGr
Potentilla arguta Pursh, tall cinquefoil	2	P	N	68	TPo
Potentilla norvegica L., Norwegian cinquefoil	1	B	N	59	DGo, MR
Potentilla recta L., sulphur cinquefoil	2	P	I	57	DGo
Potentilla rivalis Nutt., brook cinquefoil	2	A	N	50	MRi
Prunus americana Marsh., wild plum	1	S	N	45	DGo, TP, FM
Prunus virginiana L., choke cherry	1	S	N	45	FFo, DG, FM
Rosa arkansana Porter, prairie wild rose	2	S	N	57	TPo, DG
ROSACEAE (Rose Family)—*(Continued)*					
Rosa multiflora Thunb., multiflora rose	2	S	I	56	DGi, TP, OF
Rubus occidentalis L., black raspberry	2	S	N	46	OFo
RUBIACEAE (Madder Family)					
Galium aparine L., catchweed bedstraw	1	A	N	58	DGc, FF, OF
Galium circaezans Michx., woods bedstraw	1	P	N	57	OFc
Galium triflorum Michx., sweet-scented bedstraw	2	P	N	59	OFo, SA
Hedyotis nigricans (Lam.) Fosb., narrowleaf bluet	3	P	N	50	TPr
RUTACEAE (Citrus Family)					
Zanthoxylum americanum P. Mill., prickly ash	2	S	N	45	OFc
SALICACEAE (Willow Family)					
Populus deltoides Marsh. ssp. *monolifera* (Ait.) Eckenw., cottonwood	2	T	N	36	FFo, DG
Salix amygdaloides Anderss., peachleaf willow	2	T	N	5	FFo, MR
Salix exigua Nutt. ssp. *interior* (Rowlee) Cronq., sandbar willow, coyote willow	2	S	N	56	MRc, FF
SANTALACEAE (Sandalwood Family)					
Comandra umbellata (L.) Nutt. ssp. umbellata, bastard toadflax	2	P	N	47	TPo
SCROPHULARIACEAE (Figwort Family)					
Agalinis aspera (Dougl. *ex* Benth.) Britt., gerardia	3	A	N	89	TP?
Bacopa rotundifolia (Michx.) Wettst., water hyssop	2	P	N	79	MRi
Linaria vulgaris Hill, butter-and-eggs	2	P	I	68	DGr
Lindernia dubia (L.) Penn., false pimpernel	2	A	N	78	MRo
Mimulus ringens L., Allegheny monkey-flower	1	P	N	79	MRi
Penstemon cobaea Nutt., cobaea penstemon	2	P	N	46	TPi
Penstemon digitalis Nutt. *ex* Sims, smooth beardtongue	2	P	I	47	PRc
Penstemon grandiflorus Nutt., large beardtongue	2	P	N	47	TPo
Scrophularia marilandica L., Maryland figwort	1	P	N	89	OFi
Verbascum blattaria L., moth mullein	2	B	I	68	DGi
Verbascum thapsus L., common mullein	2	B	I	67	DGc
Veronica agrestis L., field speedwell	2	A	I	38	DGo
Veronica arvensis L., corn speedwell	2	A	I	46	DGc, TP
Veronica catenata Penn. var. *catenata*	2	P	N	68	SAi
Veronica peregrina L. var. *peregrina*, purslane speedwell	2	A	N	48	FFo
Veronica peregrina L. var. *xalapensis* (H.B.K.) St. John & Warren, purslane speedwell	1	A	N	48	DGo, MR, FF

TABLE II—*(Continued from page 109)*

	S	H	Pr	Fl	Hbtat/ab
SIMAROUBACEAE (Quassia Family)					
Ailanthus altissima (P. Mill.) Swingle, tree of heaven	2	T	I	56	DGr
SMILACACEAE (Catbriar Family)					
Smilax herbacea L. var. *lasioneuron* (Small) Rydb., carrion flower	1	P	N	57	OFo
Smilax hispida Muhl., bristly greenbriar	1	V	N	56	OFo, FF, DG
SOLANACEAE (Nightshade Family)					
Datura stramonium L., Jimson weed	2	A	N	79	DGi
Physalis heterophylla Nees, clammy groundcherry	1	P	N	50	TPo, SP
Physalis longifolia Nutt. *(P. virginiana* var. *sonarae),* common ground cherry	1	P	N	59	DGc, TP
Physalis virginiana P. Mill., ground cherry	1	P	N	59	TPo
Solanum carolinense L., horse nettle	1	P	N	59	DGo
Solanum ptycanthum Dun. *ex* DC. *(S. americanum),* black nightshade	2	A	N	50	DGc, FF
Solanum rostratum Dun., buffalo bur	2	A	N	50	DGo
SPARGANIACEAE (Bur-reed Family)					
Sparganium eurycarpum Engelm., bur-reed	2	P	N	68	MRi
TYPHACEAE (Cat-tail Family)					
Typha angustifolia L., narrowleaf cat-tail	2	P	N	57	MRi
Typha latifolia L., common cat-tail	1	P	N	57	MRc
ULMACEAE (Elm Family)					
Celtis occidentalis L., hackberry	1	T	N	45	FFc, OF, DG
Ulmus americana L., American elm	1	T	N	35	FFo, OF, DG
Ulmus pumila L., Siberian elm	2	T	I	3	DGo
Ulmus rubra Muhl., red elm, slippery elm	2	T	N	35	OFo, FF, DG
URTICACEAE (Nettle Family)					
Laportea canadensis (L.) Wedd., wood nettle	2	P	N	79	OFo
Parietaria pensylvanica Muhl. *ex* Willd., Pennsylvania pellitory	2	A	N	59	DGc, OF, FF
URTICACEAE (Nettle Family)—*(Continued)*					
Pilea fontana (Lunell) Rydb., clearweed	2	A	N	79	SAr
Pilea pumila (L.) A. Gray, clearweed	2	A	N	79	FFo, OF, SA
Urtica dioica L. ssp. *gracilis* (Ait.) Seland., stinging nettle	1	P	N	69	FFc, OF
VERBENACEAE (Vervain Family)					
Lippia lanceolata (Michx.) Greene, northern fog fruit	2	P	N	59	MRi
Phryma leptostachya L., lopseed	2	P	N	69	OFo
Verbena bipinnatifida Nutt., Dakota vervain	2	P	N	50	TPi
Verbena bracteata Lag. & Rodr., prostrate vervain	2	A	N	40	DGc
Verbena canadensis (L.) Britt., rose vervain	2	P	I?	30	DGr
Verbena hastata L., blue vervain	2	P	N	60	FMo
Verbena stricta Vent., hoary vervain	2	P	N	59	DGo, TP
Verbena urticifolia L., white vervain	1	P	N	60	FFo, FM, OF
VIOLACEAE (Violet Family)					
Viola pedatifida G. Don, prairie violet	1	P	N	46	TPc
Viola pratincola Greene, meadow violet	1	P	N	36	FFc, FM, DG, TP
Viola rafinesquii Greene, Johnny jump-up	2	A	N	37	TPr
Viola sororia Willd., downy blue violet	1	P	N	46	OFc, FF
VITACEAE (Grape Family)					
Parthenocissus vitacea (Knerr) Hitchc., woodbine	2	V	N	57	OFc, FF, DG
Vitis riparia Michx., riverbank grape	1	V	N	79	FFo
ZANNICHELLIACEAE (Horned Pondweed Family)					
Zannichellia palustris L., horned pondweed	2	P	N	61	AQi
ZYGOPHYLLACEAE (Caltrop Family)					
Tribulus terrestris L., puncture vine	2	A	I	50	DGo

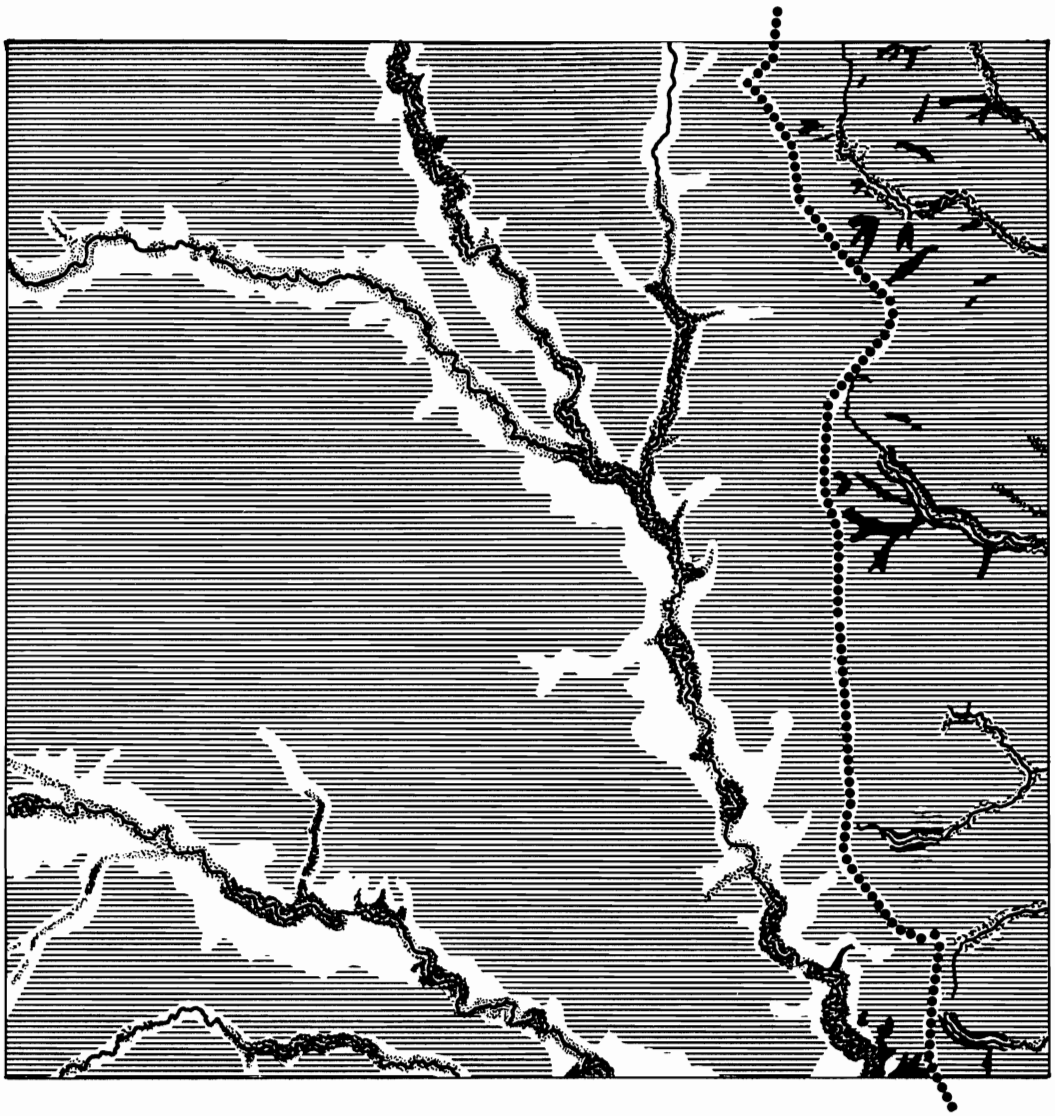

FIG. 3 **Vegetation Map of Seward County, Nebraska**

TALL-GRASS PRAIRIE

FLOODPLAIN PRAIRIE AND MEADOW

EASTERN DECIDUOUS FOREST

FLOODPLAIN FOREST

FLOODPLAIN FOREST WITH SCATTERED OAK

W E

GLACIAL TILL RIDGE

W: LOESS PLAINS

E: LOESS DRIFT HILLS

N

TEXT—*(Continued from page 99)*

Species reported in *Atlas*, not collected by author (collection status = 3)

Agalinis aspera (Aughey *s.n.*, 28 August 1873, *NEB); Alisma cf. subcordatum* (Kiener 25992, *NEB); Amaranthus hybridus* (Meyer 43, *NEB*); Ammannia auriculata (Kiener 25994; G. Imig 35, *NEB); Azolla mexicana* (Tolstead 41586, *NEB); Bidens connata* (Weedon 6197, *NEB); Carex atherodes* (Kiener 29918, *NEB); Hedyotis nigricans* (Magrath and Hays 5620, *KANU); Ipomoea hederacea* (Koch 4282, *NEB);* 60241, *KANU); Malva rotundifolia* (Stephens 58487, *KANU); Sagittaria rigida* (Kiener 24086, 25988, *NEB); Strophostyles helvula* (Aughey *s.n.*, 28 August 1873, *NEB); Utricularia vulgaris* (Kiener 23950, *NEB).*

Species new to Seward County, not collected by author (collection status = 4)

Aquilegia canadensis (Warner 62, *NEB); Aristida purpurea* (Brandhorst *s.n.*, August 1958, *Concordia); Brassica kaber* (Schmersal 12, *NEB); Centaurea cyanus* (Groathaus 39, *Concordia); Delphinium tricorne* (Dede 68110, *Concordia); Dracocephalum parviflorum* (Groathaus 44, *Concordia); Euphorbia cyparissias* (Gundell 16, *Concordia); Euphorbia serpens* (Hafer 49, *NEB*) *Eustoma grandiflorum* (Landon 14, *NEB); Fumaria vaillentii* (Gundell 15, *Concordia); Helenium autumnale* (Tolstead 9754, *NEB); Lamium purpureum* (Keller 140, *NEB); Leonurus marrubiastrum* (Varner 28, Ringler 69, *NEB); Mentha spicata* (Barry 61, *NEB); Mirabilis albida* (Aughey *s.n.*, 28 August 1873, *NEB); Mirabilis hirsuta* (Keller 296, *NEB); Phlox divaricata* ssp. *laphamii* (Wolters 88-37, *Concordia); Physostegia virginiana* (Hackbart 12, *NEB); Ratibida pinnata* (Held 140, *Concordia); Setaria verticillata* (Keller 51, *NEB).*

Excluded species

The following species were reported from Seward County in the *Atlas*, but were based upon misidentifications or lack known voucher specimens: *Aster praealtus* Poir. var. *praealtus, Carduus acanthoides* L., *Chenopodium album* L., *Elodea canadensis* Michx., *Lechea mucronata* Raf., *Mirabilis linearis* (Pursh) Heimerl., *Oenothera biennis* L., *Phaseolus polystachios* (L.) B.S.P., *Prunus serotina* Ehrh., *Rumex orbiculatus* A. Gray, *Sagittaria cuneata* Sheld., *Sorghum halepense* (L.) Pers.

Additionally, specimens of the four following species of grasses collected by C. T. Brandhorst (moist fertile roadside, Seward County, August 1942) are in the Concordia College Herbarium but are of doubtful provenance in the county: *Agrostis scabra* Willd.; *Sitanion hystrix* (Nutt.) J. G. Sm. var. *brevifolium* (J. G. Sm.) C. L. Hitchc.; *Sporobolus airoides* (Torr.) Torr.; *Stipa viridula* Trin.

In addition, *Anemone caroliniana, Nasturtium officinale,* and *Spiranthes cernua* have been seen but not collected in the county by a reliable observer. The following species are known from surrounding counties (some very close to the county line) and continuing field work is likely to reveal their presence in Seward County: *Carex hystericina, Cerastium brachypodum, Chenopodium album, Cyperus acuminatus, Cyperus aristatus, Erythronium mesochoreum, Euthamia gymnospermoides, Lappula echinata, Lithospermum arvense, Lycopus virginicus, Mirabilis linearis, Polygonum erectum, Potamogeton crispus, Rotala ramosior, Sorghum halepense, Typha domingensis.*

Campsis radicans (L.) Seem., *Populus alba* L., and *Rhus typhina* L. have been introduced as ornamentals and have spread vegetatively. They do not reproduce by seed here and are not included in Table II.

Major floristic representation

Table III shows the ten families with the largest number of species in Seward County.

TABLE III. Ten largest families in terms of diversity

Family	Genera	Species	Total Entities
ASTERACEAE	47	90	94
POACEAE	42	88	91
FABACEAE	18	38	38
CYPERACEAE	4	37	38
LAMIACEAE	16	25	26
BRASSICACEAE	12	19	19
POLYGONACEAE	2	17	17
SCROPHULARIACEAE	9	15	16
EUPHORBIACEAE	3	15	15
ROSACEAE	7	13	13

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