

# **CLASSIFICATION OF WETLAND AND RIPARIAN AREAS IN KANSAS**

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STATE OF KANSAS

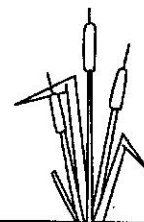
May 1993



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*Wetland & Riparian Areas Project*

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# **CLASSIFICATION OF WETLAND AND RIPARIAN AREAS IN KANSAS**

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## FOREWORD

The *Wetland and Riparian Areas Project* (WRAP) represents a cooperative effort involving federal and state agencies and organizations for the purpose of addressing conservation issues related to wetland and riparian areas in Kansas. A primary goal of the project was to provide pertinent information to government agencies, private organizations and the general public regarding wetland and riparian resources.

The following agencies were represented on the WRAP Technical Committee.

K.S.U., Dept. of Landscape Architecture  
Kansas Department of Health and Environment  
U.S. Army Corps of Engineers  
K.S.U., Dept. of Regional Community Planning  
Kansas Biological Survey  
U.S. Fish and Wildlife Service  
State Conservation Commission  
U.S. Geological Service  
Kansas Department of Wildlife and Parks  
U.S. Soil Conservation Service  
State Board of Agriculture, Div. of Water Resources  
U.S. Environmental Protection Agency  
K.S.U., State and Extension Forestry  
Kansas Water Office

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EPA Project Officer  
Wetland Protection Section  
EPA, Region 7

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*THIS DOCUMENT WAS PRINTED ON RECYCLED PAPER.*

## DEFINITIONS

The definitions used in this classification are intended to identify wetland and riparian habitats for the purpose of promoting stewardship of the resources they support. These definitions do not attempt to identify wetlands that are regulated under federal programs. The following definitions for wetlands and riparian areas from the Kansas Water Plan have been adopted for this classification:

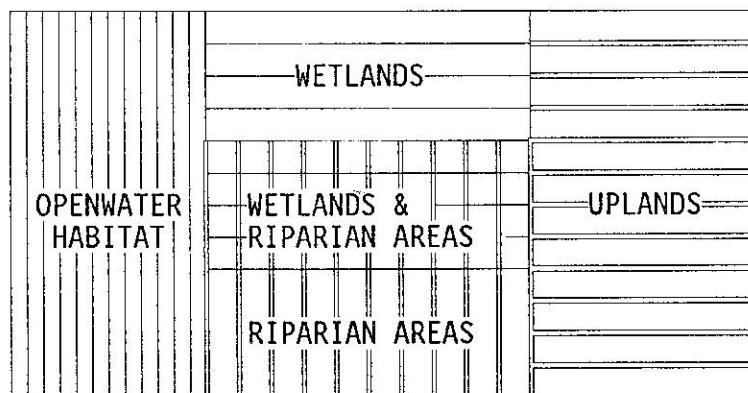
*WETLAND* - "Any area of predominantly hydric soils where standing water or wet soil conditions exist for a significant part of the growing season of most years. When surface water is present, depth generally does not exceed six feet. Vegetation is dominated by water tolerant plants (Hydrophytes)" (Kansas Water Plan; Fish, Wildlife and Recreation Section; Wetland Protection, Subsection; January 1986; Page 4).

*RIPARIAN AREA* - "An area of streamside vegetation along any perennial or intermittent stream including the stream bank and adjoining floodplain which is typically distinguishable from upland areas in terms of vegetation, soils or topography" (Kansas Water Plan; Fish, Wildlife and Recreation Section; Riparian Protection Subsection; January 1986; Page 4).

The above definitions were designed to provide general descriptions of wetland and riparian areas. Consequently, qualitative phrases are used, such as "significant part of the growing season" and "typically distinguishable from upland". In general, these conditions are assumed to have been met based upon the presence of soil, plant, or hydrologic conditions described in this classification.

Wetlands and riparian areas are lands transitional between aquatic and upland habitats (Figure 1). During the growing season soils on these areas are moist, saturated, or covered by shallow water. These conditions hinder plant species that require drier sites. Soils at wetland sites typically do not drain well and are composed of clay and silt. Riparian soils may be composed of sand and gravel that allow alluvial water to flow through.

Figure 1. The spatial distribution of habitat types.



Most of the moisture that supports riparian vegetation is supplied by seepage from the adjacent stream. The water-table within the riparian zone is maintained at relatively constant and shallow depths during the growing season. The width of riparian areas and the plant community they support depend on topography, soil type, and available moisture. In general, riparian areas along perennial streams are wider than intermittent streams. Width of riparian areas will vary among sites and can be difficult to determine when the vegetation has been cleared. Riparian plant communities often support trees. However, some sites are composed of only shrubs or grasses. These plant communities that occur along streams may also occur along the shores of lakes and reservoirs.

Riparian areas may be also classified as wetlands (Figure 1). Some riparian areas have enough moisture to support wetland plants (hydrophytes) and are classified as wetland. Other riparian areas have soils that are moist enough to support vegetation that is different from surrounding uplands, but not moist enough to support hydrophytes, and are not wetlands. Thus, a site may be classified as upland, wetland, riparian area, or both wetland and riparian area (Figure 1).

Wetlands are generally less than six feet deep and support water tolerant plants. Openwater areas differ from wetlands in that they are often more than six feet deep and may not support vascular plants (they may support planktonic algae). Perennial streams that lack vegetation in the channel are considered openwater habitats and not wetland. Thus, openwater areas include ponds, lakes, reservoirs, or rivers. It is important to note that within a single basin several habitat types may occur. For example, a lake with shallow areas could have both wetland and openwater habitat. A stream corridor can have openwater habitat in the stream channel, wetland habitat along the stream or in oxbows, and a riparian zone along the bank.

## TERMINOLOGY AND CLASSIFICATION

This classification uses specific terms to describe the hydrology and vegetation of wetland and riparian areas. Hydrology is the science that deals with circulation, distribution, and properties of water. The amount of water and length of time it is present, influences the vegetation and soils that occur at a site. The terms discussed below are important for separating wetlands and riparian areas among different types.

### WETLAND TERMINOLOGY

#### Vegetation Indicator Status

Plants are used widely to describe and classify wetlands because they are conspicuous and reflect differences among sites due to soils and hydrology. Most guidelines for identifying wetlands use plants as one of the principal indicators of wetland habitats. Plants are referred to one of five indicator categories based on their frequency of occurrence in wetlands. Obligate wetland plants almost always occur in wetlands but may occur rarely in non-wetlands. Facultative wetland plants usually occur in wetlands but also occur in non-wetlands. Facultative plants have a similar likelihood of occurring in both wetlands and non-wetlands. Facultative upland plants occur sometimes in wetlands but are most frequent in non-wetlands. Obligate upland

plants rarely occur in wetlands, but almost always are found in non-wetlands. Extensive list of plant species and their indicator status have been produced to aid in identifying wetlands (Appendix I). Some common examples of plants that fall in these five indicator categories are listed below.

**OBLIGATE WETLAND PLANTS** - almost always occur in wetlands but may occur rarely in non-wetlands.

**EXAMPLES**

Grasses and Grasslike

cattails (*Typha spp.*)  
bulrushes (*Scirpus spp.*)  
widgeon grass (*Ruppia maritima*)

Forbs and Aquatics

arrow-head (*Sagittaria spp.*)  
white water-crowfoot (*Ranunculus longirostris*)  
pondweeds (*Potamogeton spp.*)

Trees and Shrubs

sandbar willow (*Salix exigua*)  
black willow (*Salix nigra*)  
false indigo-bush (*Amorpha fruticosa*)

**FACULTATIVE WETLAND PLANTS** - usually occur in wetlands but also occur in non-wetlands.

**EXAMPLES**

Grasses and Grasslike

barnyard grass (*Echinochloa crusgalli*)  
prairie cordgrass (*Spartina pectinata*)  
saltgrass (*Distichlis spicata*)

Forbs

seepweed (*Suaeda depressa*)  
curly dock (*Rumex crispus*)  
stinging nettle (*Urtica dioica*)

Trees and Shrubs

green ash (*Fraxinus pennsylvanica*)  
pin oak (*Quercus palustris*)  
salt cedar (*Tamarix ramosissima*)

**FACULTATIVE PLANTS** - have a similar likelihood of occurring in both wetlands and non-wetlands.

**EXAMPLES**

Grasses and Grasslike

big bluestem (*Andropogon gerardii*)  
eastern gamagrass (*Tripsacum dactyloides*)  
switchgrass (*Panicum virgatum*)

Forbs

blue-eye-grass (*Sisyrinchium angustifolium*)  
indian hemp dogbane (*Apocynum cannabinum*)  
common plantain (*Plantago major*)

Trees and Shrubs

cottonwood (*Populus deltoides*)  
pecan (*Carya illinoensis*)  
rough-leaved dogwood (*Cornus drummondii*)

**FACULTATIVE UPLAND PLANTS** - occur sometimes in wetlands but are most frequent in non-wetlands.

**EXAMPLES**

Grasses and Grasslike

Canada wildrye (*Elymus canadensis*)  
little bluestem (*Andropogon scoparius*)  
western wheatgrass (*Agropyron smithii*)

Forbs

white heath aster (*Aster ericoides*)  
white clover (*Trifolium repens*)  
common dandelion (*Taraxacum officinale*)

Trees and Shrubs

bur oak (*Quercus macrocarpa*)  
eastern red cedar (*Juniperus virginiana*)  
poison ivy (*Toxicodendron radicans*)

**OBLIGATE UPLANDS PLANTS** - rarely occur in wetlands, but almost always are found in non-wetlands.

**EXAMPLES**

Grasses and Grasslike

cheat grass (*Bromus tectorum*)  
side-oats grama (*Bouteloua curtipendula*)  
prairie sandgrass (*Calamovilfa gigantea*)

Forbs

broomweed (*Xanthocephalum dracunculoides*)  
purple prairie clover (*Dalea purpurea*)  
prickly pear cactus (*Opuntia sp.*)

Trees and Shrubs

sand sage (*Artemisia filifolia*)  
leadplant (*Amorpha canescens*)  
blackjack oak (*Quercus marilandica*)

## Hydrology

The hydrology of a site strongly influences the vegetation and soils that a site can support. We divided hydrology among four general categories:

### Temporary

Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface for most of the season. Upland and facultative-wetland plants are characteristic of temporarily flooded wetlands.

### Seasonal

Surface water is present or the substrate is saturated to the surface for extended periods, especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface. Plant species composition is variable and may consist of upland, facultative wetland, and obligate wetland plants.

### **Semipermanent**

Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the surface. Plant species composition consists predominantly of facultative and obligate wetland plants.

### **Permanent**

Water covers the land surface throughout the year, except during extreme drought. Vegetation is dominated by obligate wetland plants.

## **Soils**

Soil types are very useful for distinguishing wetlands from upland sites. Soils that have developed under wet conditions are known as hydric soils. A hydric soil is a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. In order for a soil to be listed as hydric, it has to meet one or more of the following criteria:

1. All Histosols except Folists.
2. Soils in Aquic suborder, Aquic subgroup, Albolls suborder, Salorthids great group, Pell great group of Vertisols, Pachic subgroups, or Cumulic subgroups that are:
  - a) Somewhat poorly drained and have a frequently occurring water table at less than 0.5 feet from the surface for a significant period (usually more than 2 weeks) during the growing season, or
  - b) poorly drained or very poorly drained and have either:
    - (1) a frequently occurring water table at less than 0.5 feet from the surface for a significant period (usually more than 2 weeks) during the growing season if textures are coarse sand, sand, or fine sand in all layers with 20 inches, or for other soils
    - (2) a frequently occurring water table at less than 1.0 feet from the surface for significant period (usually more than 2 weeks) during the growing season if permeability is equal to or greater than 6.0 inches/hour in all layers within 20 inches, or
    - (3) a frequently occurring water table at less than 1.5 feet from the surface for significant period (usually more than 2 weeks) during the growing season if permeability is equal to or greater than 6.0 inches/hour in any layers within 20 inches.
3. Soils that are frequently ponded for long duration or very long duration during the growing season.
4. Soils that are frequently flooded for long duration or very long



duration during the growing season.

The Soil Conservation Service has listed 21 hydric soils than occur in Kansas (Appendix 2).

### WETLAND TYPES

In addition to hydrology and vegetation, salinity was also used to divide wetlands that occur in Kansas into the following nine types. Some of these wetland types may be divided between two of the above hydrological terms (Figure 2).

Figure 2. The distribution of wetland types along the moisture gradient.

**WETLAND TYPES**

TEMPORARY	SEASONAL	SEMIPERMANENT	PERMANENT
Flooded Basin	Wet Meadow	Shallow Freshwater Marsh	Deep Freshwater Marsh
Forested Wetland	Salt Flat	Streambed Wetland	Salt Marsh
			Ground Water Seep

#### Flooded Basin

These are temporary wetlands that occupy shallow depressions. Soils usually contain a clay subsoil layer. These basins often fill after a large rainfall event or snow melt in the spring. The duration and frequency of inundation is highly variable and dependent on precipitation patterns. Because these temporarily flooded basins are on the drier end of the moisture gradient they may support both wetland and upland plants. In a series of wet years these wetlands may support perennial wetland plants such as spikerush and cattails. During period with less precipitation these areas may support only annuals such as smartweeds and barnyard grass.

Other Common Names: playa, sink, pothole, and rain-water basin.

#### Forested Wetland

These temporary to seasonal wetlands can occupy shallow depressions or areas adjacent to other wetland types. Soils are moist enough to support trees that are absent or of different species in the adjacent uplands. Examples of possible tree species include cottonwood, green ash, pin oak, or black willow. When these wetlands occur along rivers or streams they may also be riparian forests.

Other Common Names: bottomland forest, swamp, and green-tree reservoir.

**Wet Meadow**

These seasonal wetlands are nearly level or within slight depressions. The plant community is dominated by grasses or sedges. Soils are poorly drained and saturated for much of the growing season. Plant species may include foxtail, prairie cordgrass, eastern gamagrass, or sedges.

Other Common Names: low prairie and wet prairie.

**Salt Flat**

These seasonal wetlands are nearly level or within slight depressions and have high salinity concentrations. The high salinity is a result of saline ground water or evaporation. The soil is saturated and has standing water only after heavy precipitation. Vegetation is sparse and contains salt tolerant species such as saltgrass, three-square bulrush, or seablite.

Other Common Names: salt marsh and saline marsh.

**Streambed Wetland**

These wetlands occur within a stream channel and can be seasonal or semipermanent. Pools or saturated soils that remain in the channel after ephemeral or intermittent streams have stopped flowing may be wetlands if they support wetland plants. The plant species in seasonal streambed wetlands may include annual wetland plants such as smartweeds or barnyard grass. In semipermanent streambed wetlands the plant species may include emergent species such as cattail and arrowhead, and submergent species such as white water-crowfoot, and water starwort.

Other Common Names: stream pools.

**Shallow Freshwater Marsh**

These seasonal and semipermanent wetlands occur within distinct depressions or may be adjacent to deep freshwater marshes or deepwater habitats. Soils are saturated during most normal years and standing water may occur for varying lengths of time. Vegetation is dominated by emergent plant species such as grasses (e.g., foxtails or cordgrasses), sedges, cattails, spikerushes, or bulrushes. Submergent species may be present (e.g., pondweeds, water-milfoils, and hornworts).

Other Common Names: playa, sink, sandhill pool, oxbow.

**Deep Freshwater Marsh**

These semipermanent or permanent wetlands occur in distinct depressions or may be adjacent to deepwater habitats. The soil is covered with standing water during the growing season. Standing water may occur during the entire year for permanent wetlands. Emergent vegetation (e.g., cattails and/or bulrushes) forms a border in the shallows and the deeper areas are dominated by submergent vegetation (e.g., pondweeds, water-milfoils, and hornworts) or vegetation may be absent.

Other Common Names: oxbow, swamp (true swamps are dominated by woody plants), shrub swamp, bog, pond, impoundment, and reservoir shallows.

**Salt Marsh**

These semipermanent or permanent wetlands occur in distinct depressions or may be adjacent to deepwater habitats. Salinity levels are high. The high salinity is a result of saline ground water or evaporation.

The soil is covered with standing water during the growing season. Standing water remains for the entire year in permanent wetlands. The vegetation is dominated by emergent species (e.g., salt grass, three-square bulrush, and seablite) and may form a border surrounding deeper areas dominated by submergent vegetation (e.g., pondweeds and widgeon grass) or submerged vegetation may be absent.

Other Common Names: saline marsh.

#### **Groundwater Seep**

These semipermanent and permanent wetlands occur on a slope or nearly level ground. The water source for these wetlands is groundwater seepage. The soil is saturated during most of the year and flowing water usually is present at least early in the growing season. The groundwater may or may not flow for the entire year. Vegetation is varied and depends on the seed source and the chemistry of the water.

Other Common Names: spring, fen, and bog.

The classification of wetlands was designed to meet management and planning needs within the Kansas. This classification was **not** intended to be used for delineating wetlands that will be regulated under federal regulatory programs (Clean Water Act and Food Security Acts). Classification of wetlands and riparian areas can be very detailed and complicated. Our aim was to group sites among categories that are useful and understandable for landowners, managers, and planners. This classification was created from a composite of original ideas and modifications of the following three systems:

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Dept. of the Inter., Fish and Wildl. Serv., U.S. Govt. Printing Off. Washington, D.C. 103pp.

Lauver, C. L. 1989. Preliminary classification of the natural communities of Kansas. Kans. Nat. Heritage Prog., Kans. Biol. Sur. Rept. No. 50. 20pp.

Shaw, S. P., and C. G. Fredine. 1956. Wetlands of the United States. U.S. Fish and Wildl. Serv., Circular 39. 67pp.

Table 1. Cross reference of wetland types among three classification systems.

Kansas Wetland Classification	USFWS - Circular 39 (1956)	USFWS - Wetland and Deepwater Habitats (Cowardin et al. 1979)		Water chemistry
		Classes	Water regimes	
Flooded Basin	Type 1. Seasonally flooded basins or flats	Emergent wetland	Temporarily flooded	Fresh Mixosaline
Wet Meadow	Type 2. Inland fresh meadow	Emergent wetland	Saturated	Fresh Mixosaline
Shallow Freshwater Marsh	Type 3. Inland shallow fresh marshes	Emergent wetland	Semipermanently & Seasonally flooded	
Deep Freshwater Marsh	Type 4. Inland deep fresh marshes	Emergent wetland	Permanently flooded	Fresh
	Type 5. Inland open fresh water	Aquatic Bed	Intermittently exposed	Mixosaline
		Unconsolidated-bottom	Semipermanently flooded	
Forested Wetland	Type 1. Seasonally flooded basins or flats	Forested wetland	<u>ALL</u> except Permanently	Fresh Mixosaline
	Type 7. Wooded swamps			
Salt Flat	Type 9. Inland saline flats	Unconsolidated-shore	Seasonally, Temporally, & Intermittently flooded	Eusaline Hypersaline
Salt Marsh	Type 10. Inland saline marshes	Emergent wetland	Semipermanently, Seasonally, & Permanently flooded	Eusaline
	Type 11. Inland open saline water	Unconsolidated-bottom	Intermittently exposed	
Streambed Wetland	Type 1. Seasonally flooded basins or flats	Variable		
	Type 3. Inland shallow Fresh Marshes			
Ground Water Seep	Type 1. Seasonally flooded basins or flats	Variable		
	Type 3. Inland shallow fresh marshes			

## RIPARIAN AREA TERMINOLOGY

Hydrology and vegetation are also important for classifying riparian areas. However, the terms used to classify wetland hydrology and vegetation do not work well for classifying riparian areas. Duration of stream-flow is more commonly used to describe stream hydrology. Riparian plant species that frequently occur in Kansas are listed in Appendix 3.

### Hydrology

#### Intermittent

A stream or reach of stream that generally flows only during a part of the year. Water continues to flow after the cessation of surface water run-off, but effluent ground water will not sustain flows through moderate periods of little or no precipitation. It may contain reaches of perennial flow.

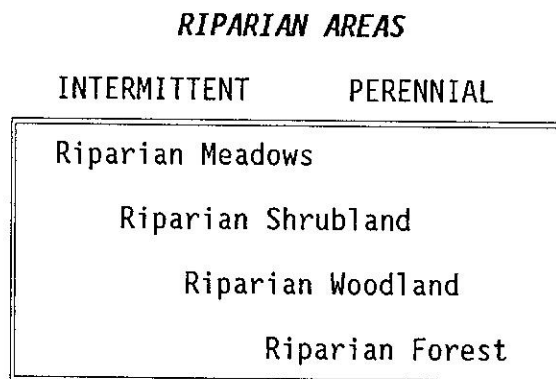
#### Perennial

A stream or reach of stream in which flow persists to the outlet except during extreme drought. The permanency of flow is usually attributable to aquifer effluent. (In some instances, melt waters from snow will sustain permanent flows.)

## RIPARIAN AREA TYPES

Hydrology influences the type of vegetation that can grow along a stream and is useful in classifying riparian areas. Vegetation is readily visible and useful in classifying riparian area types. Vegetation was the main factor used to divide four riparian area types between the two hydrological terms (Figure 3).

Figure 3. The distribution of riparian area types between intermittent and perennial streams.



#### Riparian Meadow

Plant species include grasses (e.g., foxtail, prairie cordgrass, sedges, or switchgrass). Bulrushes, cattail and spikerush occur in wetter areas. Shrubs and trees are sparse or absent.

Other Common Names: low prairie, wet prairie, and wet pasture.

### **Riparian Shrubland**

Shrubs (e.g., sandbar willow, salt cedar, rough-leaved dogwood, and poison ivy) form a major component of the plant community and trees are sparse or absent.

Other Common Names: shrub-steppe, bosque, parkland, savanna, and scrub.

### **Riparian Woodland**

Trees (e.g., cottonwood, bur oak, black willow, or ash) form a major component of the plant community, but canopy cover is less than in forested areas. The trees tend to have widely spreading lower branches. The understory consists of shrubs or grass.

Other Common Names: savanna, woodlot, and orchard.

### **Riparian Forest**

In the western half of the state one or a few tree species dominate the plant community (e.g., cottonwood, peach-leaved willow, and sandbar willow). In eastern Kansas several tree species generally dominate the plant community (e.g., boxelder, hackberry, black walnut, cottonwood, green ash, American elm, sycamore). An understory consists of smaller trees, shrubs, and vines.

Other Common Names: bottomland hardwood.

## **RESOURCE ASSESSMENT AND INVENTORY**

Based on current USFWS estimates, Kansas lost 405,600 acres or 48% of its wetlands between the 1780s and 1980s. The vast majority of these were shallow and often ephemeral wetlands, drained between the mid-1950s and mid-1970s. Most losses in Kansas have been associated with draining and conversion associated with agriculture. Because of the small proportion of public land that occurs in Kansas, most wetlands and riparian areas occur on private lands. The major wetlands that occur on public lands are listed in Appendix 4. Riparian areas have not been inventoried to the same extent as wetlands and trends are difficult to accurately establish. Losses of riparian areas have been extensive and have occurred due to conversion to farmland, urban developments, channelization, and dewatering.

## **HISTORICAL INFORMATION AND INVENTORIES**

In 1890 the state of Kansas sold 12 major wetland areas for \$270,000 to finance Emporia Normal School (now Emporia State University). Each of these 12 areas were over 1000 acres with the largest being about 4,500 acres. These areas were located in the central part of Kansas and were drained and converted to agricultural uses shortly after being sold. Several of these wetlands were salt marshes.

A wetlands inventory conducted in 1954 by the USFWS estimated that 204,166 acres, or 95% of the state's wetland acreage, were located within 41 counties of Kansas (Figure 4 and Appendix 5). Since that time, a comprehensive wetland inventory of the state has not been conducted. Currently a National Wetland Inventory is being conducted by the USFWS and has inventoried only 12 million acres or 22% of the state's land area, primarily in southwest and eastern Kansas. The U.S. Department of Agriculture estimated 143,400 acres of wetlands in Kansas during their 1987 National Resources Inventory and have identified 145,823 acres of existing wetlands on croplands under the "swampbuster" provisions of the 1985 Food Security Act. Wetlands on land that has not been farmed were not surveyed by USDA. The varied

definitions and delineations contribute to the lack of consistency in wetland inventories and trend analysis (Appendix 5).

The 1954 USFWS inventory classified wetlands by types that are compatible with this classification. This allows us to show how wetland types were distributed across the state in 1954 (Figure 5). Significant numbers of wetlands have been lost since 1954, and the distributions presented in Figure 5 should be viewed as an index of where specific wetland types naturally occurred in the state and what types of wetland should be targeted for restoration in specific geographical areas.

#### **WHAT KIND OF WETLAND AND RIPARIAN AREAS SHOULD CONSERVATION PROGRAMS TARGET?**

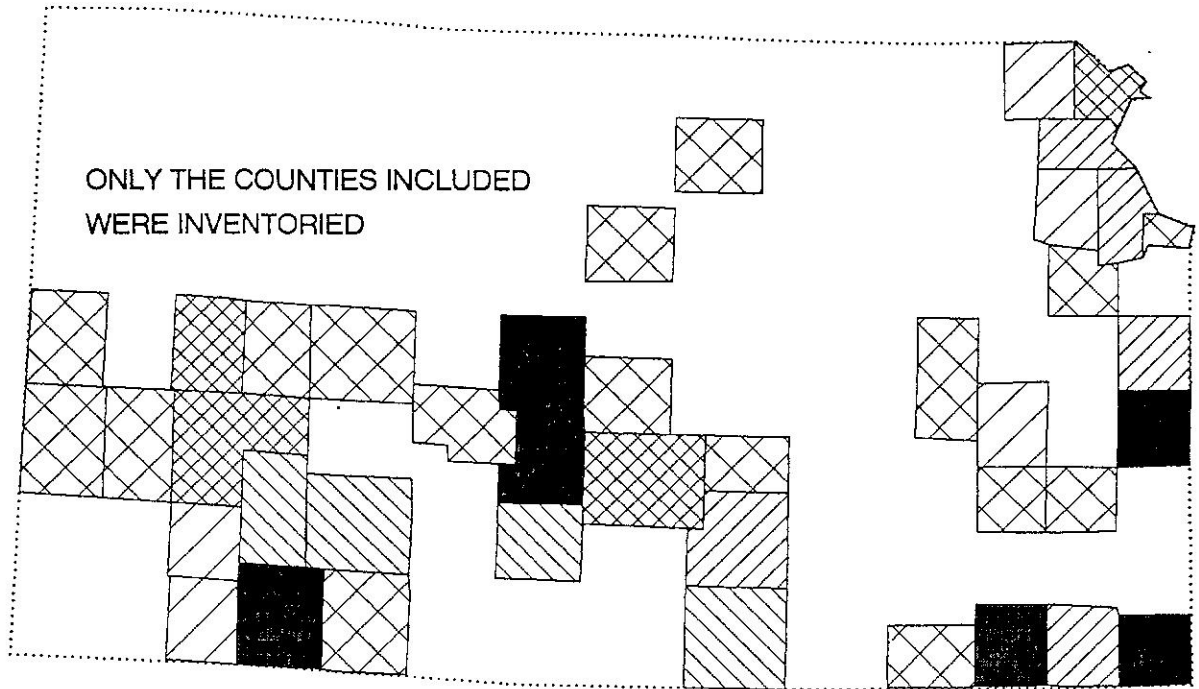
The different types of wetland and riparian areas discussed in this classification are not evenly distributed across the state. For example, the flooded basins, known as playas, are the predominant wetland type that occurs in the southwest corner of the state. Salt marshes are relatively rare in Kansas and occur mostly in the center of the state. Riparian forests occur much more frequently in the eastern part of the state where the rainfall is heavier. Thus, efforts to target priority wetland and riparian areas for conservation typically need to focus on a local or regional scale.

Targeting wetland and riparian area types may be more appropriate at the county or basin scale. All wetland and riparian areas provided benefits, but within a given geographic area different types may provide different benefits. It is important to maintain a diversity of wetland and riparian areas within a given geographic area to preserve the variety of benefits they provide.

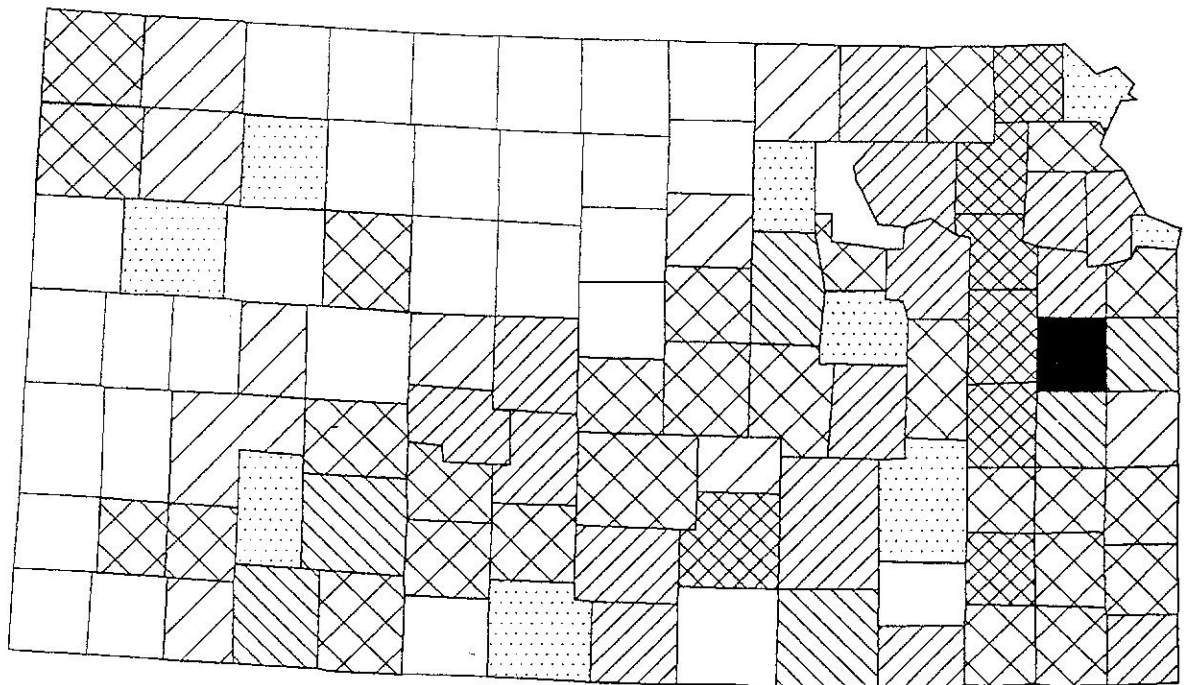
Important criteria to consider when determining the types of areas to target are scarcity and threat. Rare wetland and riparian types may provide a given geographic area with unique or unusual resources. For example, many of the plants and animals that occur in salt marshes cannot exist in other wetland types, such as the more common flooded basins. However, the threats to flooded basins are much greater than salt marshes. Flooded basins are more easy to drain and convert to other uses than salt marshes. The scarcity and threats to different types of wetland and riparian areas need to be carefully evaluated when targeting specific types of areas.

Targeting conservation for wetland and riparian areas may also be based on geographic areas and not on the different types. For example, if there is concern about the quality of water in a municipal reservoir then all types of wetland and riparian areas within the watershed should be targeted. However, if endangered species that use wetlands are of concern, areas where species distribution overlap may be targeted. In most cases, the opportunity exists to maximize several different functions and values by carefully selecting overlapping priority areas for wetland and riparian conservation.

Figure 4. Wetland acreage per county.



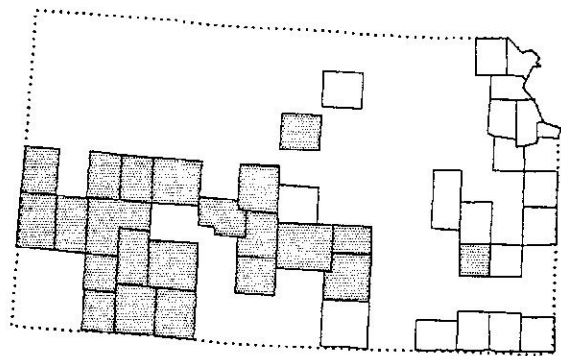
1954 USFWS CIRCULAR 39 INVENTORY



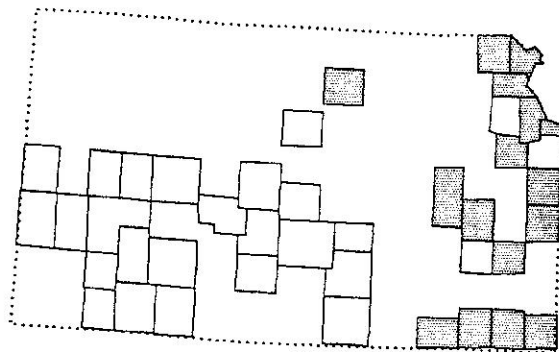
1987-90 SCS WETLAND DETERMINATIONS  
- WETLANDS ON CROPLANDS



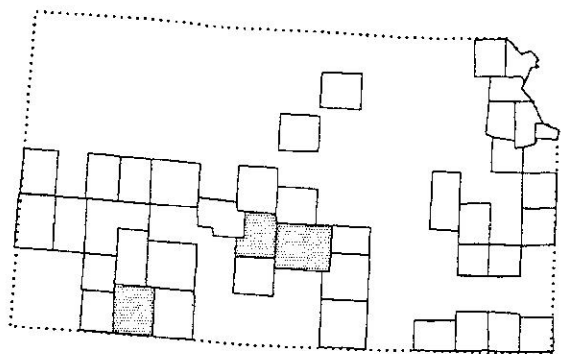




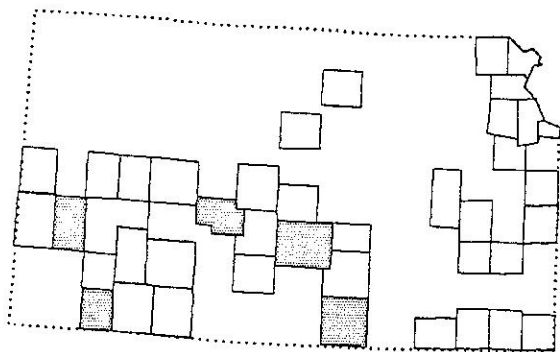
FLOODED BASINS



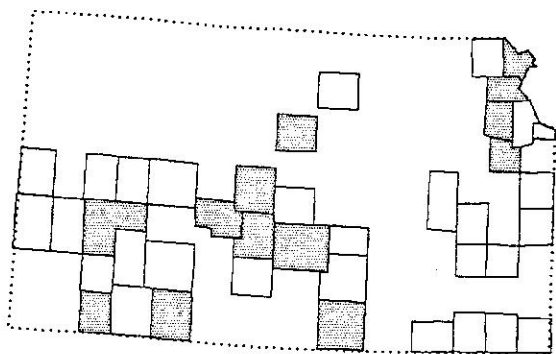
FORESTED WETLANDS



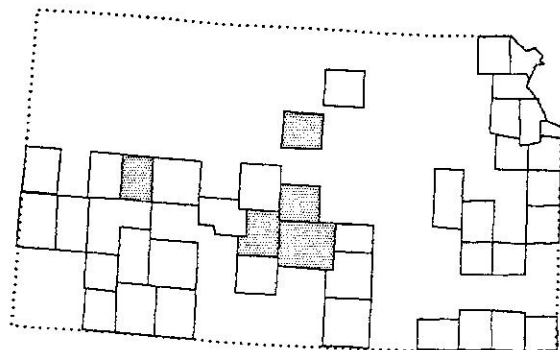
WET MEADOWS



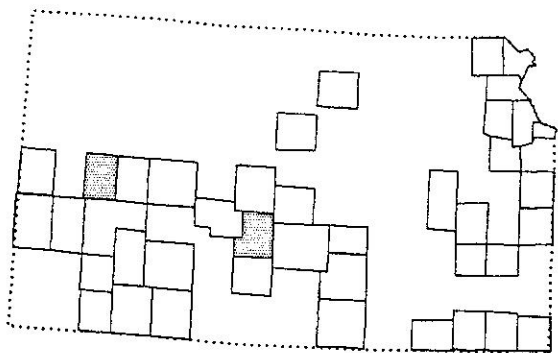
SHALLOW FRESHWATER MARSH



DEEP FRESHWATER MARSH



SALT FLAT



SALT MARSH

Figure 5. The distribution of wetland types in Kansas.

Appendix 1. Common wetland vascular plants of Kansas<sup>1</sup>.

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS <sup>2</sup>
Acanthaceae	<i>Justicia americana</i>	Common water-willow	OBL
Aceraceae	<i>Acer saccharinum</i>	Silver maple	FACW
Alismataceae	<i>Alisma plantago-aquatica</i>	Broad-leaf water-plantain	OBL
Alismataceae	<i>Sagittaria cuneata</i>	Northern arrow-head	OBL
Alismataceae	<i>Sagittaria engelmanniana</i>	Engelmann's arrow-head	OBL
Alismataceae	<i>Sagittaria latifolia</i>	Broad-leaf arrow-head	OBL
Alismataceae	<i>Sagittaria montevidensis</i>	Long-lobe arrow-head	OBL
Amaranthaceae	<i>Amaranthus blitoides</i>	Prostrate amaranth	FACW
Amaranthaceae	<i>Amaranthus rudis</i>	Tall amaranth	FACW
Apiaceae	<i>Berula erecta</i>	Cutleaf water parsnip	OBL
Apiaceae	<i>Cicuta maculata</i>	Spotted water-hemlock	OBL
Apiaceae	<i>Conium maculatum</i>	Poison hemlock	FACW
Araceae	<i>Acorus calamus</i>	Sweetflag	OBL
Araceae	<i>Arisaema dracontium</i>	Green dragon	FACW
Asclepiadaceae	<i>Asclepias incarnata</i>	Swamp milkweed	OBL
Asteraceae	<i>Ambrosia trifida</i>	Giant ragweed	FACW
Asteraceae	<i>Cacalia plantaginea</i>	Tuberous indian plantain	FACW
Asteraceae	<i>Aster praealtus</i>	Willowleaf aster	FACW
Asteraceae	<i>Bidens cernua</i>	Nodding beggar-ticks	OBL
Asteraceae	<i>Bidens comosa</i>	Leafy-bract beggar-ticks	FACW
Asteraceae	<i>Bidens connata</i>	Purple-stem beggar-ticks	OBL
Asteraceae	<i>Bidens frondosa</i>	Devil's beggar-ticks	FACW
Asteraceae	<i>Bidens aristosa</i>	Awnless beggar-ticks	FACW
Asteraceae	<i>Boltonia asteroides</i>	White boltonia	FACW
Asteraceae	<i>Eclipta prostrata</i>	Yerba de tajo	FACW
Asteraceae	<i>Eupatorium perfoliatum</i>	Common boneset	OBL
Asteraceae	<i>Flaveria campestris</i>	Alkali flaveria	FACW
Asteraceae	<i>Helenium autumnale</i>	Common sneezeweed	FACW
Asteraceae	<i>Helianthus grosseserratus</i>	Sawtooth sunflower	FACW
Asteraceae	<i>Solidago gigantea</i>	Giant goldenrod	FACW
Asteraceae	<i>Sonchus asper</i>	Prickly sowthistle	FACW
Balsaminaceae	<i>Impatiens capensis</i>	Spotted tough-me-not	FACW
Balsaminaceae	<i>Impatiens pallida</i>	Pale tough-me-not	FACW
Brassicaceae	<i>Iodanthus pinnatifidus</i>	Purple rocket	OBL
Brassicaceae	<i>Nasturtium officinale</i>	True watercress	OBL
Brassicaceae	<i>Rorippa palustris</i>	Bog yellow-cress	OBL
Brassicaceae	<i>Rorippa sessiliflora</i>	Stalkless yellow-cress	OBL
Brassicaceae	<i>Rorippa sinuata</i>	Spreading yellow-cress	FACW
Callitrichaceae	<i>Callitriche heterophylla</i>	Water starwort	OBL
Campanulaceae	<i>Lobelia cardinalis</i>	Cardinal flower	OBL
Campanulaceae	<i>Lobelia siphilitica</i>	Great blue lobelia	OBL
Ceratophyllaceae	<i>Ceratophyllum demersum</i>	Coontail	OBL
Chenopodiaceae	<i>Monolepis nuttalliana</i>	Nuttall's poverty-weed	FACW
Cornaceae	<i>Cornus amomum</i>	Silky dogwood	FACW

Appendix 1. Continued.

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS <sup>2</sup>
Crassulaceae	<i>Penthorum sedoides</i>	Ditch stonecrop	OBL
Cyperaceae	<i>Carex amphibola</i>	Narrowleaf sedge	FACW
Cyperaceae	<i>Carex frankii</i>	Frank's sedge	OBL
Cyperaceae	<i>Carex hyalinolepis</i>	Shoreline sedge	OBL
Cyperaceae	<i>Carex hystericina</i>	Porcupine sedge	OBL
Cyperaceae	<i>Carex interior</i>	Inland sedge	OBL
Cyperaceae	<i>Carex lanuginosa</i>	Woolly sedge	OBL
Cyperaceae	<i>Carex lupulina</i>	Hop sedge	FACW+
Cyperaceae	<i>Carex praegracilis</i>	Clusterfield sedge	FACW
Cyperaceae	<i>Carex scoparia</i>	Broom sedge	FACW
Cyperaceae	<i>Carex vulpinoidea</i>	Fox sedge	OBL
Cyperaceae	<i>Cyperus acuminatus</i>	Tapeleaf flatsedge	OBL
Cyperaceae	<i>Cyperus aristatus</i>	Awned flatsedge	OBL
Cyperaceae	<i>Cyperus erythrorhizos</i>	Redroot flatsedge	OBL
Cyperaceae	<i>Cyperus esculentus</i>	Yellow nutsedge	FACW
Cyperaceae	<i>Cyperus oderatus</i>	Rusty flatsedge	FACW
Cyperaceae	<i>Cyperus strigosus</i>	False nutsedge	FACW
Cyperaceae	<i>Eleocharis acicularis</i>	Least spikerush	OBL
Cyperaceae	<i>Eleocharis compressa</i>	Flatstem spikerush	FACW
Cyperaceae	<i>Eleocharis erythropoda</i>	Bald spikerush	OBL
Cyperaceae	<i>Eleocharis machrostachya</i>	Creeping spikerush	OBL
Cyperaceae	<i>Eleocharis obtusa</i>	Blunt spikerush	OBL
Cyperaceae	<i>Eleocharis smallii</i>	Small's spikerush	OBL
Cyperaceae	<i>Fimbristylis puberula</i>	Marsh fimbry	OBL
Cyperaceae	<i>Fuirena simplex</i>	Western umbrella-sedge	OBL
Cyperaceae	<i>Hemicarpha micrantha</i>	Common hemicarpha	FACW
Cyperaceae	<i>Scirpus acutus</i>	Hard-stem bulrush	OBL
Cyperaceae	<i>Scirpus americanus</i>	Olney's bulrush	OBL
Cyperaceae	<i>Scirpus atrovirens</i>	Greene bulrush	OBL
Cyperaceae	<i>Scirpus fluviatilis</i>	River bulrush	OBL
Cyperaceae	<i>Scirpus maritimus</i>	Saltmarsh bulrush	OBL
Cyperaceae	<i>Scirpus pendulus</i>	Drooping bulrush	OBL
Cyperaceae	<i>Scirpus validus</i>	Soft-stem bulrush	OBL
Elatinaceae	<i>Elatine triandra</i>	Three-stamen water-wort	OBL
Equisetaceae	<i>Equisetum hyemale</i>	Rough horsetail	FACW
Equisetaceae	<i>Equisetum laevigatum</i>	Smooth scouring-rush	FACW
Fabaceae	<i>Amorpha fruticosa</i>	False indigo-bush	OBL
Fabaceae	<i>Amphicarpaea bracteata</i>	American hog-peanut	FACW
Fabaceae	<i>Apios americana</i>	American potato-bean	FACW
Fagaceae	<i>Quercus palustris</i>	Pin oak	FACW
Gentianaceae	<i>Eustoma grandiflorum</i>	Showy prairie-gentian	FACW
Haloragaceae	<i>Myriophyllum pinnatum</i>	Cut-leaf water-milfoil	OBL
Haloragaceae	<i>Myriophyllum spicatum</i>	Eurasian water-milfoil	OBL
Iridaceae	<i>Hypoxis hirsuta</i>	Eastern yellow stargrass	FACW
Isoetaceae	<i>Isoetes butleri</i>	Butler's quillwort	OBL
Juncaceae	<i>Juncus acuminatus</i>	Taper-tip rush	OBL
Juncaceae	<i>Juncus balticus</i>	Baltic rush	OBL
Juncaceae	<i>Juncus diffusissimus</i>	Slim-pod rush	FACW+

Appendix 1. Continued.

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS <sup>2</sup>
Juncaceae	<i>Juncus marginatus</i>	Grass-leaf rush	FACW
Juncaceae	<i>Juncus torreyi</i>	Torrey's rush	FACW
Lamiaceae	<i>Lycopus americanus</i>	American bugleweed	OBL
Lamiaceae	<i>Mentha arvensis</i>	Field mint	FACW
Lamiaceae	<i>Physostegia virginiana</i>	False dragon-head	OBL
Lamiaceae	<i>Pycnanthemum tenuifolium</i>	Slender mountain-mint	FACW
Lamiaceae	<i>Scutellaria lateriflora</i>	Blue skullcap	OBL
Lamiaceae	<i>Stachys tenuifolia</i>	Marsh hedgenettle	FACW
Lamiaceae	<i>Teucrium canadense</i>	American germander	FACW
Lemnaceae	<i>Lemna minor</i>	Common duckweed	OBL
Lemnaceae	<i>Lemna perpusilla</i>	Minute duckweed	OBL
Lemnaceae	<i>Spirodela polyrhiza</i>	Giant duckweed	OBL
Lemnaceae	<i>Wolffia columbiana</i>	Columbian watermeal	OBL
Lemnaceae	<i>Wolffia punctata</i>	Dotted watermeal	OBL
Lentibulariaceae	<i>Utricularia vulgaris</i>	Common bladderwort	OBL
Lythraceae	<i>Ammannia auriculata</i>	Earleaf ammannia	OBL
Lythraceae	<i>Ammannia coccinea</i>	Purple ammannia	OBL
Lythraceae	<i>Lythrum alatum</i>	Winged loosestrife	OBL
Lythraceae	<i>Lythrum californicum</i>	California loosestrife	OBL
Marsileaceae	<i>Marsilea vestita</i>	Hairy water fern	OBL
Najadaceae	<i>Najas guadalupensis</i>	Southern naiad	OBL
Nelumbonaceae	<i>Nelumbo lutea</i>	American lotus	OBL
Oleaceae	<i>Fraxinus pennsylvanica</i>	Green ash	FACW
Onagraceae	<i>Epilobium coloratum</i>	Purple-leaf willow-herb	OBL
Onagraceae	<i>Ludwigia alternifolia</i>	Bushy seedbox	OBL
Onagraceae	<i>Ludwigia palustris</i>	Marsh seedbox	OBL
Onagraceae	<i>Ludwigia peploides</i>	Floating seedbox	OBL
Orchidaceae	<i>Spiranthes cernua</i>	Nodding ladies'-tresses	FACW
Poaceae	<i>Alopecurus carolinianus</i>	Tufted foxtail	FACW
Poaceae	<i>Bromus latiglumis</i>	Earleaf brome	FACW
Poaceae	<i>Cinna arundinacea</i>	Stout woodreed	FACW
Poaceae	<i>Distichlis spicata</i>	Inland saltgrass	NI
Poaceae	<i>Echinochloa crusgalli</i>	Barnyard grass	FACW
Poaceae	<i>Echinochloa muricata</i>	Rough barnyard grass	OBL
Poaceae	<i>Eragrostis reptans</i>	Hairy creeping lovegrass	OBL
Poaceae	<i>Glyceria striata</i>	Fowl manna grass	OBL
Poaceae	<i>Hordeum jubatum</i>	Fox-tail barley	FACW
Poaceae	<i>Leersia oryzoides</i>	Rice cutgrass	OBL
Poaceae	<i>Leersia virginica</i>	Whitegrass	FACW
Poaceae	<i>Leptochloa fascicularis</i>	Bearded sprangletop	OBL
Poaceae	<i>Leptochloa filiformis</i>	Red sprangletop	OBL
Poaceae	<i>Muhlenbergia asperifolia</i>	Alkali muhly	FACW
Poaceae	<i>Muhlenbergia frondosa</i>	Wire-stem muhly	FACW
Poaceae	<i>Muhlenbergia racemosa</i>	Green muhly	FACW
Poaceae	<i>Muhlenbergia sylvatica</i>	Forest muhly	FACW
Poaceae	<i>Paspalum floridanum</i>	Florida paspalum	FACW
Poaceae	<i>Phalaris arundinacea</i>	Reed canary grass	FACW+
Poaceae	<i>Phalaris caroliniana</i>	Carolina canary grass	FACW

Appendix I. Continued.

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS <sup>2</sup>
Poaceae	<i>Phragmites australis</i>	Common reed	FACW
Poaceae	<i>Spartina pectinata</i>	Prairie cordgrass	FACW
Polygonaceae	<i>Polygonum hydropiper</i>	Marshpepper smartweed	OBL
Polygonaceae	<i>Polygonum hydropiperoides</i>	Swamp smartweed	OBL
Polygonaceae	<i>Polygonum lapathifolium</i>	Willow-weed	OBL
Polygonaceae	<i>Polygonum pennsylvanicum</i>	Pennsylvania smartweed	FACW+
Polygonaceae	<i>Polygonum persicaria</i>	Lady's thumb	OBL
Polygonaceae	<i>Polygonum punctatum</i>	Dotted smartweed	OBL
Polygonaceae	<i>Polygonum virginianum</i>	Virginia smartweed	FACW
Polygonaceae	<i>Rumex crispus</i>	Curly dock	FACW
Polygonaceae	<i>Rumex maritimus</i>	Golden dock	FACW
Polygonaceae	<i>Rumex stenophyllus</i>	Narrow-leaf dock	FACW+
Pontederiaceae	<i>Heteranthera limosa</i>	Blue mud-plantain	OBL
Pontederiaceae	<i>Heteranthera reniformis</i>	Kidney-leaf mud-plantain	OBL
Pontederiaceae	<i>Zosterella dubia</i>	Water stargrass	OBL
Potamogetonaceae	<i>Potamogeton amplifolius</i>	Largeleaf pondweed	OBL
Potamogetonaceae	<i>Potamogeton crispus</i>	Curly pondweed	OBL
Potamogetonaceae	<i>Potamogeton diversifolius</i>	Waterthread pondweed	OBL
Potamogetonaceae	<i>Potamogeton foliosus</i>	Leafy pondweed	OBL
Potamogetonaceae	<i>Potamogeton nodosus</i>	Longleaf pondweed	OBL
Potamogetonaceae	<i>Potamogeton pectinatus</i>	Sago pondweed	OBL
Potamogetonaceae	<i>Potamogeton pusillus</i>	Baby pondweed	OBL
Primulaceae	<i>Lysimachia ciliata</i>	Fringed loosestrife	FACW
Ranunculaceae	<i>Anemone canadensis</i>	Canada anemone	FACW
Ranunculaceae	<i>Myosurus minimus</i>	Tiny mouse-tail	FACW
Ranunculaceae	<i>Ranunculus abortivus</i>	Subalpine butter-cup	FACW
Ranunculaceae	<i>Ranunculus cymbalaris</i>	Seaside butter-cup	OBL
Ranunculaceae	<i>Ranunculus longirostris</i>	White water crowfoot	OBL
Ranunculaceae	<i>Ranunculus sceleratus</i>	Celery-leaf butter-cup	OBL
Ranunculaceae	<i>Thalictrum dasycarpum</i>	Purple meadow-rue	FACW
Rubiaceae	<i>Cephalanthus occidentalis</i>	Common buttonbush	OBL
Rubiaceae	<i>Galium obtusum</i>	Blunt-leaf bedstraw	FACW
Salicaceae	<i>Salix amygdaloides</i>	Peach-leaf willow	FACW
Salicaceae	<i>Salix caroliniana</i>	Costal-plain willow	OBL
Salicaceae	<i>Salix exigua</i>	Sandbar willow	OBL
Salicaceae	<i>Salix nigra</i>	Black willow	OBL
Scrophulariaceae	<i>Bacopa rotundifolia</i>	Disk water-hyssop	OBL
Scrophulariaceae	<i>Leucospora multifida</i>	Narrow-leaf paleseed	OBL
Scrophulariaceae	<i>Lindernia anagallidea</i>	False-pimpernel	OBL
Scrophulariaceae	<i>Lindernia dubia</i>	Yellow-seed false-pimpernel	OBL
Scrophulariaceae	<i>Mimulus alatus</i>	Sharp-wing monkey-flower	OBL
Scrophulariaceae	<i>Mimulus glabratus</i>	Round-leaf monkey-flower	OBL
Scrophulariaceae	<i>Mimulus ringens</i>	Alleghany monkey-flower	OBL
Scrophulariaceae	<i>Veronica anagallis-aquatica</i>	Water speedwell	OBL
Scrophulariaceae	<i>Veronica catenata</i>	Pink water speedwell	OBL

Appendix 1. Continued.

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS <sup>2</sup>
Scrophulariaceae	<i>Veronica peregrina</i>	Purslane speedwell	OBL
Scrophulariaceae	<i>Veronica catenata</i>	Pink water speedwell	OBL
Sparganiaceae	<i>Sparganium eurycarpum</i>	Giant burreed	OBL
Tamariaceae	<i>Tamarix ramosissima</i>	Saltcedar	FACW
Typhaceae	<i>Typha angustifolia</i>	Narrow-leaf cattail	OBL
Typhaceae	<i>Typha domingensis</i>	Southern cattail	OBL
Typhaceae	<i>Typha latifolia</i>	Broad-leaf cattail	OBL
Urticaceae	<i>Boehmeria cylindrica</i>	Small-spike false-nettle	OBL
Urticaceae	<i>Laportea canadensis</i>	Canada wood-nettle	FACW
Urticaceae	<i>Urtica dioica</i>	Stinging nettle	FACW
Verbenaceae	<i>Phyla lanceolata</i>	Lance-leaf frog-fruit	OBL
Verbenaceae	<i>Verbena hastata</i>	Blue vervain	FACW
Zannichelliaceae	<i>Zannichellia palustris</i>	Horned pondweed	OBL

<sup>1</sup>Compiled from by C. C. Freeman, Kansas Biological Survey.

<sup>2</sup>5IND (=Region 5 [USFWS] Indicator) is based on data in Reed, P. B., Jr. 1988a. National list of plant species that occur in wetlands: Central Plains (Region 5). U.S. Fish Wildl. Serv. Biol. Rep. 88(26.5). 73 pp.

Appendix 2. Hydric soils that occur in Kansas.

SERIES	SOIL ID NUMBER	DRAINAGE CLASS	HIGH WATER DEPTH	TABLE		FLOODING		PONDING MONTHS
				MONTHS	MONTHS	DURATION	MONTHS	
ALBATON	IA0120	POOR	1.0-3.0	NOV-JUL	OCCASIONAL	BRIEF	FEB-NOV	
BREMER	IA0135	POOR	1.0-2.0	NOV-JUL	RARE			
CALCO	IA0075	POOR	0.0-3.0	NOV-JUL	FREQUENT	BRIEF	APR-OCT	
CARWILE	OK0134	SOMEWHAT-POOR	1.0-2.0	OCT-APR	NONE			
COLO	IA0071	POOR	1.0-3.0	NOV-JUL	OCCASIONAL	LONG	FEB-NOV	OCT-APR
GIRARD	KS0043	POOR	0.0-2.0	NOV-MAY	FREQUENT	BRIEF	MAY-OCT	
HAIG	IA0015	POOR	1.0-2.0	NOV-JUL	NONE			
KANZA	KS0056	POOR	0.0-3.0	DEC-MAR	FREQUENT	VERY BRIEF	JAN-DEC	
KINGMAN	KS0060	POOR	0.0-2.0	DEC-MAR	OCCASIONAL	VERY BRIEF	JAN-DEC	
NESS	KS0083	POOR	6.0-6.0	MAR-JUN	NONE			
OSAGE	M00009	POOR	0.0-1.0	NOV-MAY	OCCASIONAL	LONG	MAR-OCT	MAR-SEP
PAXICO	KS0178	SOMEWHAT-POOR	1.5-3.0	NOV-MAY	FREQUENT	LONG	APR-OCT	
PLEASANT	C00701	MODERATELY-WELL	6.0-6.0	APR-SEP	NONE			APR-SEP
PLEVNA	KS0092	POOR	0.0-2.0	JAN-DEC	FREQUENT	LONG	APR-OCT	
RANDALL	KS0083	POOR	6.0-6.0	MAR-JUN	NONE			
SARPY	M00118	EXCESSIVE	6.0-6.0		FREQUENT	LONG		APR-SEP
SOLOMON	KS0107	POOR	0.0-2.0	DEC-MAY	OCCASIONAL	BRIEF-LONG	APR-OCT	
SWEETWATER	TX0612	POOR	0.5-3.0	JAN-DEC	OCCASIONAL	BRIEF	APR-OCT	
VODA	KS0183	SOMEWHAT-POOR	0.5-3.0	APR-SEP	OCCASIONAL	LONG	APR-OCT	
WABASH	M00011	POOR	0.0-1.0	NOV-MAY	OCCASIONAL	BRIEF-LONG	APR-OCT	
ZOOK	IA0073	POOR	0.0-3.0	NOV-MAY	OCCASIONAL	BRIEF-LONG	FEB-NOV	

Appendix 3. Common riparian vascular plants of Kansas. **Woody plants are in bold type**<sup>1</sup>.

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS <sup>2</sup>
<b>Aceraceae</b>	<b>Acer negundo</b>	Boxelder	FAC
<b>Aceraceae</b>	<b>Acer saccharinum</b>	Silver maple	FACW
<b>Anacardiaceae</b>	<b>Toxicodendron radicans</b>	Kuntze Poison ivy	FACU
<b>Anacardiaceae</b>	<b>Toxicodendron rydbergii</b>	Rydberg poison ivy	FAC
<b>Annonaceae</b>	<b>Asimina triloba</b>	Common pawpaw	FAC
<b>Apiaceae</b>	<b>Chaerophyllum procumbens</b>	Spreading chervil	FAC
<b>Apiaceae</b>	<b>Cicuta maculata</b>	Spotted water-hemlock	OBL
<b>Apiaceae</b>	<b>Conium maculatum</b>	Poison hemlock	FACW
<b>Apiaceae</b>	<b>Sanicula canadensis</b>	Canada sanicle	NI
<b>Apiaceae</b>	<b>Sanicula gregaria</b>	Cluster sanicle	FAC
<b>Apocynaceae</b>	<b>Apocynum cannabinum</b>	Hemp dogbane	FAC
<b>Araceae</b>	<b>Arisaema dracontium</b>	Green dragon	FACW
<b>Araceae</b>	<b>Arisaema triphyllum</b>	Jack-in-the-pulpit	FAC
<b>Asclepiadaceae</b>	<b>Asclepias incarnata</b>	Swamp milkweed	OBL
<b>Asteraceae</b>	<b>Baccharis salicina</b>	<b>Great Plains false-willow</b>	FAC
<b>Asteraceae</b>	<b>Bidens cernua</b>	Nodding beggar-ticks	OBL
<b>Asteraceae</b>	<b>Bidens comosa</b>	Leafy-bract beggar-ticks	FACW
<b>Asteraceae</b>	<b>Bidens connata</b>	Purple-stem beggar-ticks	OBL
<b>Asteraceae</b>	<b>Bidens frondosa</b>	Devil's beggar-ticks	FACW
<b>Asteraceae</b>	<b>Bidens aristosa</b>	Awnless beggar-ticks	FACW
<b>Asteraceae</b>	<b>Boltonia asteroides</b>	White boltonia	FACW
<b>Asteraceae</b>	<b>Coreopsis tinctoria</b>	Plains coreopsis	FAC
<b>Asteraceae</b>	<b>Eclipta prostrata</b>	Yerba de tajo	FACW
<b>Asteraceae</b>	<b>Erechtites hieracifolia</b>	American burnweed	FAC
<b>Asteraceae</b>	<b>Eupatorium perfoliatum</b>	Common boneset	OBL
<b>Asteraceae</b>	<b>Eupatorium purpureum</b>	Spotted joe-pye-weed	FAC
<b>Asteraceae</b>	<b>Eupatorium rugosum</b>	White snakeroot	NI
<b>Asteraceae</b>	<b>Helenium autumnale</b>	Common sneezeweed	FACW
<b>Asteraceae</b>	<b>Helianthus grosseserratus</b>	Sawtooth sunflower	FACW
<b>Asteraceae</b>	<b>Helianthus hirsutus</b>	Hairy sunflower	NI
<b>Asteraceae</b>	<b>Helianthus tuberosus</b>	Jerusalem artichoke	FAC
<b>Asteraceae</b>	<b>Iva xanthifolia</b>	Coarse sumpweed	FAC
<b>Asteraceae</b>	<b>Lactuca floridana</b>	Woodland lettuce	FACU
<b>Asteraceae</b>	<b>Rudbeckia triloba</b>	Brown-eyed Susan	FACU
<b>Asteraceae</b>	<b>Silphium integrifolium</b>	Whole-leaf rosin-weed	NI
<b>Asteraceae</b>	<b>Silphium perfoliatum</b>	Cup-plant	FAC
<b>Asteraceae</b>	<b>Solidago gigantea</b>	Giant goldenrod	FACW
<b>Balsaminaceae</b>	<b>Impatiens capensis</b>	Spotted tough-me-not	FACW
<b>Balsaminaceae</b>	<b>Impatiens pallida</b>	Pale tough-me-not	FACW
<b>Brassicaceae</b>	<b>Alliaria petiolata</b>	Garlic mustard	FACW
<b>Caesalpinaceae</b>	<b>Cassia marilandica</b>	Maryland senna	FAC
<b>Caesalpinaceae</b>	<b>Cercis canadensis</b>	Redbud	NI
<b>Caesalpinaceae</b>	<b>Gleditsia triacanthos</b>	Honeylocust	FAC
<b>Caesalpinaceae</b>	<b>Gymnocladus dioica</b>	Kentucky coffetree	NI
<b>Campanulaceae</b>	<b>Campanula americana</b>	American bellflower	FAC
<b>Campanulaceae</b>	<b>Lobelia cardinalis</b>	Cardinal flower	OBL



## Appendix 3. Continued.

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS <sup>2</sup>
Campanulaceae	<i>Lobelia siphilitica</i>	Great blue lobelia	OBL
Cannabaceae	<i>Humulus lupulus</i>	Common hops	NI
Caprifoliaceae	<i>Lonicera japonica</i>	Japanese honeysuckle	FACU
Caprifoliaceae	<i>Sambucus canadensis</i>	American elderberry	FAC
Caprifoliaceae	<i>Symphoricarpos orbiculatus</i>	Buckbrush	FACU-
Caryophyllaceae	<i>Silene stellata</i>	Starry campion	NI
Celastraceae	<i>Euonymus atropurpureus</i>	Wahoo	FAC
Chenopodiaceae	<i>Chenopodium simplex</i>	Maple-leaf goosefoot	NI
Commelinaceae	<i>Commelina communis</i>	Asiatic dayflower	FAC
Commelinaceae	<i>Commelina erecta</i>	Erect dayflower	NI
Cornaceae	<i>Cornus amomum</i>	Silky dogwood	FACW
Cornaceae	<i>Cornus drummondii</i>	Rough-leaf dogwood	FAC
Crassulaceae	<i>Penthorum sedoides</i>	Ditch stonecrop	OBL
Cucurbitaceae	<i>Echinocystis lobata</i>	Wild cucumber	FAC
Cucurbitaceae	<i>Sicyos angulatus</i>	Bur cucumber	FAC
Cupressaceae	<i>Juniperus virginiana</i>	Eastern redcedar	FACU-
Cyperaceae	<i>Carex amphibola</i>	Narrowleaf sedge	FACW
Cyperaceae	<i>Carex brevior</i>	Short-beak sedge	FAC
Cyperaceae	<i>Carex frankii</i>	Frank's sedge	OBL
Cyperaceae	<i>Carex gravida</i>	Heavy sedge	NI
Cyperaceae	<i>Carex hyalinolepis</i>	Shoreline sedge	OBL
Cyperaceae	<i>Carex hystericina</i>	Porcupine sedge	OBL
Cyperaceae	<i>Carex lanuginosa</i>	Woolly sedge	OBL
Cyperaceae	<i>Carex lupulina</i>	Hop sedge	FACW+
Cyperaceae	<i>Carex praegracilis</i>	Clusterfield sedge	FACW
Cyperaceae	<i>Carex scoparia</i>	Broom sedge	FACW
Cyperaceae	<i>Carex vulpinoidea</i>	Fox sedge	OBL
Cyperaceae	<i>Cyperus acuminatus</i>	Tapeleaf flatsedge	OBL
Cyperaceae	<i>Cyperus aristatus</i>	Awned flatsedge	OBL
Cyperaceae	<i>Cyperus erythrorhizos</i>	Redroot flatsedge	OBL
Cyperaceae	<i>Cyperus esculentus</i>	Yellow nutsedge	FACW
Cyperaceae	<i>Cyperus oderatus</i>	Rusty flatsedge	FACW
Cyperaceae	<i>Cyperus strigosus</i>	False nutsedge	FACW
Cyperaceae	<i>Eleocharis acicularis</i>	Least spikerush	OBL
Cyperaceae	<i>Eleocharis compressa</i>	Flatstem spikerush	FACW
Cyperaceae	<i>Eleocharis erythropoda</i>	Bald spikerush	OBL
Cyperaceae	<i>Eleocharis machrostachya</i>	Creeping spikerush	OBL
Cyperaceae	<i>Eleocharis smallii</i>	Small's spikerush	OBL
Cyperaceae	<i>Scirpus americanus</i>	Olney's bulrush	OBL
Cyperaceae	<i>Scirpus atrovirens</i>	Greene bulrush	OBL
Cyperaceae	<i>Scirpus fluviatilis</i>	River bulrush	OBL
Cyperaceae	<i>Scirpus pendulus</i>	Drooping bulrush	OBL
Cyperaceae	<i>Scirpus validus</i>	Soft-stem bulrush	OBL
Elaeagnaceae	<i>Elaeagnus angustifolia</i>	Russian olive	FAC
Equisetaceae	<i>Equisetum hyemale</i>	Rough horsetail	FACW
Equisetaceae	<i>Equisetum laevigatum</i>	Smooth scouring-rush	FACW
Fabaceae	<i>Amorpha fruticosa</i>	False indigo-bush	OBL
Fabaceae	<i>Amphicarpaea bracteata</i>	American hog-peanut	FACW
Fabaceae	<i>Apios americana</i>	American potato-bean	FACW
Fabaceae	<i>Desmodium canadense</i>	Canada tick clover	FAC

## Appendix 3. Continued.

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS <sup>2</sup>
Fabaceae	<i>Desmodium canescens</i>	Hoary tickclover	NI
Fabaceae	<i>Desmodium glutinosum</i>	Large-flower tickclover	NI
Fabaceae	<i>Desmodium paniculatum</i>	Paniculed tickclover	NI
Fabaceae	<i>Glycyrrhiza lepidota</i>	American licorice	FACU
Fabaceae	<i>Strophostyles helvola</i>	Trailing wildbean	FACU
Fabaceae	<i>Strophostyles leiosperma</i>	Slick-seed wildbean	NI
Fagaceae	<i>Quercus macrocarpa</i>	Bur oak	FACU
Fagaceae	<i>Quercus palustris</i>	Pin oak	FACW
Fumariaceae	<i>Corydalis flavula</i>	Yellow corydalis	FAC
Gentianaceae	<i>Eustoma grandiflorum</i>	Showy prairie-gentian	FACW
Grossulariaceae	<i>Ribes missouriense</i>	Missouri gooseberry	NI
Hippocastanaceae	<i>Aesculus glabra</i>	Western buckeye	FAC
Hydrophyllaceae	<i>Ellisia nyctelea</i>	Waterpod	FAC
Juglandaceae	<i>Carya cordiformis</i>	Bitternut hickory	FAC
Juglandaceae	<i>Carya illinoensis</i>	Pecan	FAC
Juglandaceae	<i>Carya laciniosa</i>	Shellbark hickory	FAC
Juglandaceae	<i>Juglans nigra</i>	Black walnut	FACU
Juncaceae	<i>Juncus tenuis</i>	Path rush	FAC
Juncaceae	<i>Juncus torreyi</i>	Torrey's rush	FACW
Lamiaceae	<i>Agastache nepetoides</i>	Yellow giant-hyssop	FAC
Lamiaceae	<i>Lycopus americanus</i>	American bugleweed	OBL
Lamiaceae	<i>Mentha arvensis</i>	Field mint	FACW
Lamiaceae	<i>Prunella vulgaris</i>	Heal-all	FAC
Lamiaceae	<i>Scutellaria lateriflora</i>	Blue skullcap	OBL
Lamiaceae	<i>Stachys tenuifolia</i>	Marsh hedgenettle	FACW
Lamiaceae	<i>Teucrium canadense</i>	American germander	FACW
Lythraceae	<i>Cuphea viscosissima</i>	Blue waxweed	NI
Lythraceae	<i>Lythrum alatum</i>	Winged loosestrife	OBL
Lythraceae	<i>Lythrum californicum</i>	California loosestrife	OBL
Menispermaceae	<i>Menispermum canadense</i>	Canada moonseed	NI
Mimosaceae	<i>Desmanthus illinoensis</i>	Illinois bundleflower	FACU
Moraceae	<i>Maclura pomifera</i>	Osage orange	NI
Moraceae	<i>Morus alba</i>	White mulberry	FAC
Moraceae	<i>Morus rubra</i>	Red mulberry	FACU
Oleaceae	<i>Fraxinus americana</i>	White ash	FACU
Oleaceae	<i>Fraxinus pennsylvanica</i>	Green ash	FACW
Onagraceae	<i>Ludwigia alternifolia</i>	Bushy seedbox	OBL
Ophioglossaceae	<i>Botrychium virginianum</i>	Rattlesnake fern	FACU
Poaceae	<i>Agropyron smithii</i>	Western wheatgrass	FACU
Poaceae	<i>Agrostis hyemalis</i>	Winter bentgrass	FACU
Poaceae	<i>Agrostis stolonifera</i>	Spreading bentgrass	FAC+
Poaceae	<i>Bromus inermis</i>	Smooth brome	NI
Poaceae	<i>Bromus japonicus</i>	Japanese brome	FACU
Poaceae	<i>Cinna arundinacea</i>	Stout woodreed	FACW
Poaceae	<i>Dactylis glomerata</i>	Orchard grass	FACU
Poaceae	<i>Distichlis spicata</i>	Inland saltgrass	NI
Poaceae	<i>Echinochloa crusgalli</i>	Barnyard grass	FACW
Poaceae	<i>Echinochloa muricata</i>	Rough barnyard grass	OBL
Poaceae	<i>Elymus canadensis</i>	Canada wildrye	FACU
Poaceae	<i>Elymus villosus</i>	Hairy wildrye	FACU

## Appendix 3. Continued.

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS <sup>2</sup>
Poaceae	<i>Elymus virginicus</i>	Virginia wildrye	FAC
Poaceae	<i>Eragrostis reptans</i>	Hairy creeping lovegrass	OBL
Poaceae	<i>Festuca pratensis</i>	Meadow fescue	FAC
Poaceae	<i>Glyceria striata</i>	Fowl manna grass	OBL
Poaceae	<i>Hordeum jubatum</i>	Fox-tail barley	FACW
Poaceae	<i>Leersia oryzoides</i>	Rice cutgrass	OBL
Poaceae	<i>Leersia virginica</i>	Whitegrass	FACW
Poaceae	<i>Leptochloa fascicularis</i>	Bearded sprangletop	OBL
Poaceae	<i>Leptochloa filiformis</i>	Red sprangletop	OBL
Poaceae	<i>Muhlenbergia sylvatica</i>	Forest muhly	FACW
Poaceae	<i>Panicum virgatum</i>	Switchgrass	FAC
Poaceae	<i>Phalaris arundinacea</i>	Reed canary grass	FACW+
Poaceae	<i>Poa pratensis</i>	Kentucky bluegrass	FACU
Poaceae	<i>Polypogon monspeliensis</i>	Rabbitfoot grass	OBL
Poaceae	<i>Setaria geniculata</i>	Knotroot bristlegrass	FAC
Poaceae	<i>Spartina pectinata</i>	Prairie cordgrass	FACW
Poaceae	<i>Sphenopholis obtusata</i>	Prairie wedgegrass	FACW
Polygonaceae	<i>Polygonum hydropiper</i>	Marshpepper smartweed	OBL
Polygonaceae	<i>Polygonum hydropiperoides</i>	Swamp smartweed	OBL
Polygonaceae	<i>Polygonum lapathifolium</i>	Willow-weed	OBL
Polygonaceae	<i>Polygonum pensylvanicum</i>	Pennsylvania smartweed	FACW+
Polygonaceae	<i>Polygonum persicaria</i>	Lady's thumb	OBL
Polygonaceae	<i>Polygonum punctatum</i>	Dotted smartweed	OBL
Polygonaceae	<i>Polygonum virginianum</i>	Virginia smartweed	FACW
Polygonaceae	<i>Rumex crispus</i>	Curly dock	FACW
Phytolaccaceae	<i>Phytolacca americana</i>	Common pokeweed	FAC
Platanaceae	<i>Platanus occidentalis</i>	American sycamore	FAC
Primulaceae	<i>Lysimachia ciliata</i>	Fringed loosestrife	FACW
Ranunculaceae	<i>Anemone canadensis</i>	Canada anemone	FACW
Ranunculaceae	<i>Clematis pitcheri</i>	Pitcher's virgin's- bower	NI
Ranunculaceae	<i>Ranunculus abortivus</i>	Subalpine butter-cup	FACW
Ranunculaceae	<i>Ranunculus cymbalaris</i>	Seaside butter-cup	OBL
Rosaceae	<i>Agrimonia parviflora</i>	Small-flower groovebur	FAC
Rosaceae	<i>Geum canadense</i>	White avens	FACU
Rosaceae	<i>Potentilla norvegica</i>	Norwegian cinquefoil	FAC
Rosaceae	<i>Potentilla paradoxa</i>	Bushy cinquefoil	FAC
Rosaceae	<i>Potentilla rivalis</i>	Brook cinquefoil	FACW+
Rosaceae	<i>Prunus americana</i>	Wild plum	NI
Rosaceae	<i>Prunus serotina</i>	Black cherry	FACU
Rosaceae	<i>Rubus allegheniensis</i>	Common blackberry	FACU-
Rosaceae	<i>Rubus occidentalis</i>	Black raspberry	NI
Rubiaceae	<i>Cephalanthus occidentalis</i>	Common buttonbush	OBL
Rubiaceae	<i>Galium aparine</i>	Catchweed bedstraw	FACU
Rubiaceae	<i>Galium circaezans</i>	Wild licorice	NI
Rubiaceae	<i>Galium concinnum</i>	Shining bedstraw	FACU
Rubiaceae	<i>Galium obtusum</i>	Blunt-leaf bedstraw	FACW
Salicaceae	<i>Populus deltoides</i>	Cottonwood	FAC
Salicaceae	<i>Salix amygdaloides</i>	Peach-leaf willow	FACW

## Appendix 3. Continued.

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS <sup>2</sup>
Salicaceae	<i>Salix caroliniana</i>	Costal-plain willow	OBL
Salicaceae	<i>Salix exigua</i>	Sandbar willow	OBL
Salicaceae	<i>Salix nigra</i>	Black willow	OBL
Scrophulariaceae	<i>Leucospora multifida</i>	Narrow-leaf paleseed	OBL
Scrophulariaceae	<i>Mimulus alatus</i>	Sharp-wing monkey-flower	OBL
Scrophulariaceae	<i>Mimulus ringens</i>	Alleghany monkey-flower	OBL
Smilacaceae	<i>Smilax herbacea</i>	Smooth carrion-flower	FAC
Smilacaceae	<i>Smilax hispida</i>	Bristly greenbrier	FAC
Tamariaceae	<i>Tamarix ramosissima</i>	Saltcedar	FACW
Tiliaceae	<i>Tilia americana</i>	American basswood	FACU
Ulmaceae	<i>Celtis occidentalis</i>	Common hackberry	FACU
Ulmaceae	<i>Ulmus americana</i>	American elm	FAC
Ulmaceae	<i>Ulmus pumila</i>	Siberian elm	NI
Ulmaceae	<i>Ulmus rubra</i>	Slippery elm	FAC
Urticaceae	<i>Boehmeria cylindrica</i>	Small-spike false-nettle	OBL
Urticaceae	<i>Laportea canadensis</i>	Canada wood-nettle	FACW
Urticaceae	<i>Parietaria pensylvanica</i>	Pennsylvania pellitory	FAC
Urticaceae	<i>Pilea pumila</i>	Canada clearweed	FAC
Urticaceae	<i>Urtica dioica</i>	Stinging nettle	FACW
Verbenaceae	<i>Phyla cuneifolia</i>	Wedge-leaf frog-fruit	FAC
Verbenaceae	<i>Phyla lanceolata</i>	Lance-leaf frog-fruit	OBL
Verbenaceae	<i>Verbena hastata</i>	Blue vervain	FACW
Violaceae	<i>Viola pratincola</i>	Blue prairie violet	FAC-
Violaceae	<i>Viola pubescens</i>	Smooth yellow violet	FAC
Violaceae	<i>Viola sororia</i>	Downy blue violet	FAC
Vitaceae	<i>Parthenocissus inserta</i>	Thicket creeper	FAC
Vitaceae	<i>Parthenocissus quinquefolia</i>	Virginia creeper	FAC
Vitaceae	<i>Vitis cinerea</i>	Graybark grape	FAC
Vitaceae	<i>Vitis riparia</i>	River-bank grape	FAC
Vitaceae	<i>Vitis vulpina</i>	Winter grape	FAC

<sup>1</sup>Compiled from by C. C. Freeman, Kansas Biological Survey and J. K. Strickler, State and Extension Forestry.

<sup>2</sup>5IND (=Region 5 [USFWS] Indicator) is based on data in Reed, P. B., Jr. 1988a. National list of plant species that occur in wetlands: Central Plains (Region 5). U.S. Fish Wildl. Serv. Biol. Rep. 88(26.5). 73 pp.

Appendix 4. State and federal acres containing wetlands.

Wetland Areas	Managing Agency	Wetland County	Acres
Baker Wetland	KDWP <sup>a</sup>	Douglas	20
Cheyenne Bottoms WA	KDWP	Barton	13,933
Copan WA	KDWP	Montgomery	122
Elk City WA	KDWP	Montgomery	145
Fall River WA	KDWP	Greenwood	25
Flint Hills NWR	USFWS	Coffey-Lyon	1,500
Hamilton WA	KDWP	Hamilton	1
Isabel WA	KDWP	Pratt	26
Jamestown WA	KDWP	Republic	1,265
John Redmond WA	KDWP	Coffey	200
Kaw WA	KDWP	Cowley	35
Kingman WA	KDWP	Kingman	30
Kirwin NWR	USFWS	Phillips	1
Marais des Cygnes WA	KDWP	Linn	2,240
Marion WA	KDWP	Marion	19
McPherson Wetlands WA	KDWP	McPherson	120
Meade Fish Rearing Station	KDWP	Meade	5
Meade WA	KDWP	Meade	6
Melvern WA	KDWP	Osage	80
Milford WA	KDWP	Clay-Riley	210
Mined Land WA	KDWP	Cherokee-Crawford-Labette	60
Neosho WA	KDWP	Neosho	1,055
Norton WA	KDWP	Norton	40
Perry WA	KDWP	Jefferson	1,000
Quivira NWR	USFWS	Stafford	5,000
Sheridan WA	KDWP	Sheridan	1
Slate Creek WA	KDWP	Sumner	220
Texas Lake WA	KDWP	Pratt	75
Toronto WA	KDWP	Greenwood-Woodson	5
Tuttle Creek WA	KDWP	Pottawatomie-Riley-Marshall	300
Washington WA	KDWP	Washington	16
Woodson WA	KDWP	Woodson	2
<b>Total</b>			<b>28,766</b>

NWR = National Wildlife Refuge

WA = State Wildlife Area

<sup>a</sup> Cooperatively managed with Baker University and University of Kansas.

Appendix 5. Wetland acreage by county in Kansas.

County	USFWS Inventory (1954)	National Wetlands Inventory (1987-1990)	National Resources Inventory (1987)	SCS <sup>a</sup> "Swampbuster" Inventory (1987-1990)
Allen	281			469
Anderson	b			1,941
Atchison	2,030	c		253
Barber	b			48
Barton	30,285	65,781 <sup>d</sup>		4,505
Bourbon	b	c		270
Brown	177	c		6,434
Butler	b		e	3,074
Chase	b		e	4,653
Chautauqua	580			3,411
Cherokee	14,259			2,052
Cheyenne	b			308
Clark	505	c		807
Clay	b			16
Cloud	141			0
Coffey	122			8,391
Comanche	b			0
Cowley	b			1,228
Crawford	b	c		429
Decatur	b		e	0
Dickinson	b			1,541
Doniphan	8,342	c		33
Douglas	269	c		3,339
Edwards	b	c		877
Elk	b			0
Ellis	b			0
Ellsworth	b			0
Finney	9,760	c		68
Ford	1,523	c		1,756
Franklin	b	c		10,347
Geary	b			368
Gove	b			0
Graham	b			0
Grant	b	c		798
Gray	1,689	c	e	2
Greeley	256	c		0
Greenwood	b			42
Hamilton	768	c		0
Harper	b		e	2,426
Harvey	742			156
Haskell	51	c		318
Hodgeman	b	c		293
Jackson	b	c		8,487

## Appendix 5. Continued.

County	USFWS Inventory (1954)	National Wetlands Inventory (1987-1990)	National Resources Inventory (1987)	SCS <sup>a</sup> "Swampbuster" Inventory (1987-1990)
Jefferson	114	c		6,063
Jewell	b			0
Johnson	b	c		202
Kearney	861	c		0
Kingman	b			3,773
Kiowa	b	c	e	547
Labette	3,507			386
Lane	450	c		121
Leavenworth	3,174	c		7,231
Lincoln	553			0
Linn	21,325	c	e	60
Logan	b			3
Lyon	538			468
McPherson	b		e	865
Marion	b			275
Marshall	b			4,037
Meade	13,219	c	e	1,803
Miami	4,595	c		1,022
Mitchell	b		e	0
Montgomery	12,612			830
Morris	b			13
Morton	b	c		0
Nemaha	b			633
Neosho	b			645
Ness	461	c		0
Norton	b			0
Osage	b	c		8,580
Osborne	b			0
Ottawa	b			106
Pawnee	484	c		3,636
Phillips	b			0
Pottawatomie	b			4,163
Pratt	1,720			373
Rawlins	b			127
Reno	6,145	6,656 <sup>d</sup>	e	760
Republic	b			0
Rice	721	5,438		315
Riley	b			0
Rooks	b			0
Rush	b	c		157
Russell	b			0
Saline	b		e	364
Scott	8,778	c		0
Sedgwick	3,789			5,555

Appendix 5. Continued.

County	USFWS Inventory (1954)	National Wetlands Inventory (1987-1990)	National Resources Inventory (1987)	SCS <sup>a</sup> "Swampbuster" Inventory (1987-1990)
Seward	200	c		159
Shawnee	b	c		8,687
Sheridan	b			39
Sherman	b			256
Smith	b			0
Stafford	4,829	12,931 <sup>d</sup>		2,257
Stanton	b	c		0
Stevens	b	c		0
Sumner	1,103			0
Thomas	b			187
Trego	b			840
Wabaunsee	b			2,936
Wallace	b			0
Washington	b			200
Wichita	b	c		0
Wilson	b			7,275
Woodson	269			660
Wyandotte	914	c		6
<b>State</b>				
<b>Total</b>	<b>216,423</b>	<b>N/A</b>	<b>143,400</b>	<b>145,823</b>

- a Acreage figure is for wetlands occurring on croplands only.
- b Denotes county that not conduct a survey. Total wetland acreage estimated for all nonsurveyed counties was 10,734 acres.
- c Denotes counties with completed wetland inventories but for that no wetland acreage figures are available.
- d Total acreage figure of wetlands of all types by quadrangle. Quadrangle maps overlap county boundaries and acreage totals may be over or under represent actual county wetland acreage.
- e Denotes counties in that point samples included wetland cover types.