

RESTORATION AND MANAGEMENT OF DECLINING HABITATS

SPECIFICATION

PRAIRIE HABITAT

Restoration

Habitat restoration can range from actively seeding and planting an area to passively allowing restoration through appropriate management and natural succession. Management practices such as weed and pest control, inter-seeding, local native plant collection, artificial disturbances that mimic natural disturbance, prescribed burning, prescribed grazing, or use exclusion should be used to accelerate the succession process.

Restoration methods are likely to:

- Establish a herbaceous plant community that closely resembles the native community to the extent technically and fiscally practical.
- In most cases, establish desired herbaceous plant communities within four years by utilizing management methods that will speed the natural succession process.
- Use management methods that mimic natural disturbances, in order to maintain the desired plant community for the long-term.

Species

Plant species and their distribution and abundance should mimic the natural plant community as closely as possible.

When developing a seed mixture for a given range site, refer to Section II Range Site Descriptions for estimates of native plant composition. Species may be selected based on technically authoritative sources such as research findings, historic records from natural history writings, and/or native species found on adjacent sites that have been maintained as historic prairies. It is

preferable to utilize native seed from similar/local sites (if possible).

Minimum species composition for some habitat types/locations (refer to Figure 1 for locations) are as follows:

Tallgrass Prairie (Upland and Lowland)

Tallgrass prairies will be planted to a minimum of eight native grass species and seven native forb species. Example mixtures that meet these minimum requirements are shown in Appendix A.

Loess Mixed Grass Prairie

Loess Mixed Grass prairies will be planted to a minimum of eight native grass species and seven native forb species. Example mixtures that meet these minimum requirements are shown in Appendix B.

Mixed and Shortgrass Prairie

Mixed and Shortgrass prairies will be planted to a minimum of eight native grass species and three native forb species. Example mixtures that meet these minimum requirements are shown in Appendix C.

Seed

Grass seed must meet the distance (mileage) requirements for common/native ecotype seed and certified grass variety restrictions in accordance with Section II Pastureland and Hayland Interpretations *Adapted Grass Varieties* and *Certified Perennial Grass Varieties Recommended for Nebraska* Extension publication EC90-120. When possible, native ecotypes should be utilized in place of certified varieties.

Forb species and seed must be adapted to the site as shown in Section II Rangeland Interpretations and Pastureland and Hayland Interpretations.

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Planting

Refer to RANGE PLANTING (550) for cover crop, seedbed preparation, planting rates, depth of planting, seeding dates, and other planting requirements.

No-till drills utilized for planting native grasses and forbs should include: depth bands (1/2"), notched coulters ahead of double disk openers, packer wheels, seedbox with auger-like agitator and oversized seed tubes to accommodate fluffy grass seed, and a separate seedbox for forb and small grass seed. Standard grass drills have the same requirements, except notched coulters are not necessary. Refer to Nebraska Range Technical Note No. 4 or consult with the NRCS or Cooperative Extension Specialists when planting forbs into existing stands of native grass.

Ideal depth for planting native forbs is slightly less than that for native grasses and care must be taken not to plant native forb seed too deep. However, seed-soil contact is very important.

Fertility

Most native legumes are pH sensitive. If pH is strongly acid (below 5.0), lime should be applied according to University of Nebraska recommendations. When soil Phosphorus test levels are low (below 15 ppm Bray P-1 and below 10 ppm Sodium Bicarbonate) apply approximately 10 lb P₂O₅/ac when placed with seed and 20 lb/ac when broadcast. Soil samples for Phosphorus should be taken to a depth of three inches, and soil samples for pH to a depth of eight inches.

If the site is naturally low or high in pH, select native species adapted to these conditions.

Weed Control

Weeds threatening stand establishment will be controlled by mowing and/or spraying with labeled herbicides (herbicides must not compromise the desired plant composition). A wick applicator may be used for applying a non-selective translocated herbicide. An

analysis of potential weed competition will be made prior to seeding in order to recommend appropriate weed control strategy. All chemicals used must be registered, handled, and applied in accordance with product label directions. For application guidelines refer to the Guide for Herbicide Use in Nebraska, Section II - Water Quantity and Quality.

When broadleaf weeds threaten seeding establishment because of severe shading, they should be mowed or shredded or sprayed with labeled herbicides. Mowing or shredding should be discontinued in late July to early August. The height of mowing or shredding must be above the height of the seeded grasses.

Weedy grasses such as foxtail, barnyardgrass, sandbur, annual bromes, crabgrass, or other annual grasses should not be mowed or shredded unless severe shading occurs. Shredding may cause these annual grasses to stool out causing more competition to seeded grasses. When necessary, mowing or shredding must be completed such that more leaves are cut from weedy grasses than from seeded grasses and discontinued in late July to early August. Pre-emergent herbicides may be appropriate for some warm season grass and forb seedings (refer to the product label).

Infestations of grasshoppers and other insects will be sprayed for control if necessary for establishment.

Operation and Maintenance

During the seeding year, it may be difficult to determine whether a prairie restoration is successful. When the seeding has more than 0.25 seeded plants per square foot it can be considered successful. It may take two to four years before the seeding is fully successful.

All native herbaceous plant communities in Nebraska evolved under the influence of two basic processes, fire and disturbance caused by herbivores.

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Grazing by livestock must not occur for at least two successive growing seasons, or until the seeded plants are well established. Grazing must be limited and timed to achieve the desired effects on the native plant community.

Prescribed burning must be conducted and timed to achieve the desired effects on the native plant community, refer to PRESCRIBED BURNING (338).

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APPENDIX A TALLGRASS PRAIRIE (Upland Sites) (Example that meets minimum requirements)

Species (minimum of eight grass species)	PLS Pounds	Seeds per Sq. Ft.	% of Grass Mixture
Big bluestem	0.9	3.42	16.7
Canada wildrye	0.7	1.82	8.9
Indiangrass	0.4	1.60	7.8
Little bluestem	0.6	3.60	17.6
Sideoats grama	0.9	3.96	19.4
Switchgrass	0.2	1.78	8.7
Virginia wildrye	0.6	1.02	5.0
Western wheatgrass	1.3	3.25	15.9
*Forb species (minimum of seven from the list below)	Variable	2.0 or more	10% or more

*Forb species selected must be adapted to the site. Refer to Section II Pasture and Hayland Interpretations and Rangeland Interpretations (Range Site Descriptions) for additional guidance on forb seeding rates and species selection on a specific site.

TALLGRASS PRAIRIE (Lowland Sites) (Example that meets minimum requirements)

Species (minimum of eight grass species)	PLS Pounds	Seeds per Sq. Ft.	% of Grass Mixture
Big bluestem	1.3	4.94	24.5
Canada wildrye	0.7	1.82	9.0
Indiangrass	0.7	2.80	13.9
Little bluestem	0.6	3.60	17.9
Sideoats grama	0.5	2.20	10.9
Switchgrass	0.2	1.78	8.8
Virginia wildrye	0.6	1.02	5.1
Western wheatgrass	0.8	2.00	9.9
*Forb species (minimum of seven from the list below)	Variable	2.0 or more	10% or more

*Forb species selected must be adapted to the site. Refer to Section II Pasture and Hayland Interpretations and Rangeland Interpretations (Range Site Descriptions) for guidance on species selection on a specific site.

**Commercially Available Native Forbs

Arkansas rose (*Rosa arkansan*)
 Blackeyed susan (*Rudbeckia hirta*)
 Blanketflower (*Gaillardia aristata*)
 Canada milkvetch (*Astragalus canadensis*)
 Cudweed sagewort (*Artemisia ludoviciana*)
 Dotted gayfeather (*Liatris punctata*)
 False sunflower/Smooth oxeye (*Heliopsis helianthoides*)
 Fringed sagewort (*Artemisia frigida*)
 Grayhead coneflower (*Ratibida pinnata*)
 Hairy goldaster (*Chrysopsis villosa*)
 Illinois bundleflower (*Desmanthus illinoensis*)

Leadplant (*Amorpha canescens*)
 Maximilian sunflower (*Helianthus maximiliani*)
 Missouri goldenrod (*Solidago missouriensis*)
 New England aster (*Aster novae angliae*)
 Pale purple coneflower (*Echinacea pallida*)
 Pitcher sage (*Salvia azurea*)
 Plains coreopsis (*Coreopsis tinctoria*)
 Purple coneflower/Blacksampson (*Echinacea angustifolia*)
 Purple coneflower (*Echinacea purpurea*)
 Purple prairieclover (*Dalea purpurea*)

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Roundhead lespedeza (*Lespedeza capitata*)
Scarlet globemallow (*Sphaeralcea coccinea*)
Shell leaf penstemon/large beardtongue
(*Penstemon grandiflorus*)
Showy partridgepea (*Cassia chamaecrista*)
Stiff goldenrod (*Solidago rigida*)
Stiff sunflower (*Helianthus rigidus*)
Swamp milkweed (*Asclepias incarnata*)

Thickspike gayfeather (*Liatris pycnostachya*)
Upright coneflower (*Ratibida columnifera*)
Western yarrow (*Achillea millefolium/lanulosa*)
White aster (*Aster ericoides*)
White prairieclover (*Petalostemum or Dalea candidum*)
Wild bergamot (*Monarda fistulosa*)

**Refer to Section II Pasture and Hayland Interpretations and Range Interpretations (Range Site Descriptions) for guidance on species adaptability to range sites and additional species that are not listed.

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APPENDIX B LOESS MIXED GRASS PRAIRIE (Example that meets minimum requirements)

Species (minimum of eight grass species)	PLS Pounds	Seeds per Sq. Ft.	% of Grass Mixture
Big bluestem	1.0	3.80	18.9
Blue grama	0.1	1.89	9.4
Canada wildrye	0.7	1.82	9.1%
Indiangrass	0.2	0.80	4.0
Little bluestem	0.6	3.60	17.9
Sideoats grama	1.0	4.40	21.9
Switchgrass	0.2	1.78	8.9
Western wheatgrass	0.8	2.00	9.9
*Forb species (minimum of seven from the list below)	Variable	2.0 or more	10% or more

*Forb species selected must be adapted to the site. Refer to Section II Pasture and Hayland Interpretations and Rangeland Interpretations (Range Site Descriptions) for additional guidance on forb seeding rates and species selection on a specific site.

**Commercially Available Native Forbs

Arkansas rose (<i>Rosa arkansan</i>)	Purple coneflower/Blacksampson (<i>Echinacea angustifolia</i>)
Blackeyed susan (<i>Rudbeckia hirta</i>)	Purple coneflower (<i>Echinacea purpurea</i>)
Blanketflower (<i>Gaillardia aristata</i>)	Purple prairieclover (<i>Dalea purpurea</i>)
Canada milkvetch (<i>Astragalus canadensis</i>)	Rocky Mtn. bee plant (<i>Cleome serrulata</i>)
Cudweed sagewort (<i>Artemisia ludoviciana</i>)	Roundhead lespedeza (<i>Lespedeza capitata</i>)
Dotted gayfeather (<i>Liatris punctata</i>)	Scarlet globemallow (<i>Sphaeralcea coccinea</i>)
False sunflower/Smooth oxeye (<i>Heliopsis helianthoides</i>)	Shell leaf penstemon/Large beardtongue (<i>Penstemon grandiflorus</i>)
Fringed sagewort (<i>Artemisia frigida</i>)	Showy partridgepea (<i>Cassia chamaecrista</i>)
Grayhead coneflower (<i>Ratibida pinnata</i>)	Stiff goldenrod (<i>Solidago rigida</i>)
Hairy goldaster (<i>Chrysopsis villosa</i>)	Stiff sunflower (<i>Helianthus rigidus</i>)
Illinois bundleflower (<i>Desmanthus illinoensis</i>)	Swamp milkweed (<i>Asclepias incarnata</i>)
Leadplant (<i>Amorpha canescens</i>)	Thickspike gayfeather (<i>Liatris pycnostachya</i>)
Maximilian sunflower (<i>Helianthus maximiliani</i>)	Upright coneflower (<i>Ratibida columnifera</i>)
Missouri goldenrod (<i>Solidago missouriensis</i>)	Western yarrow (<i>Achillea millefolium/lanulosa</i>)
New England aster (<i>Aster novae angliae</i>)	White aster (<i>Aster ericoides</i>)
Pale purple coneflower (<i>Echinacea pallida</i>)	White prairieclover (<i>Petalostemum or Dalea candidum</i>)
Pitcher sage (<i>Salvia azurea</i>)	Wild bergamot (<i>Monarda fistulosa</i>)
Plains coreopsis (<i>Coreopsis tinctoria</i>)	

**Refer to Section II Pasture and Hayland Interpretations and Range Interpretations (Range Site Descriptions) for guidance on species adaptability to range sites and additional species that are not listed.

**APPENDIX C MIXED AND SHORTGRASS PRAIRIE
(Example that meets minimum requirements)**

Species (minimum of eight grass species)	PLS Pounds	Seeds per Sq. Ft.	% of Grass Mixture
Blue grama	0.2	3.78	18.7
Buffalograss	1.6	2.08	10.3
Green needlegrass	0.4	1.68	8.3
Little bluestem	0.4	2.40	11.9
Needleandthread	0.2	0.52	2.6
Prairie junegrass	0.04	2.12	10.5
Sideoats grama	0.6	2.64	13.0
Western wheatgrass	2.0	5.0	24.7
*Forb species (minimum of three from the list below)	Variable	2.0 or more	10% or more

*Forb species selected must be adapted to the site. Refer to Section II Pasture and Hayland Interpretations and Rangeland Interpretations (Range Site Descriptions) for additional guidance on forb seeding rates and species selection on a specific site.

****Commercially Available Native Forbs**

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|--|--|
| American vetch (<i>Vicia americana</i>) | Purple coneflower/Blacksampson (<i>Echinacea angustifolia</i>) |
| Cudweed sagewort (<i>Artemisia ludoviciana</i>) | Purple prairieclover (<i>Dalea purpurea</i>) |
| Dotted gayfeather (<i>Liatris punctata</i>) | Rocky Mtn. bee plant (<i>Cleome serrulata</i>) |
| Fringed sagewort (<i>Artemisia frigida</i>) | Scarlet globemallow (<i>Sphaeralcea coccinea</i>) |
| Ground plum milkvetch (<i>Astragalus crassicarpus</i>) | Upright coneflower (<i>Ratibida columnifera</i>) |
| Hairy goldaster (<i>Chrysopsis villosa</i>) | Western yarrow (<i>Achillea millefolium/lanulosa</i>) |

**Refer to Section II Pasture and Hayland Interpretations and Range Interpretations (Range Site Descriptions) for guidance on species adaptability to range sites and additional species that are not listed.

DECIDUOUS FOREST HABITAT

Species

Sites to be planted or seeded to declining deciduous forest habitat (refer to figures 2 and 3) must be planted to adapted native trees and shrubs. Species must be listed in Appendix D for Riparian Deciduous Forests, or Appendix E for Upland Deciduous Forests, and be adapted to the site according to Section II Conservation Tree and Shrub Suitability Groups.

Tree and shrub species that require cool, moist, and shaded conditions to establish should not be planted on cropland sites. Only native species that will establish on open cropland sites will be used. For guidance refer to Appendices D and E, and Section II Conservation Tree and Shrub Suitability Groups (Table II Species Attributes).

Species of shrubs and trees shall be mixed within rows to closely resemble the native plant community to the extent technically and fiscally practical.

Riparian Deciduous Forests

Frequently flooded riparian sites will be planted to a minimum of four tree species and two shrub species. Infrequently flooded riparian sites will be planted to a minimum of five tree species and two shrub species (refer to Appendix D for species).

Species compositions shall be adjusted based on the number of species utilized and species adaptability to the site according to Section II Conservation Tree and Shrub Suitability Groups and species composition requirements in Appendix D.

Upland Deciduous Forests

For upland deciduous forests north of the Platte River, a minimum of five tree species and four shrub species will be used. For upland deciduous forests south of the Platte River, a minimum of seven tree species and

four shrub species will be planted (refer to Appendix E for species)

Species composition shall be adjusted based on species composition requirements in Appendix E, and site adaptability according to Section II Conservation Tree and Shrub Suitability Groups.

Low Maintenance Native Grass and Forb Seedings

Low maintenance native grass seedings shall be used between tree rows when needed to control erosion until desired forest cover is established. Seedings shall be made before or concurrent with tree plantings. All mixtures must include native grass species with at least 20 PLS/ft² (refer to Table 1 for example mixtures). Native grass species selected must not be too competitive with trees, adequately address soil erosion, adapted to the site, and adapted to mowing or other management practices. An additional 2 PLS/ft² of native forbs may be added to all grass mixtures. To determine forbs that are appropriate, refer to Section II Pastureland and Hayland Suitability Groups. Some recommended mixtures are as follows:

*Table 1 Low Maintenance Mixtures

Species/Mix	% of Mix	PLS lbs/ac
Virginia wildrye	50%	6.0
Little bluestem	18%	0.6
Sideoats grama	32%	1.5
Showy patridgepea	(additional 10% of native forbs may be added)	0.9
Missouri goldenrod		0.02
Wild bergamot		0.02
Sideoats grama		6.8
Sideoats grama	60%	4.1
Blue grama	40%	0.6
Sideoats grama	60%	4.1
Blue grama	30%	0.5
Buffalo grass	10%	2.3

*Native forbs that are appropriate may be added/changed in all mixtures.

Grass seed must meet the distance (mileage) requirements for common/native ecotype seed or certified grass variety restrictions in accordance with Section II Pastureland and Hayland Interpretations *Adapted Grass Varieties and Certified Perennial Grass Varieties Recommended for Nebraska* Extension publication EC90-120. When possible, native ecotypes should be utilized in place of certified varieties.

Forb species and seed must be adapted to the site as shown in Section II Rangeland Interpretations and Pastureland and Hayland Interpretations.

Site Preparation/Planting Requirements

Site preparation and planting will be done according to the NRCS TREE PLANTING (612) standard. NRCS DIRECT SEEDING (652) standard will be followed when establishing trees and shrubs from seed. Plant to plant spacing will be based on requirements in Appendices D and E.

Planting Stock/Seed Sources/Handling and Storage

All planting stock and seed will meet the requirements of the NRCS TREE PLANTING (612) standard. Handling and storage will also meet the requirements of the NRCS TREE PLANTING (612) standard.

Operation and Maintenance

Weeds and vegetation threatening stand establishment will be controlled by tillage, mowing, cutting and/or spraying with labeled selective herbicides, or spot spraying with non-selective herbicides. Care must be taken so herbicides do not damage trees and shrubs. Guidelines for controlling competitive vegetation are in the NRCS TREE PLANTING (612) standard.

Insects and diseases will be monitored and controlled when an infestation threatens stand survival.

Protection from damage by wildlife including rodents may be necessary. Individual tree protection devices (tubes or other devices), animal repellents, and/or fencing may be used. See Nebraska Forestry Technical Note 51 for detailed information on animal repellants. Control of rodents may be achieved by the use of poison baits.

Livestock will be excluded from tree/shrub plantings.

Replant all trees and shrubs seedlings or reseed all seeded areas where establishment has failed during the first two years after the original planting. When replanting is necessary, planting will be made with the same native species, unless that species was found to be poorly adapted. If there are still significant void areas after the first two years, hand planting will be completed as necessary to fill void areas.

Long-term maintenance shall include periodic checks of the planting. Pruning and removal of broken branches and other maintenance will be completed as necessary.

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Appendix D Riparian Deciduous Forest Species Mixture

Species	Minimum Stand Composition in %	Plant Spacing Ft.
INFREQUENTLY FLOODED SITES		
TREES		10-20 ft
American elm (<i>Ulmus americana</i>)	0-10%	
Basswood, American linden (<i>Tilia americana</i>)	0-10%	
Black walnut (<i>Juglans nigra</i>)	0-30%	
Boxelder (<i>Acer negundo</i>)	0-10%	
Bur oak (<i>Quercus macrocarpa</i>)	10-30%	
Green ash (<i>Fraxinus americana</i>)	10-20%	
Hackberry (<i>Celtis occidentalis</i>)	5-10%	
Kentucky coffeetree (<i>Gymnocladus dioicus</i>)	0-10%	
Red elm (<i>Ulmus rubra</i>)	0-10%	
Red oak (<i>Quercus rubra</i>)	0-10%	
Silver maple (<i>Acer sacharinum</i>)	0-10%	
SHRUBS		4-8 ft
Buttonbush (<i>Cephalanthus occidentalis</i>)	0-5%	
Gooseberry, Missouri (<i>Ribes missouriensis</i>)	5-10%	
Hazelnut, American (<i>Corylus americana</i>)	0-5%	
Rough-leaved dogwood (<i>Cornus racemosa</i>)	0-10%	
Snowberry, common (<i>Symphoricarpos albus</i>) or Snowberry, western (<i>Symphoricarpos occidentalis</i>)	0-10%	
FREQUENTLY FLOODED SITES		
TREES		10-20 ft
Black willow (<i>Salix nigra</i>) or Peach-leaf willow (<i>Salix amygdaloides</i>)	0-20%	
Boxelder (<i>Acer negundo</i>)	0-15%	
Cottonwood (<i>Populus deltoides</i>)	10-30%	
Green ash (<i>Fraxinus americana</i>)	10-30%	
Silver maple (<i>Acer sacharinum</i>)	5-15%	
SHRUBS		4-8 ft
Buttonbush (<i>Cephalanthus occidentalis</i>)	0-10%	
Elderberry, American elder (<i>Sambucus canadensis</i>)	0-10%	
Red-osier dogwood (<i>Cornus sericea</i>)	0-10%	
Rough-leaved dogwood (<i>Cornus racemosa</i>)	0-10%	

Appendix E Upland Deciduous Forest Species Mixture

Species	Minimum Stand Composition in Percent	Plant Spacing Ft.
TREES		10-20 ft
Basswood, American linden (<i>Tilin americana</i>)	0-10%	
Bitternut hickory (<i>Carya cordiformis</i>)	5-20%	
Black cherry (<i>Prunus serotina</i>)	0-10%	
*Black oak (<i>Quercus velutina</i>)	0-10%	
Black walnut (<i>Juglans nigra</i>)	0-20%	
Bur oak (<i>Quercus macrocarpa</i>)	20-50%	
*Chinkapin oak (<i>Quercus muhlenbergii</i>)	0-20%	
Ironwood (<i>Ostrya virginiana</i>)	0-10%	
Red oak (<i>Quercus rubra</i>)	10-20%	
*Shagbark hickory (<i>Carya ovata</i>)	0-20%	
SHRUBS		4-8 ft
American plum (<i>Prunus americana</i>)	5-20%	
Bittersweet (<i>Celastrus scandens</i>)	0-10%	
Blackberry (<i>Rubus allegheniensis</i>)	0-10%	
Chokecherry, common (<i>Prunus virginiana</i>)	5-20%	
Gooseberry, Missouri (<i>Ribes missouriensis</i>)	0-20%	
Hazelnut, American (<i>Corylus americana</i>)	0-20%	
Prickly ash (<i>Zanthoxylum americanum</i>)	0-10%	

*** Use the species only in Sarpy, Cass, Otoe, Johnson, Nemaha, Pawnee and Richardson counties**

Figure 1: Declining Prairie Habitats

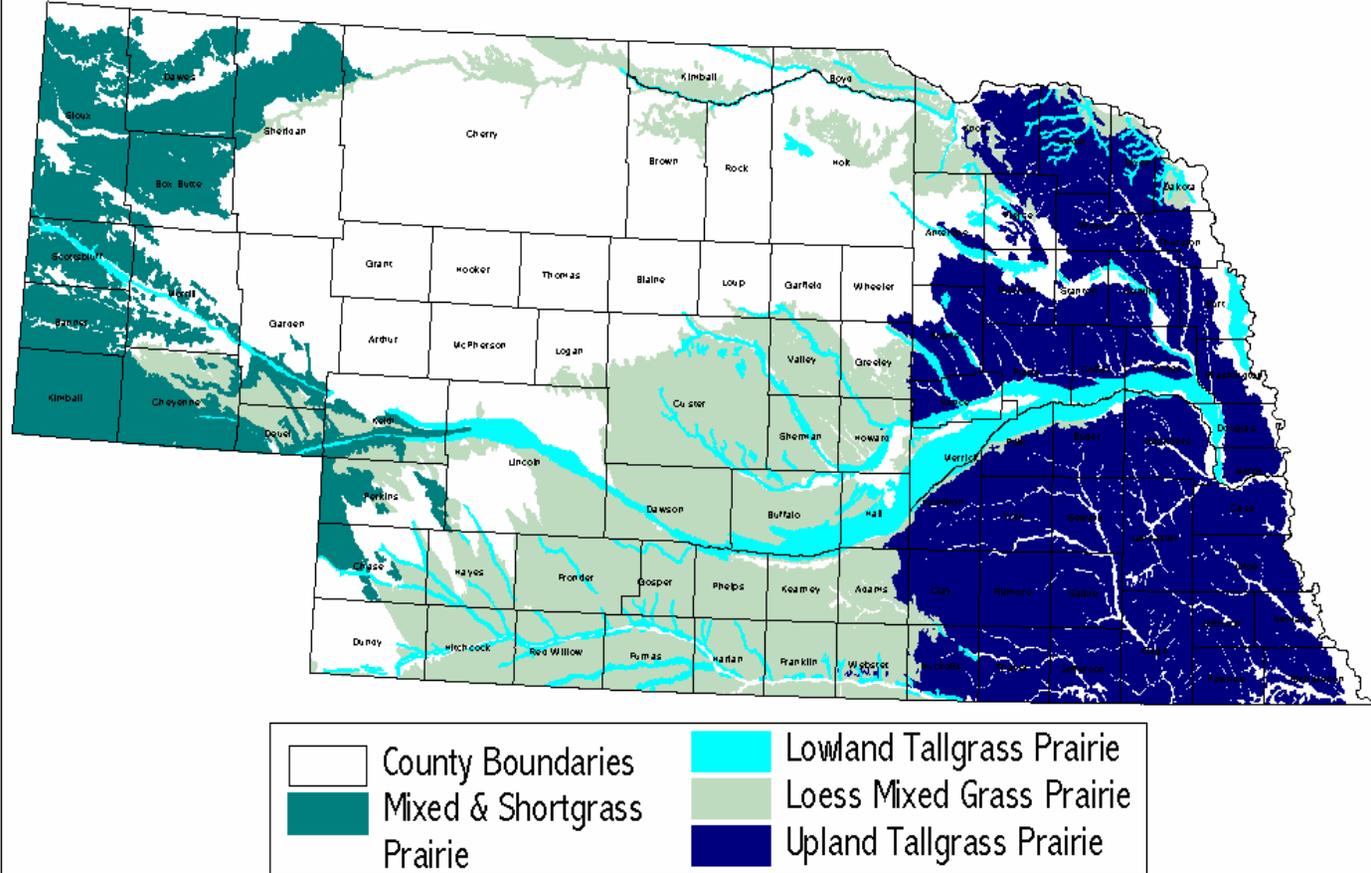


Figure 2: Declining Riparian Deciduous Forest Habitat Locations

Riparian deciduous forests are generally found in the floodplains of perennial rivers and streams in the eastern ¼ of Nebraska. They are often associated with lowland Tallgrass Prairies and Upland Deciduous Forests.

Some historical riparian deciduous forests in Nebraska are:

Bazile Creek - Downstream from the Knox-Antelope County line

Big Blue River - Downstream from the Seward-York County line and the Seward-Butler County line to the Kansas border

Big Sandy Creek - Downstream from Highway 81 in Thayer County

Elkhorn River - Downstream from the Madison-Antelope County line

Little Blue River - Downstream from the Clay-Nuckolls County line

Logan Creek - Downstream from the Dixon-Wayne County line

Missouri River - The entire length of the river

Niobrara River - Downstream from the Keya Paha-Cherry County line

Platte River - Downstream from the Polk-Butler County line

Republican River - Downstream from the Harlan County Reservoir

Verdigre Creek - In Antelope and Knox Counties

All perennial streams in Cass, Otoe, Johnson, Nemaha, Pawnee and Richardson counties

Figure 3: Declining Upland Deciduous Forest Habitat Locations

Historic upland deciduous forests occur primarily in the eastern half of Nebraska on gentle or steep slopes adjacent to stream floodplains. Bur oak is the dominant tree species throughout this habitat type. Tree, shrub, and herbaceous species associated with Bur oak varied relative to soils, aspect, slope, and available moisture.

Some historical upland deciduous forest sites are:

Bazile Creek – Downstream from the Knox-Antelope County line in uplands one mile either side of the floodplain

Big Blue River – Downstream from the Seward-York County line and the Seward-Butler County line to the Kansas border, uplands one-half mile either side of the floodplain

Big Sandy Creek – Downstream from Highway 81 in Thayer County, uplands one-half mile either side of the floodplain

Elkhorn River – Downstream from the Madison-Antelope County line, uplands within one mile either side of the floodplain

Little Blue River – Downstream from the Clay-Nuckolls County line, uplands one-half mile either side of the floodplain

Logan Creek – Downstream from the Dixon-Wayne County line, uplands one-half mile either side of the floodplain

Missouri River – Downstream from the Washington-Burt County line, uplands within two miles of the floodplain

Niobrara River – Downstream from the Keya Paha-Cherry County line, uplands one-half mile either side of the floodplain

Platte River – Downstream from the Elkhorn River to the Missouri River, uplands within two miles of the floodplain

Republican River – Downstream from the Harlan County Reservoir, uplands one-half mile either side of the floodplain

Turkey Creek – Turkey Creek and its tributaries in Pawnee County, uplands one mile either side of the floodplain

Verdigree Creek – In Antelope and Knox Counties, uplands one-half mile either side of the floodplain

In Cass, Otoe, Johnson, Nemaha, Pawnee and Richardson Counties, the upland areas within one-half mile of any perennial stream

In Seward County, sites in the Burchard-Steinhauer and Hibbs-Hall soil associations located along the Oak Creek, Middle Oak Creek, Middle Creek, South Branch Middle Creek and its tributaries, Culber Creek, Holmes Creek and Cheese Creek.

In Butler County, sites in the Sharpsburg-Steinhauer-Pawnee soil association

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