USDA Natural Resources Conservation Service

Ecological site F131BY001AR
Loamy Terrace

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

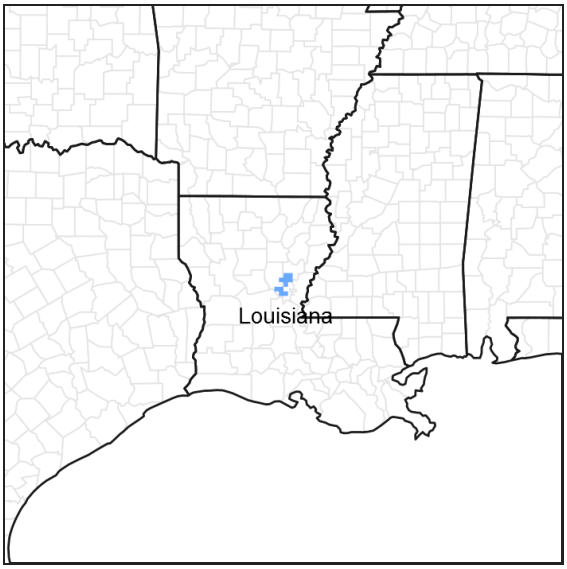


Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

MLRA notes

Major Land Resource Area (MLRA): 131B–Arkansas River Alluvium

Major Land Resource Area (MLRA) 131B, the Arkansas River Alluvium, is in Arkansas (67 percent) and Louisiana (33 percent). It makes up about 3,955 square miles. The towns of Montrose, Dumas, and England, Arkansas, and Monroe, Louisiana, are in this MLRA. Interstate 20 passes through Monroe, Louisiana. Most parts of the Overflow National Wildlife Refuge, the Upper Ouachita National Wildlife Refuge, and the D'Arbonne National Wildlife Area are in this MLRA.

Classification relationships

USDA-Natural Resources Conservation Service, 2006.
-Major Land Resource Area (MLRA) 131B

Ecological site concept

The Loamy Terrace is a tallgrass prairie. The sites are productive are maintained by frequent fires every one to three years.

Associated sites

F131BY003AR	**Loamy Flood Plain** Sites are found in a lower position on the landscape.

Similar sites

F131DY005AR	**Loamy Prairie Terrace** Sites are similar, but in different MLRAs.

Table 1. Dominant plant species

Tree	(1) *Quercus nigra*
Shrub	Not specified
Herbaceous	(1) *Panicum virgatum*

Physiographic features

The site occurs on stream terraces. The sites are nearly level with slopes ranging from 0 to 2, but are typically less than 1 percent. Sites exhibit a water table that may be as high as 12 inches below the surface, especially during the late fall and early winter.

Table 2. Representative physiographic features

Landforms	(1) Alluvial plain > Stream terrace
Runoff class	Low to medium
Flooding frequency	None to rare
Ponding frequency	None
Elevation	5–30 m
Slope	0–2%
Water table depth	30–203 cm
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation is 56 inches, which increases from north to south. Most of the rainfall occurs as frontal storms during late fall, winter, and early spring, although an appreciable amount of precipitation also occurs as convective thunderstorms during the early part of the growing season. The total amount of the precipitation that occurs as snow ranges from less than one percent in the southern part of the MLRA to five percent in the northern part. Temperatures range from highs in the low 90's during the summer to lows in the low 30's during the winter. The frost-free period averages 222 days, while the freeze-free period averages 256 days.

Table 3. Representative climatic features

Frost-free period (average)	222 days
Freeze-free period (average)	255 days
Precipitation total (average)	1,422 mm

Climate stations used

- (1) MONROE RGNL AP [USW00013942], Monroe, LA
- (2) DUMAS [USC00032148], Dumas, AR
- (3) PORTLAND [USC00035866], Portland, AR

- (4) COLUMBIA LOCK [USC00161979], Columbia, LA
- (5) MONROE ULM [USC00166314], Monroe, LA
- (6) RAYVILLE [USC00167691], Rayville, LA
- (7) DERMOTT 3 NE [USC00031962], Dermott, AR
- (8) KEO [USC00033862], England, AR
- (9) ROHWER 2 NNE [USC00036253], Pickens, AR
- (10) BASTROP [USC00160537], Bastrop, LA

Influencing water features

The sites occur on stream terraces that shed water and has a water table as high as 12 inches.

Wetland description

This site has the potential for being a hydric soil, and an on-site investigation would be needed to identify specific hydric features are present.

Soil features

The soils consist of very deep, somewhat poorly to poorly drained, slow to impermeable soils. The two soils correlated to this site are Bursley silty clay loam and Crowley silt loam. Their taxonomic descriptions are Fine-silty, mixed, active, thermic Aeric Glossaqualf and Fine, smectitic, thermic Typic Albaqualf, respectively.

Table 4. Representative soil features

Parent material	(1) Alluvium–sedimentary rock
Surface texture	(1) Silt loam (2) Silty clay loam
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained to poorly drained
Permeability class	Slow
Soil depth	203 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	20.32 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	4.5–8.4
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The information in this ecological site description (ESD), including the state-and-transition model (STM), was developed using archeological and historical data, professional experience, and scientific studies. The information is representative of a complex set of plant communities. Not all scenarios or plants are included. Key indicator plants,

animals, and ecological processes are described to inform land management decisions.

Introduction - This Arkansas River Alluvium (MLRA 131B) is on the alluvial plains along the lower Arkansas River in Arkansas and the Ouachita River in Louisiana and Arkansas. The landforms in the area are level or depressional to very gently undulating alluvial plains, backswamps, oxbows, natural levees, and terraces. Landform shapes range from convex on natural levees and undulating terraces, to concave in oxbows. Landform shapes differentiate water-shedding positions from water-receiving positions, both of which affect soil formation and hydrology. Average elevations start at about 50 feet in the southern part of the area and gradually rise to about 250 feet in the northwestern part. Maximum local relief is about 10 feet, but relief is considerably lower in most of the area.

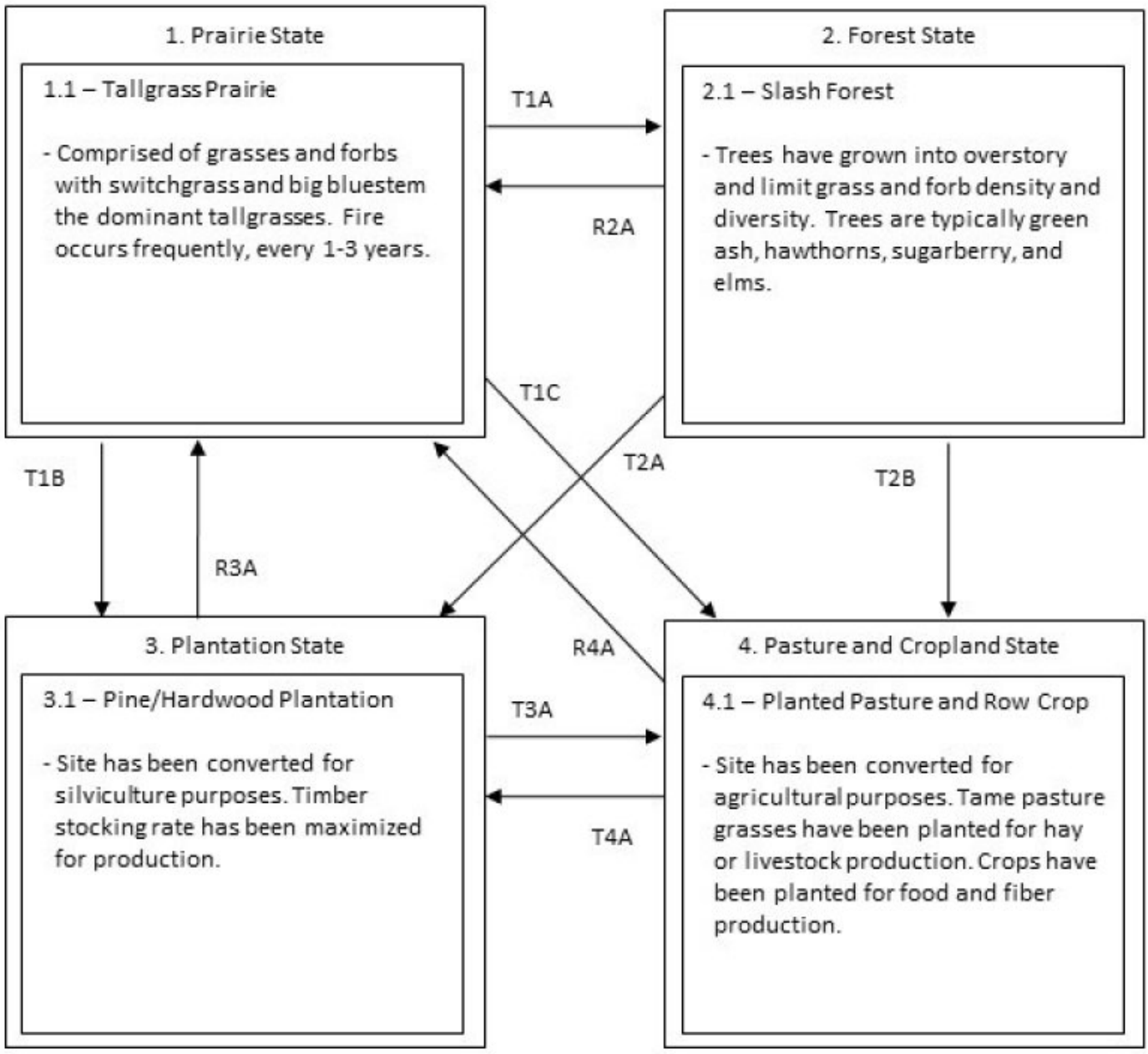
Geology - Bedrock in this area consists of Tertiary and Cretaceous sands formed as beach deposits during the retreat of the Cretaceous ocean from the midsection of the United States. Alluvial deposits from flooding and lateral migration of the Arkansas and Ouachita Rivers typically lie above the bedrock. These sediments are sandy to clayey fluvial deposits of Holocene to late Pleistocene age and are many feet thick. The geologic surfaces are identified as the Arkansas Lowlands, which extend from the Yazoo Basin up the Arkansas River to the margin of the Coastal Plain, and the parts of the Tensas Basin west of Macon Ridge. The deposits on both of these surfaces are of Holocene age. In some areas late Pleistocene terrace deposits are within several feet of the present surfaces, but they do not crop out in the MLRA.

Biological Resources - This area once consisted entirely of bottomland hardwood deciduous forest and mixed hardwood and cypress swamps pocked with areas of prairies on the terraces. The major tree species in the native plant communities in the areas of bottomland hardwoods formerly were and currently are water oak (*Quercus nigra*), Nuttall oak (*Quercus texana*), cherrybark oak (*Quercus pagoda*), pecan (Carya illinoensis), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), eastern cottonwood (*Populus deltoides*), and hickory (Carya sp.). The major tree species in the native plant communities in the swamps formerly were and currently are bald cypress (*Taxodium distichum*), water tupelo (*Nyssa aquatica*), green ash (*Fraxinus pennsylvanica*), and black willow (*Salix nigra*). The important native understory species are palmetto (*Sabal minor*), greenbrier (Smilax sp.), wild grape (Vitis sp.), and poison ivy (*Toxicodendron radicans*) in the areas of bottomland hardwoods and buttonbush (*Cephalanthus occidentalis*), lizardtail (*Saururus cernuus*), waterlily (Nymphaea sp.), sedges (Carex sp.), and rushes (Juncus sp.) in the swamps. Switchgrass (*Panicum virgatum*), big bluestem (*Andropogon gerardii*), little bluesetm (*Schizachyrium scoparium*), Indiangrass (*Sorghastrum nutans*), and eastern gamagrass (*Tripsacum dactyloides*) vegetate the prairie terraces.

Land Use - Farms and scattered tracts of forested wetlands make up nearly all of this area. The farms produce mainly cash crops. Cotton, soybeans, milo, and corn are the main crops. In many areas furrow irrigation is used during droughty parts of the growing season. Throughout the area, catfish are produced commercially on farm ponds that are contained by levees. Migratory waterfowl are harvested throughout the area. Hardwood timber is harvested on some forested wetlands, and most forested areas are managed for wildlife.

Conservation - The major resource concerns are control of surface water, management of soil moisture, and maintenance of the content of organic matter and productivity of the soils. Conservation practices on cropland generally include nutrient management, crop residue management, and alternative tillage systems, especially no-till systems. In many areas land leveling or shaping optimizes the control of surface water. Other major cropland management practices are control of competing vegetation and insects through aerial or ground spraying of herbicides and insecticides and fertility management programs that make use of chemical fertilizers.

State and transition model



Code	Practice
T1A	Fire suppression and no management. Woody species escape the height at which fire can be effective.
T1B, T2A, T4A	Site is prepared and planted to a monoculture of trees.
T1C, T2B, T3A	Site is prepared and planted to grass or crops.
R2A, R3A	Clearcut, possible reseeding, and return of natural fire intervals.
R4A	Native species reseeded and return of natural fire intervals.

Figure 6. STM

State 1
Prairie

This ecological site is a tallgrass prairie. Historic accounts and a few remnant locations show evidence of the prairie. The site's productive, yet sometimes droughty, soils provide a good medium for frequent fires. Dormant season and late-growing season fires are estimated to have occurred every one to three years.

Dominant plant species

- big bluestem (*Andropogon gerardii*), grass

- switchgrass (*Panicum virgatum*), grass

Community 1.1
Tallgrass Prairie

The vegetation adapted to the large, flat expanses was a diverse tallgrass prairie. Switchgrass and big bluestem are the dominant grasses. Other species include: little bluestem, Indiangrass, and eastern gamagrass in wetter areas. Forbs include: compass plant (*Silphium laciniatum*), prairie blazing star (*Liatris spicata*), black-eyed susan (*Rudbeckia hirta*), and partridge pea (*Chamaecrista fasciculata*).

State 2
Forest

The Plantation State is a result of conversion activities. The landowner has maximized silviculture production by planting a monoculture of tree species.

Dominant plant species

- green ash (*Fraxinus pennsylvanica*), tree
- hawthorn (*Crataegus*), tree

Community 2.1
Slash Forest

Green ash (*Fraxinus pennsylvanica*) and hawthorns (Crataegus sp.) are the dominant species in the Slash Forest. Other trees include: sugarberry (*Celtis laevigata*) and elms (Ulmus sp.). Slash Forest communities lack the fire regime found in the Tallgrass Prairie communities due to reduction in fine fuels.

State 3
Plantation

The Plantation State is a result of conversion activities. The landowner has maximized silviculture production by planting a monoculture of tree species.

Community 3.1
Pine/Hardwood Plantation

In the immediate years following the initial plantation tree planting, the understory community will resemble State 1. During this early growth period, the landowner will typically remove unwanted tree species and herbaceous plants to reduce competition with the planted trees. As the overstory canopy closes, less understory management is required due to sunlight restrictions to the ground layer.

State 4
Pasture and Cropland

The Pasture and Cropland State is a result of conversion activities. The landowner has maximized agriculture production by planting a monoculture of introduced grass species or agricultural row crops.

Community 4.1
Planted Pasture and Row Crop

Typical perennial warm-season grasses include Bermudagrass, bahiagrass, dallisgrass, and Johnsongrass. Spring and fall forages may include legumes such as clover. The grasses are grown for livestock production through direct grazing or baling hay for later use. Agricultural row crops are grown for food and fiber production. Typical crops include cotton, soybeans, milo, corn, rice, and sugarcane. Many farmers use herbicides to reduce unwanted plant competition which yields a plant community unrepresentative of State 1 or subsequent vegetative states.

Transition T1A
State 1 to 2

The transition from State 1 to State 2 is a result of time and long periods of no fire. Without fire to suppress seedlings, biomass and diversity are lost from the grass and forb layers.

Transition T1B
State 1 to 3

The transition is due to the land manager maximizing silviculture potential. If present, merchantable timber is harvested by clearcut, then the site is prepared and planted to a monoculture of trees.

Transition T1C
State 1 to 4

The transition is due to the land manager maximizing agricultural production. If present, merchantable timber is harvested by clearcut, then the site is prepared and planted to either a tame grass or row crop.

Restoration pathway R2A
State 2 to 1

Restoration of this community to the reference state begins with a timber harvest. Removing trees opens up the canopy, allowing sunlight penetration to the ground. If the land has been forested for many decades, native seeds may be required if a seedbank does not exist. After a successful stand of grass has returned, natural burn intervals are required to keep woody species controlled.

Transition T2A
State 2 to 3

The transition is due to the land manager maximizing silviculture potential. If present, merchantable timber is harvested by clearcut, then the site is prepared and planted to a monoculture of trees.

Transition T2B
State 2 to 4

The transition is due to the land manager maximizing agricultural production. If present, merchantable timber is harvested by clearcut, then the site is prepared and planted to either a tame grass or row crop.

Restoration pathway R3A
State 3 to 1

Restoration of this community to the reference state begins with a timber harvest. Removing trees opens up the canopy, allowing sunlight penetration to the ground. If the land has been forested for many decades, native seeds may be required if a seedbank does not exist. After a successful stand of grass has returned, natural burn intervals are required to keep woody species controlled.

Transition T3A
State 3 to 4

The transition is due to the land manager maximizing agricultural production. If present, merchantable timber is harvested by clearcut, then the site is prepared and planted to either a tame grass or row crop.

Restoration pathway R4A
State 4 to 1

Restoration of this community to the reference state begins by reseeding native seeds. After a successful stand of grass has returned, natural burn intervals are required to keep woody species controlled.

Transition T4A
State 4 to 3

The transition is due to the land manager maximizing silviculture potential. If present, merchantable timber is harvested by clearcut, then the site is prepared and planted to a monoculture of trees.

Additional community tables

Inventory data references

These site descriptions were developed as part of the provisional ecological site initiative using historic soil survey manuscripts and low intensity field sampling.

Other references

Allen, J. A., B. D. Keeland, J. A. Stanturf, and A. F. Kennedy Jr. 2001. A guide to bottomland hardwood restoration. Technical report, USGS/BRD/ITR-2000-0011.

Louisiana Natural Heritage Program. 2009. The Natural Communities of Louisiana. Baton Rouge, LA, U.S.A. Data current as of August 2009.

NatureServe. 2013. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA, U.S.A. Data current as of 12 July 2013.

Randall, J. M., and J. Marinelli. 1996. Invasive plants: weeds of the global garden. Volume 149. Brooklyn Botanic Garden, Brooklyn, NY.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database.

Stanturf, J. A., S. H. Schoenholtz, C. J. Schweitzer, and J. P. Shepard. 2001. Achieving restoration success: Myths in bottomland hardwood forests. Restoration Ecology, 9:189-200.

Stringham, T. K., W. C. Krueger, and P. L. Shaver. 2003. State and transition modeling: An ecological process approach. Journal of Range Management 56:106-113.

U.S. Army Corps of Engineers. 2010. Regional supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0). U.S. Army Corps of Engineers, Engineer Research and Development Center, Environmental Laboratory ERDC/EL TR-10-20.

USDA-NRCS Ag Handbook 296 (2006).

Contributors

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Approval

Bryan Christensen, 9/22/2023

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	11/03/2021
Approved by	Bryan Christensen
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**
