

Ecological site F070BY001NM

Rio Grande cottonwood/Plains cottonwood 11-15 inches

Last updated: 9/12/2023
Accessed: 05/21/2025

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.

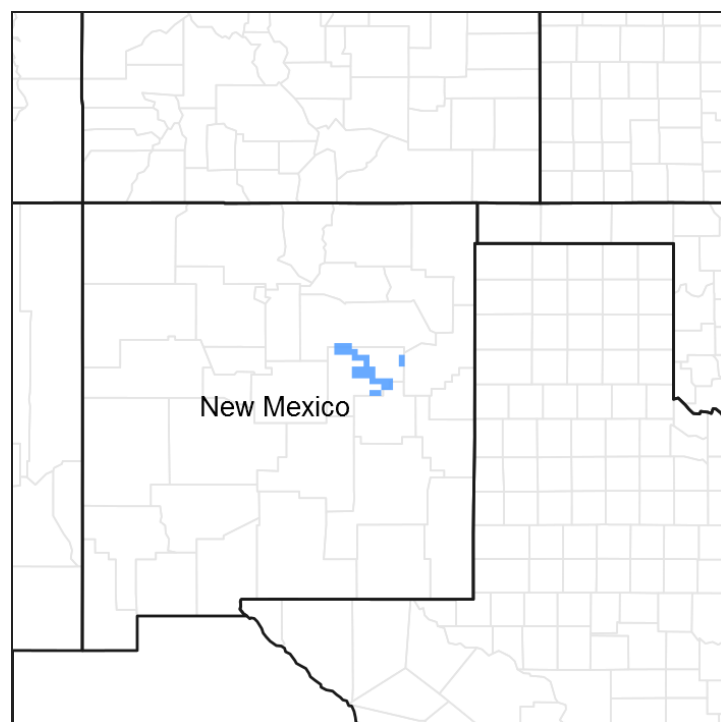


Figure 1. Mapped extent

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.

Ecological site concept

The central concept of this ecological site is floodplain systems along the Pecos River in MLRA 70B.

Table 1. Dominant plant species

Tree	(1) <i>Populus fremontii</i> (2) <i>Populus sargentii</i>
Shrub	(1) <i>Salix exigua</i> (2) <i>Baccharis glutinosa</i>
Herbaceous	(1) <i>Pascopyrum smithii</i>

Physiographic features

This ecological site occupies floodplains along low-gradient, braided, meandering sections of river with some incision. Floodplains are typically broad, and may not be accessible during low to moderate flow events.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Terrace
Elevation	3,500–3,700 ft
Slope	0–3%
Aspect	Aspect is not a significant factor

Climatic features

Mean annual precipitation ranges from 11 to 15 inches. Most of this precipitation occurs as rain during the summer. Summers are warm to hot and the winters tend to be moderate with occasional cold periods.

Table 3. Representative climatic features

Frost-free period (average)	200 days
Freeze-free period (average)	
Precipitation total (average)	

Influencing water features

The Pecos river has a regulated flow through this area. Supplementary flow from tributaries can result in flooding during high-intensity rain events.

Soil features

These soils are found on floodplains which have a slopes ranging from 0 to 1 percent. The Glendale series is very deep and well-drained. It formed in calcareous alluvium.

Permeability is moderately slow.
The Harkey soil is very deep and well-drained, with moderate permeability. It formed in calcareous alluvium.
The Ustifluvents soil component is very deep, floods frequently, has very deep soils and is somewhat poorly drained. It formed in mixed alluvium.

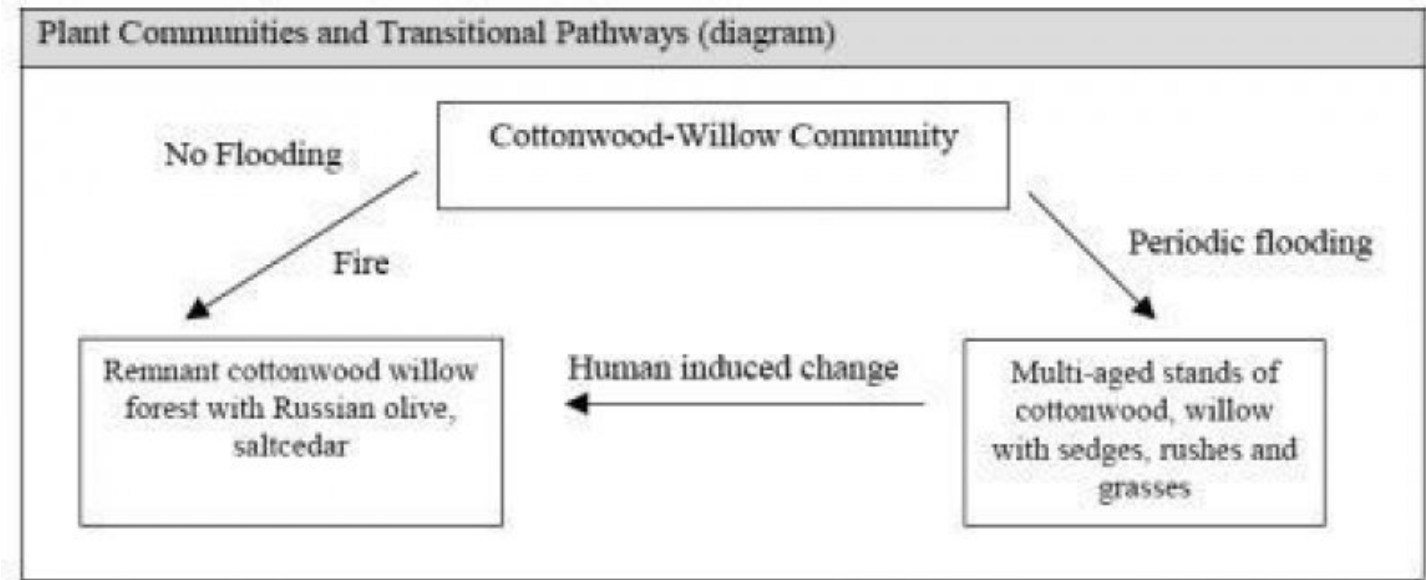
Table 4. Representative soil features

Parent material	(1) Alluvium
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Ecological dynamics

Riparian vegetation germinates on moist mineral soils. As seasonal flooding occurs, the river channel moves, thus allowing for the establishment of new stands of cottonwoods and willows. Various age class stands of woody vegetation can be found across the floodplain. Overflow ponds, cutoff chutes and wet areas also provide areas for regeneration of new plants.
The introduction of dams and other flood-control structures has greatly impeded the above processes. Under current conditions, flooding is rare. Thus, regeneration of cottonwoods and willows is rare. The result is a competitive advantage for invasive woody species: Russian olive and saltcedar.

State and transition model



State 1
Reference State

This plant community is characterized by stands of cottonwood and willow and a general lack of invasive woody plants.

Dominant plant species

- Rio Grande cottonwood (*Populus deltoides* ssp. *wislizeni*), tree
- plains cottonwood (*Populus deltoides* ssp. *monilifera*), tree

Community 1.1

Reference Community

This phase is characterized by scattered, large Rio Grande and Plains cottonwood trees with even aged stands of replacement trees. Understory and openings contain Coyote willow and some baccharis. The streambank hosts sedges, rushes and grasses.

Dominant plant species

- Rio Grande cottonwood (*Populus deltoides* ssp. *wislizeni*), tree
- plains cottonwood (*Populus deltoides* ssp. *monilifera*), tree

Community 1.2

Multi-Aged Stand

This community exhibits recent regeneration of cottonwoods and willows. The overstory is multi-aged. Rush and sedge extend beyond streambanks to the treads of floodplains. Russian olive and saltcedar are generally absent.

Pathway P1.1

Community 1.1 to 1.2

Flooding event

Pathway P1.2

Community 1.2 to 1.1

Moderate duration between flooding events, measured in years rather than decades.

State 2

Hydrologically-Altered State

This state is characterized by the relative dominance on invasive woody plants: Russian olive and saltcedar. Older cottonwoods are often present, but their progeny is notably absent.

Dominant plant species

- Russian olive (*Elaeagnus angustifolia*), tree
- saltcedar (*Tamarix ramosissima*), tree

Community 2.1

Naturalized Community

Small stand of Rio Grande cottonwoods, with Seepwillow and Coyote willow stands on the banks. Also common are Saltcedar, and Russian olive. Alkali sacaton and threesquare are found as groundcover. Rio Grande cottonwood seedlings are present.

Transition T1A

State 1 to 2

Prolonged absence of flooding resulting from the construction of flood-control structures.

Restoration pathway R2A

State 2 to 1

Significant flooding event or series thereof, coupled with the eradication of invasive woody plants. The former can occur if particularly intense rain events flood local tributaries.

Additional community tables

Other references

Handbook of Wetland Vegetation Communities of New Mexico Volume II. PP 54-61

Contributors

Steve Lacey

Approval

Kendra Moseley, 9/12/2023

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	05/21/2025
Approved by	Kendra Moseley
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:**
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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**
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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:

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:**

17. **Perennial plant reproductive capability:**
