Ecological site RX143X00Y110
Broad Floodplain Riparian Complex

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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.

MLRA notes

Major Land Resource Area (MLRA): 143X–Northeastern Mountains

MLRA 143 is in Maine (51 percent), New York (27 percent), Vermont (13 percent), New Hampshire (7 percent), and Massachusetts (2 percent). It makes up about 34,409 square miles (89,118 square kilometers). The MLRA consists of rolling hills and mountains covered by Wisconsin till. It is in three parts separated by other MLRAs. The western part is in New York (primarily the Adirondack Mountains). The central part is mainly in the Green Mountains in Vermont and the Berkshires in Massachusetts. The eastern part is in New Hampshire and most of northern Maine. The MLRA is used mainly for forestry and recreational purposes. The western part of MLRA 143 in the Adirondack Mountains has a distinct boundary with the physiographical dissimilar Saint Lawrence-Champlain Plain. The middle part that encompasses the Green Mountains has a diffuse boundary as it blends into the northern part of the New England and Eastern New York Uplands on the foothills of the Green Mountains. The southern boundary of the easternmost part of MLRA 143 has the same diffuse boundary. The northern boundary of the MLRA is the Canadian border. The westernmost part of this MLRA is primarily in the Adirondack province of the Appalachian Highlands. A small area in the southern end of the western part is in the Mohawk section of the Appalachian Plateaus province of the same division. The easternmost part, primarily in northern Maine, is in the New England Upland section of the New England province of the Appalachian Highlands. The southwestern half of this part is in the White Mountain section of the same province and division, and the middle part of the MLRA is in the Green Mountain section. The mountains and foothills in this MLRA are commonly rounded. They are underlain by bedrock and typically covered with thin deposits of till. The more rugged mountain areas are separated by high-gradient streams coursing through steep areas of colluvium or talus-laden valleys. Many glacially broadened valleys are filled with glacial outwash and have numerous swamps and lakes. The mountains and foothills are moderately steep to very steep, and the valleys are nearly level to sloping. As the northernmost MLRA in the region with the coldest temperatures and shortest growing season, the Northeastern Mountains have less overall tree diversity, fewer pine and oak trees, and more abundant spruce and fir trees than neighboring MLRAs. The variability in microtopography on this site results in a patchy mosaic of plant communities. Silver maple is the most common overstory species, with diverse grasses and herbs indicating differences in soil wetness throughout the site due to slight variability in elevation above the water table. This site is subject to ice scour and flooding, but the most extensive disturbance is cultivation. These broad, flat landforms are nutrient rich with high water-holding capacity. These factors along with their adjacency to rivers made them ideal farming locations for early settlers, much of which continues today. The effects of altered flow regimes from modern dams may also be significant but require further study.

Classification relationships

This site occurs in Ecological Site Group 1 (Floodplains) of MLRA 143 (The Northeastern Mountains), in the Northeastern Forage and Forest Region (Land Resource Region R). The Northeastern Forage and Forest LRR includes all of Maine, New Hampshire, Vermont, Rhode Island, and Connecticut, as well as large portions of Massachusetts, New York, New Jersey, Pennsylvania, and Ohio. Its southern boundary marks the extent of the Wisconsin ice sheet, which engulfed the entire LRR as recently as 10,000 to 15,000 years ago. Erosional and depositional processes associated with glaciation created many of the topographic patterns that distinguish MLRAs within the Northeastern region. Harder granitic and metamorphic bedrock to the north were more resistant to glacial erosion, resulting in the relatively nutrient poor mountains of MLRA 143; whereas nutrient-rich sedimentary bedrock of MLRAs 139, 140, and 146 resulted in relatively flat, fertile landscapes ideal for cultivation. Other areas were depressed below sea-level by the sheer mass of the glacier, resulting in pockets of marine sediments which distinguish MLRAs 142, 144A, 144B, and 145. Precipitation is sufficient to support productive forestland throughout the Northeastern region. Still, a latitudinal temperature gradient from mesic to frigid soil temperatures results in a general transition from central hardwoods and pine in the southern MLRAs to northern hardwoods and spruce-fir forests farther north (no true boreal forests exist in the region). Elevations are generally low throughout the Northeastern region, with the exception of MLRA 143 which has many high mountain ecosystems with cryic temperature regimes and alpine vegetation above the tree line.

Ecological site concept

This site occurs next to large rivers and includes a complex of soils and landforms associated with floodplains. Well-drained natural levees occur near the stream bank, with broad, somewhat poorly to moderately well-drained floodplains behind. Side channels often carry water past the levees into the floodplains during high water, the lowest areas of the floodplain, including poorly- and very poorly-drained oxbows and depressions, may be ponded at times. These soils are derived from alluvium, are typically silt loams to fine sands in texture, and may have gravel or sand layers from particular flooding events. Poorly-drained soils are often organic over alluvium. The variability in microtopography on this site results in a patchy mosaic of plant communities. Silver maple is the most common overstory species, with diverse grasses and herbs indicating differences in soil wetness throughout the site due to slight variability in elevation above the water table. This site is subject to ice scour and flooding, but the most extensive disturbance is cultivation. These broad, flat landforms are nutrient rich with high water-holding capacity. These factors along with their adjacency to rivers made them ideal farming locations for early settlers, much of which continues today. The effects of altered flow regimes from modern dams may also be significant, but require further study.

Similar sites

RX143X00Y120	**Small Floodplain Riparian Complex** The Small Floodplains site occurs next to small rivers and streams, supports mostly herbaceous species, and has floodplains too small for extensive cultivation; whereas the Broad Floodplains site occurs next to large rivers supporting tree cover and extensive cultivation.

Table 1. Dominant plant species

Tree	(1) *Acer rubrum* (2) *Abies balsamea*
Shrub	Not specified
Herbaceous	Not specified

Legacy ID

F143XY110ME

Physiographic features

This site consists of complex microtopography associated with rivers, including: stream banks, natural levees, floodplains, backswamps, stream terraces, etc. Slopes are gentle throughout this site, and minor changes in slope and elevation often correspond to major differences in flooding, ponding, and the resultant soil moisture and vegetation. This site is therefore considered a riparian complex of distinct soils and plant communities which occur together on distinctive, but closely associated fluvial landforms.

Table 2. Representative physiographic features

Landforms	(1) River valley > Flood plain (2) Swamp
Runoff class	Very low to very high
Flooding frequency	Occasional to frequent
Ponding frequency	None to occasional

Elevation	0 – 760 m
Slope	0 – 10 %
Ponding depth	Not specified
Water table depth	0 – 180 cm
Aspect	Aspect is not a significant factor

Climatic features

As the northernmost MLRA in the region, this site experiences frigid and snowy winters, warm rainy summers, and a relatively short five to six month growing season. Precipitation is fairly constant from month to month, however areas of higher elevations may receive up to double the annual precipitation of the lower elevations, and have a three to four month growing season with extremely cold winters.

Table 3 Representative climatic features

Frost-free period (characteristic range)	80-120 days
Freeze-free period (characteristic range)	130-150 days
Precipitation total (characteristic range)	1,040-1,120 mm
Frost-free period (actual range)	80-130 days
Freeze-free period (actual range)	120-160 days
Precipitation total (actual range)	1,040-1,190 mm
Frost-free period (average)	100 days
Freeze-free period (average)	140 days
Precipitation total (average)	1,090 mm

- (1) NORTHFIELD [USC00435733], Northfield, VT
- (2) JACKMAN [USC00174086], Jackman, ME
- (3) NORTH STRATFORD [USC00276234], Guildhall, NH
- (4) NEWCOMB [USC00305714], Newcomb, NY
- (5) RUMFORD 1 SSE [USC00177325], Rumford, ME

Influencing water features

This site occurs next to large perennial rivers that, when in reference condition, regularly overtop their banks, depositing sediment and nutrients on broad, forested floodplains. Natural levees often form near the channel, and side-channels may carry additional water behind the levees to low-lying areas on the floodplain. The lowest areas, including abandoned meander channels (oxbows), may be poorly- or very poorly-drained wetland inclusions within the riparian complex. Small changes in elevation above the water table may result in large variability in soil moisture and plant community.

Wetland description

There may be associated wetland Ecological Sites.

Soil features

The soils of this site include well-drained natural levees and mounds, moderately well- to somewhat-poorly drained floodplains, and poorly- to very-poorly drained oxbows and depressions. All of these soils are formed in alluvium, with some of the wetter areas having a very thick organic cap. Textures are typically silt loams to sandy loams and may include lenses of distinctive textures or gravels from particular flooding events. These soils are deep, nutrient rich, and often cultivated.

Table 4. Representative soil features

Parent material	(1) Alluvium – granite (2) Organic material – metasedimentary rock (3) Ablation till – sandstone
Surface texture	(1) Silt loam (2) Fine sandy loam (3) Very fine sandy loam
Family particle size	(1) Loamy
Drainage class	Very poorly drained to well drained
Permeability class	Very slow to rapid
Soil depth	180 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (22.9-30.5cm)	Not specified

Soil reaction (1:1 water) (10.2-21.3cm)	Not specified
Subsurface fragment volume <=3" (0-25.4cm)	Not specified
Subsurface fragment volume >3" (0-17.8cm)	Not specified

Ecological dynamics

[Caveat: The vegetation information contained in this section and is only provisional, based on concepts, and future projects support validation through field work. *] The vegetation groupings described in this section are based on the terrestrial ecological system classification and vegetation associations developed by NatureServe (Comer et al., 2003) and localized associations provided by the New York Natural Heritage Program (Edinger et al., 2014), Maine Natural Areas Program (Gawler and Cutko, 2010), New Hampshire Natural Heritage Program (Sperduto and Nichols, 2011), and Massachusetts Division of Fisheries and Wildlife (Swain, 2020).

This site is a complex of plant communities occurring on floodplains and associated landforms. The vast majority is dominated by silver maple, with a diverse understory of ferns (particularly ostrich fern), graminoids, shrubs, and forbs.

Natural levees are well-drained and form near poorly-drained stream banks. The stream banks tend to support water-loving graminoids and forbs, while natural levees often have silver maple as well as grass and shrub species that prefer well-drained soil conditions.

Behind the natural levees, the floodplains typically have silver maple with some red maple, white or brown ash, and many other tree species possible in small quantities. Depressions, oxbows and other low-lying areas may exhibit little tree cover and be herbaceous-dominated. These herbaceous areas tend to have organic soils. All of these varied communities are closely associated and form the riparian plant community complex.

Because this site is flat, nutrient-rich, and close to major waterways, it has been cultivated in many areas for crop or pasture land. Man made dams that affect flow regimes may also have a significant impact on the dynamics of this site, but require further study. Beaver dams typically do not influence the flow regime on rivers of this size, despite the fact that beaver activity is common on this site.

State and transition model

Figure 7. STM

Additional community tables

Inventory data references

Future work is needed, as described in a future project plan, to validate the information presented in this provisional ecological site description. Future work includes field sampling, data collection and analysis by qualified ecologists and soil scientists. As warranted, annual reviews of the project plan can be conducted by the Ecological Site Technical Team. A final field review, peer review, quality control, and quality assurance reviews of the ESD are necessary to approve a final document.

Other references

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Contributors

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Approval

Greg Schmidt, 10/04/2024

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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	09/22/2026
Approved by	

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:**
