

11540

Inter-Mountain Basins Montane Riparian Systems

BpS Model/Description Version: Aug. 2020

Modelers		Reviewers	
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Vegetation Type

Woody Wetland

Map Zones

18

Geographic Range

Great Basin, eastern slopes of the northern Sierra Nevada of CA and Cascades of OR, Columbia Plateau, and western edge of northern Rockies.

Biophysical Site Description

This ecological system is found within a broad elevation range from about 750m (2,460ft) in the central and northern part of MZ18 to over 2,135m (7,000ft) in northern NV (e.g. Little Humboldt River). Riparian systems are found in low-elevation canyons and draws, on floodplains, or in steep-sided canyons or narrow V-shaped valleys with rocky substrates. This low-elevation riparian system includes major tributaries of the Columbia River. Soils are typically alluvial deposits of sand, clays, silts and cobbles that are highly stratified with depth due to flood scour and deposition

Vegetation Description

This ecological system occurs as a mosaic of multiple communities that are tree, shrub, or herbaceous-dominated. Shrub and tree dominated patches were more common. In the Columbia Plateau section, important and diagnostic trees include *Populus balsamifera* ssp. *trichocarpa*, *Alnus rhombifolia*, *Populus tremuloides*, *Celtis laevigata* var. *reticulata*, *Betula occidentalis*, or *Pinus ponderosa*. Important shrubs include *Crataegus douglasii*, *Philadelphus lewisii*, *Cornus sericea*, *Salix lucida* ssp. *lasiandra*, *Salix eriocephala*, *Rosa nutkana*, *Rosa woodsii*, *Amelanchier alnifolia*, *Prunus virginiana*, and *Symphoricarpos albus*.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
POBAT	<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>	Black cottonwood
SALIX	<i>Salix</i>	Willow
ALRH2	<i>Alnus rhombifolia</i>	White alder
BEOC2	<i>Betula occidentalis</i>	Water birch
POTR5	<i>Populus tremuloides</i>	Quaking aspen
CELAR	<i>Celtis laevigata</i> var. <i>reticulata</i>	Netleaf hackberry
CRDO2	<i>Crataegus douglasii</i>	Black hawthorn

PHLE4	<i>Philadelphus lewisii</i>	Lewis' mock orange
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Species names are from the NRCS PLANTS database. Check species codes at <http://plants.usda.gov>.

Disturbance Description

These are disturbance-driven systems that require flooding, scour and deposition for germination and maintenance. This system is dependent on a natural hydrologic regime, especially annual to episodic flooding with flooding of increasing magnitude causing more stand replacement events: seven-year events for herbaceous and seedling cover; 20yr events for shrubs and pole size trees; and 50yr events for mature trees. Beaver (*Castor canadensis*) crop younger cottonwoods (*Populus* spp.) and willows (*Salix* spp.), and frequently influence the hydrologic regime through construction of dams, etc. Beaver will move from areas where tree availability is depleted. Younger stands of cottonwood and willow will be affected by beaver more frequently than other classes; mid-development and late-development trees will be affected with decreasing frequency as the trees age. Fire disturbances occur, but are infrequent catastrophic events that are caused by either fire importation from sagebrush steppe (BpS 181125) or set by Native Americans for hunting and first-year willow production for basketery. Ice scouring damages boles of larger trees and can cause mild thinning in older stands. The return interval of ice scouring was estimated to match El Nino cycles.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	173	100		
Moderate (Mixed)				
Low (Surface)				
All Fires	173	100		

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

Scale Description

This system can exist as small to large linear features in the landscape (e.g. Owyhee, Snake, Bruneau and Humboldt Rivers). In larger, low-elevation riverine systems, this system may exist as mid to large patches. Fire disturbance patch size varies from 1-100ac, but uncertainty exist about fire size and behavior in these riparian systems.

Adjacency or Identification Concerns

Livestock grazing is a major influence in the alteration of structure, composition and function of the community. Livestock can result in the nearly complete removal of willow and cottonwood regeneration, and bank slumping in places where water is accessible.

Floodplains of the Columbia Plateau have mostly been converted to agriculture and urbanization.

Exotic trees of *Elaeagnus angustifolia* and *Tamarix* spp. are common in some stands. Introduced forage species such as *Agrostis stolonifera*, *Poa pratensis*, *Phleum pretense*, and the weedy annual *Bromus tectorum* are often present in disturbed stands.

Issues or Problems

Uncertainty exists about the return intervals and effects for beaver activity, ice scouring and historic fire in these systems.

Native Uncharacteristic Conditions

Comments

This model attempts to combine the Columbia Basin Foothill and Lower Montane Riparian woodland and shrubland (CES304.768) and the northern part of the Great Basin Foothill and Lower Montane Riparian woodland and shrubland (CES304.045). This model is similar to BpS 181159 with only slight modifications to vegetation species composition because BpS 1154 and 1159 overlap in elevations and describe the lower part of meandering river systems of the Columbia Plateau.

Succession Classes

Mapping Rules

Upper Layer Lifeform	Height (m)	Canopy Cover (%)									
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Herb	0-0.5	A	A	A	A	A	A	A	A	A	A
Herb	0.5-1.0	A	A	A	A	A	A	A	A	A	A
Herb	>1.0	A	A	A	A	A	A	A	A	A	A
Shrub	0-0.5	A	A	A	A	A	A	A	A	A	A
Shrub	0.5-1.0	A	A	A	A	A	A	A	A	A	A
Shrub	1.0-3.0	A	A	A	A	A	A	A	A	A	A
Shrub	>3.0	A	A	A	A	A	A	A	A	A	A
Tree	0-5	B	B	B	B	B	B	B	B	B	B
Tree	5-10	B	B	B	B	B	B	B	B	B	B
Tree	10-25	C	C	C	C	C	C	C	C	C	C
Tree	25-50	C	C	C	C	C	C	C	C	C	C
Tree	>50	C	C	C	C	C	C	C	C	C	C

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

Description

Class A	48	Early Development 1 - All Structures
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
POPUL	Populus	Cottonwood	Upper
SALIX	Salix	Willow	Upper
ALNUS	Alnus	Alder	Upper
CAREX	Carex	Sedge	Lower

Description

Maximum Tree Size Class
None

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:ALL	0	Mid1:OPN	4
Mid1:OPN	5	Late1:CLS	24
Late1:CLS	25	Late1:CLS	999

Probabilistic Transitions

Disturbance Type	Disturbance occurs In	Moves vegetation to	Disturbance Probability	Return Interval (yrs)	Reset Age to New Class Start Age After Disturbance?	Years Since Last Disturbance
Wind or Weather or Stress	Early1:ALL	Early1:ALL	0.13	8	Yes	0
Optional 1	Early1:ALL	Early1:ALL	0.2	5	Yes	0
Replacement Fire	Mid1:OPN	Early1:ALL	0.011	91	Yes	0
Optional 1	Mid1:OPN	Mid1:OPN	0.025	40	No	0
Optional 1	Mid1:OPN	Early1:ALL	0.025	40	Yes	0
Wind or Weather or Stress	Mid1:OPN	Early1:ALL	0.05	20	Yes	0
Wind or Weather or Stress	Mid1:OPN	Mid1:OPN	0.2	5	No	0
Optional 1	Late1:CLS	Mid1:OPN	0.001	1000	Yes	0
Replacement Fire	Late1:CLS	Early1:ALL	0.011	91	Yes	0
Wind or Weather or Stress	Late1:CLS	Early1:ALL	0.02	50	Yes	0
Wind or Weather or Stress	Late1:CLS	Mid1:OPN	0.05	20	Yes	0
Optional 2	Late1:CLS	Late1:CLS	0.13	8	No	0

Optional Disturbances

Optional 1: Beaver

Optional 2: ice scour

References

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