

11540

Inter-Mountain Basins Montane Riparian Systems

BpS Model/Description Version: Aug. 2020

Modelers		Reviewers	
Rod Clausnitzer	rclausnitzer@fs.fed.us	Bruce Hostetler	bhostetler@fs.fed.us
None	None	None	None
None	None	None	None

Vegetation Type

Woody Wetland

Map Zones

1, 7, 8, 9

Geographic Range

Eastern OR and WA. Includes both Columbia Basin Foothill Riparian Woodlands and Shrublands and Great Basin Foothill Riparian Woodlands and Shrublands.

Biophysical Site Description

This ecological system is found within a broad elevation range from about 600m (2,000ft) to over 1,500m (5,000ft). These woodlands and shrublands require periodic flooding and bare, moist substrates for reestablishment. They are found in low-elevation canyons and draws, on floodplains, or in steep-sided canyons, or narrow V-shaped valleys with rocky substrates. Sites are subject to temporary flooding during spring runoff. Underlying gravels may keep the water table just below ground surface, and are favored substrates for cottonwood. Large bottomlands may have occurred in large patches, but most have been cut over or cleared for agriculture, principally grazing and hay production. Rafted ice and logs in freshets may cause considerable damage to tree boles. Beavers crop younger cottonwood and willows in the smaller waterways, and frequently dam side channels occurring in these stands. In steep-sided canyons, perennial streams typically have mid to high gradients. The surface is flooded during spring runoff and remains saturated for variable periods. 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 dominated with a diverse shrub component. In eastern OR, dominant trees may include *Betula occidentalis*, *Populus balsamifera* ssp. *trichocarpa*, and *Populus tremuloides*. Dominant shrubs include *Cornus sericea*, *Salix* spp, *Symphoricarpos albus*, *Alnus incana*, *Rosa* spp and *Crataegus* spp. Herbaceous layers are often dominated by species of *Carex* and *Juncus*, and perennial grasses and mesic forbs such *Glyceria* spp, *Iris missouriensis*, *Equisetum arvense*, or *Algelica* spp. In eastern OR, important and diagnostic trees include *Populus balsamifera* ssp. *trichocarpa*, *Alnus rhombifolia*, *Populus tremuloides*, *Celtis laevigata* var. *reticulata*, and *Betula occidentalis*. 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
POPUL	<i>Populus</i>	Cottonwood
SALIX	<i>Salix</i>	Willow
ALNUS	<i>Alnus</i>	Alder
BETUL	<i>Betula</i>	Birch
CORNU	<i>Cornus</i>	Dogwood

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. Beaver (*Castor canadensis*) crop younger cottonwoods (*Populus* spp), aspen (*Populus tremuloides*) 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. Fire disturbances occur, but are infrequent catastrophic events.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	98	100		
Moderate (Mixed)				
Low (Surface)				
All Fires	98	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 (eg, lower Deschutes, John Day, Okanogan and Methow Rivers). In larger, low-elevation riverine systems, this system may exist as mid to large size patches.

Adjacency or Identification Concerns

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

The exotic tree, *Elaeagnus angustifolia*, is common in some stands. Introduced forage species such as *Agrostis stolonifera*, *Poa pratensis*, *Phleum pretense*, and *Bromus tectorum* (a weedy annual on the driest xero-riparian sites) are often present in disturbed stands.

Issues or Problems

Native Uncharacteristic Conditions

Comments

MZs 1, 7, 8 and 9 were combined during 2015 BpS Review.

This model is a revised Intermountain Basins Montane Riparian Systems (BpS 1154). It is defined as deciduous hardwood trees and shrubs with a mosaic of herbaceous types in a small scale linear riparian system from low to mid-elevations. Conifer-dominated stream and river terraces are excluded due to the degree of hydrologic influence and fire frequencies in ponderosa pine systems.

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 28 Early Development 1 - All Structures

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

Immediate post-disturbance responses are dependent on pre-burn vegetation composition. Typically shrub dominated, but grasses and sedges may co-dominate. Deciduous trees can establish (resprout/germinants) and be a minor component of main canopy. Silt, gravel, cobble and woody debris may be common. Composition highly variable.

From Class	Begins at (yr)	Succeeds to	After (years)
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Early1:ALL	0	Mid1:ALL	14
Mid1:ALL	15	Late1:ALL	49
Late1:ALL	50	Late1:ALL	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
Optional 1	Early1:ALL	Early1:ALL	0.005	200	Yes	0
Replacement Fire	Early1:ALL	Early1:ALL	0.01	100	Yes	0
Wind or Weather or Stress	Early1:ALL	Early1:ALL	0.111	9	No	0
Optional 1	Mid1:ALL	Mid1:ALL	0.005	200	No	0
Optional 1	Mid1:ALL	Early1:ALL	0.005	200	Yes	0
Replacement Fire	Mid1:ALL	Early1:ALL	0.01	100	Yes	0
Wind or Weather or Stress	Mid1:ALL	Early1:ALL	0.011	91	Yes	0
Wind or Weather or Stress	Mid1:ALL	Mid1:ALL	0.1	10	No	0
Wind or Weather or Stress	Late1:ALL	Early1:ALL	0.0005	2000	Yes	0
Optional 1	Late1:ALL	Mid1:ALL	0.001	1000	Yes	0
Wind or Weather or Stress	Late1:ALL	Late1:ALL	0.005	200	No	0
Optional 1	Late1:ALL	Late1:ALL	0.009	111	No	0
Replacement Fire	Late1:ALL	Early1:ALL	0.01	100	Yes	0
Wind or Weather or Stress	Late1:ALL	Mid1:ALL	0.106	9	Yes	0

Optional Disturbances

Optional 1: Beaver

References

Barbour, M.G. and W.D. Billings, editors. 1988. North American terrestrial vegetation. Cambridge University Press, NY. 434 pp.

Barbour, M.G. and J. Major, editors. 1977. Terrestrial vegetation of California. John Wiley and Sons, NY. 1002 pp.

Crowe, E.A. and R.R. Clausnitzer. 1997. Mid-montane wetland plant associations of the Malheur, Umatilla and Wallowa-Whitman National Forests. Tech. Pap. R6-NRECOL-TP-22-97. [Portland, OR]: USDA Forest Service, Pacific Northwest Region.

Johnson, C.G. and S.A. Simon. 1985. Plant associations of the Wallowa Valley Ranger District, Part II: Steppe. USDA Forest Service, Pacific Northwest Region, Wallowa-Whitman National Forest. 258 pp.

Kovalchik, B.L. 1987. Riparian zone associations: Deschutes, Ochoco, Fremont, and Winema National Forests. R6 ECOL TP-279-87. Portland, OR: USDA Forest Service, Pacific Northwest Region. 171 pp.

Kovalchik, B.L. and R.R. Clausnitzer. 2004. Classification and management of aquatic, riparian, and wetland sites on the national forests of eastern Washington: series description. Gen. Tech. Rep. PNW-GTR-593. Portland, OR: USDA Forest Service, Pacific Northwest Research Station. 354 pp. In cooperation with: Pacific Northwest Region, Colville, Okanogan and Wenatchee National Forests.

Manning, M.E. and W.G. Padgett. 1995. Riparian community type classification for Humboldt and Toiyabe national forests, Nevada and eastern California. USDA Forest Service, Intermountain Region. 306 pp.

NatureServe. 2007. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA. Data current as of 10 February 2007.

Sawyer, J.O. and T. Keeler-Wolf. 1995. A manual of California vegetation. California Native Plant Society, Sacramento, CA. 471 pp.