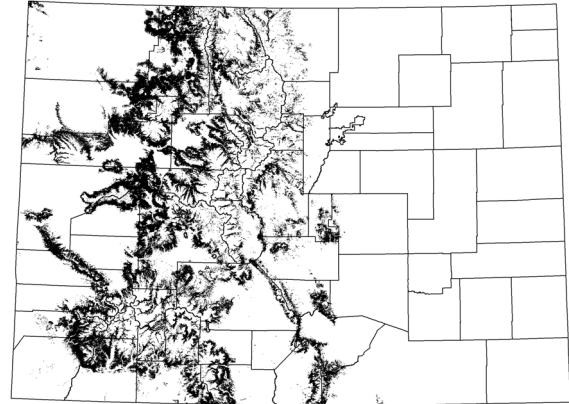


ROCKY MOUNTAIN ASPEN FOREST AND WOODLAND



R. Rondeau



extent exaggerated for display

POPULUS TREMULOIDES FOREST ALLIANCE

- Populus tremuloides* / *Acer glabrum* Forest
- Populus tremuloides* / *Amelanchier alnifolia* - *Symphoricarpos oreophilus* / *Calamagrostis rubescens* Forest
- Populus tremuloides* / *Amelanchier alnifolia* - *Symphoricarpos oreophilus* / Tall Forbs Forest
- Populus tremuloides* / *Amelanchier alnifolia* - *Symphoricarpos oreophilus* / *Thalictrum fendleri* Forest
- Populus tremuloides* / *Amelanchier alnifolia* Forest
- Populus tremuloides* / *Carex geyeri* Forest
- Populus tremuloides* / *Carex siccata* Forest
- Populus tremuloides* / *Ceanothus velutinus* Forest
- Populus tremuloides* / *Corylus cornuta* Forest
- Populus tremuloides* / *Festuca thurberi* Forest
- Populus tremuloides* / *Heracleum sphondylium* Forest
- Populus tremuloides* / *Juniperus communis* Forest
- Populus tremuloides* / *Lonicera involucrata* Forest
- Populus tremuloides* / *Physocarpus monogynus* Forest
- Populus tremuloides* / *Poa pratensis* Forest
- Populus tremuloides* / *Prunus virginiana* Forest
- Populus tremuloides* / *Pteridium aquilinum* Forest (
- Populus tremuloides* / *Shepherdia canadensis* Forest
- Populus tremuloides* / *Symphoricarpos oreophilus* / *Festuca thurberi* Forest
- Populus tremuloides* / *Symphoricarpos oreophilus* / *Thalictrum fendleri* Forest
- Populus tremuloides* / *Symphoricarpos oreophilus* Forest
- Populus tremuloides* / Tall Forbs Forest
- Populus tremuloides* / *Thalictrum fendleri* Forest
- Populus tremuloides* / *Vaccinium myrtillus* Forest
- Populus tremuloides* / *Wyethia amplexicaulis* Forest

POPULUS TREMULOIDES TEMPORARILY FLOODED FOREST ALLIANCE

- Populus tremuloides* / *Ribes montigenum* Forest

Overview: This widespread ecological system occurs throughout much of the western U.S. and north into Canada, although it is more common in the montane and subalpine zones of the southern and central Rocky Mountains. In Colorado this system is quite common on the west slope, with smaller stands represented on the east slope. These are upland forests and woodlands dominated by *Populus tremuloides* without a significant conifer component (<25% relative tree cover). They usually occur as a mosaic of many plant associations and may be surrounded by a diverse array of other systems, including grasslands, wetlands, coniferous forests, etc.

Characteristic species: Occurrences have a somewhat closed canopy of trees of 15-65 ft (5-20 m) tall, dominated by *Populus tremuloides*. Conifers that may be present but never codominant include *Abies concolor*, *Abies lasiocarpa*, *Picea engelmannii*, *Picea pungens*, *Pinus ponderosa*, and *Pseudotsuga menziesii*. Conifer species may contribute up to 15% of the tree canopy before the occurrence is reclassified as a mixed conifer occurrence. Common shrubs include *Acer glabrum*, *Amelanchier alnifolia*, *Artemisia tridentata*, *Juniperus communis*, *Prunus virginiana*, *Rosa woodsii*, *Shepherdia canadensis*, *Symphoricarpos oreophilus*, and the dwarf-shrubs *Mahonia repens* and *Vaccinium* spp. The herbaceous layers may be lush and diverse. Common graminoids may include *Bromus*

carinatus, *Calamagrostis rubescens*, *Carex siccata* (= *Carex foenea*), *Carex geyeri*, *Carex rossii*, *Elymus glaucus*, *Elymus trachycaulus*, *Festuca thurberi*, and *Hesperostipa comata*. Associated forbs may include *Achillea millefolium*, *Eucephalus engelmannii* (= *Aster engelmannii*), *Delphinium* spp., *Geranium viscosissimum*, *Heracleum sphondylium*, *Ligusticum filicinum*, *Lupinus argenteus*, *Osmorhiza berteroi* (= *Osmorhiza chilensis*), *Pteridium aquilinum*, *Rudbeckia occidentalis*, *Thalictrum fendleri*, *Valeriana occidentalis*, *Wyethia amplexicaulis*, and many others. Exotic grasses such as the perennials *Poa pratensis* and *Bromus inermis* and the annual *Bromus tectorum* are often common in occurrences disturbed by grazing.

Environment: Elevations generally range from 5,000-10,000 feet (1,525 to 3,050 m), but may be lower in some regions. Topography is variable, sites range from level to steep slopes. Occurrences at high elevations are restricted by cold temperatures and are found on warmer southern aspects. At lower elevations occurrences are restricted by lack of moisture and are found on cooler north aspects and mesic microsites. The soils are typically deep and well developed with rock often absent, and texture ranges from sandy loam to clay loams. Parent materials are variable and may include sedimentary, metamorphic or igneous rocks, but this type appears to grow best on limestone, basalt, and calcareous or neutral shales (Mueggler 1988).

Distribution of this ecological system is primarily limited by adequate soil moisture required to meet its high evapotranspiration demand, and secondarily is limited by the length of the growing season or low temperatures. Climate is temperate with a relatively long growing season, typically cold winters and deep snow. Mean annual precipitation is greater than 15 in (38 cm) and typically greater than 20 in (50 cm), except in semi-arid environments where occurrences are restricted to mesic microsites such as seeps or large snow drifts.

Dynamics: Occurrences in this ecological system often originate, and are likely maintained, by stand-replacing disturbances such as crown fire, disease and windthrow, or clearcutting by man or beaver. The stems of these thin-barked, clonal trees are easily killed by ground fires, but they can quickly and vigorously resprout in densities of up to 30,000 stems per hectare (Knight 1994). The stems are relatively short-lived (100-150 years), and the occurrence will succeed to longer-lived conifer forest if undisturbed. Occurrences are favored by fire in the conifer zone (Mueggler 1988). With adequate disturbance a clone may live many centuries. Although *Populus tremuloides* produces abundant seeds, seedling survival is rare because the long moist conditions required to establish them are rare in these habitats. Superficial soil drying will kill seedlings (Knight 1994).

Variation: Because of the open growth form of *Populus tremuloides*, enough light can penetrate for lush understory development. Depending on available soil moisture and other factors like disturbance, the understory structure may be complex with multiple shrub and herbaceous layers, or simple with just an herbaceous layer. The herbaceous layer may be dense or sparse, dominated by graminoids or forbs.



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References: Knight, D. H. 1994. Mountains and plains: Ecology of Wyoming landscapes. Yale University Press, New Haven, MA. 338 pp.

Mueggler, W. F. 1988. Aspen community types of the Intermountain Region. USDA Forest Service General Technical Report INT-250. Intermountain Research Station, Ogden, Utah. 135 pp.

Rank:	A	B	C	D
① SIZE				
Acres	>30,000	10,000-30,000	5,000-10,000	< 5,000
② CONDITION				
Community structure	The occurrence is a mosaic of aspen plant associations, and a diverse age class structure is present within these communities.	The occurrence is a mosaic of aspen plant associations, and a diverse age class structure is present within these communities.	Occurrence dominated by native species, but diversity is lacking.	Occurrence dominated by non-native species or native increasers. Diversity lacking.
Invasive exotics with major potential to alter structure and composition (e.g. <i>Bromus inermis</i>, <i>Poa pratensis</i>)	Absent.	May be present, but with very low cover.	Likely to be present.	Present.
Other non-native spp.	<3%, native species dominant.	<10%, possibly dominant in small patches, native species dominant overall.	Present and abundant in small and large patches.	May be dominant.
Native increaser spp. (<i>Balsamorhiza</i>, <i>Wyethia</i>)	< 3% cover.	<10% cover.	>10% cover.	May be dominant.
Ground cover	Ground cover is > 65%. Natural microrelief is undisturbed. Soil erosion is not accelerated by anthropogenic activities.	Ground cover intact in at least 80% of the occurrence. Soil erosion may be accelerated in small patches, or lightly so throughout the occurrence. Natural microrelief is undisturbed. Soil erosion is not accelerated by anthropogenic activities.	Ground cover is below 60% in more than 25% of the area, or in various stages of degradation throughout the occurrence.	Ground cover has been removed from 75% of the area, occurring only in small pockets naturally protected from livestock and off-road vehicle use.
Disturbance	Surficial disturbance is absent or present in only small, isolated areas (e.g. mines or ranch activities and buildings; off-road vehicle use). There are few or no roads found within the occurrence.	Surficial disturbance is limited to <20% of the area (e.g. mines or ranch activities and buildings; off-road vehicle use). There are only a few roads found within the occurrence.	Surficial disturbances occur on more than 20% of the area (e.g., mines or ranch activities and buildings; off-road vehicle use). There are more than a few roads found within the occurrence.	Surficial disturbances occur on more than 50% of the area (e.g., mines or ranch activities and buildings; off-road vehicle use). Many roads are found within the occurrence.
③ LANDSCAPE CONTEXT				
Connectivity	Highly connected – surrounding landscape has been little altered, captures characteristic ecological gradients (including nested patch communities) and geomorphic processes.	Highly connected – surrounding landscape has been little altered, captures characteristic ecological gradients (including nested patch communities) and geomorphic processes.	Moderately fragmented and isolated. Surrounded by a mix of intensive agriculture, small scale urban development, and adjacent semi-natural communities.	Highly fragmented and isolated. Entirely, or almost entirely, surrounded by agricultural or urban land use; occurrence is at best buffered on one side by natural communities.
Surrounding land	Completely surrounded by other high quality communities. Provides habitat for indicator species such as grouse, purple martin, etc.	Surrounded by moderate-low quality natural communities, some of which may have been logged or disturbed in the past; an expansive semi-natural landscape that has been used extensively for grazing.	OR ↓ Occurrence is a relatively small area (total area smaller than twice the minimum occurrence size) surrounded by an agriculturally fragmented landscape.	Surrounding landscape is primarily intensive agriculture or urban development.