

Populus deltoides – (Salix amygdaloides) / Salix exigua Woodland

COMMON NAME	Eastern Cottonwood - (Peachleaf Willow) / Sandbar Willow Woodland
SYNONYM	Cottonwood - Peach-Leaf Willow Floodplain Woodland
PHYSIOGNOMIC CLASS	Woodland (II)
PHYSIOGNOMIC SUBCLASS	Deciduous Woodland (II.B)
PHYSIOGNOMIC GROUP	Cold-deciduous woodland (II.B.2)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (II.B.2.N)
FORMATION	Temporarily flooded cold-deciduous woodland (II.B.2.N.b)
ALLIANCE	POPULUS DELTOIDES TEMPORARILY FLOODED WOODLAND ALLIANCE
CLASSIFICATION CONFIDENCE LEVEL	2
USFWS WETLAND SYSTEM	Terrestrial

RANGE

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Cottonwood - willow woodlands are typically found on the terrace immediately above the Little Missouri River and sometimes on well stabilized point bars, usually adjacent to the *Salix exigua* Temporarily Flooded Shrubland Alliance and the *Populus deltoides* / *Juniperus scopulorum* Woodland. This community is probably successional between these two communities.

Globally

This community is found in southern Manitoba, North Dakota, South Dakota, central and western Nebraska, western Kansas, eastern Colorado, and Oklahoma. It may occur in Texas and New Mexico.

ENVIRONMENTAL DESCRIPTION

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These woodlands occupy the margins of the Little Missouri River in recent alluvium. Poorly developed, sandy soils dominate these sites.

Globally

This community is found along the banks of streams and rivers, usually within 100 feet of the stream channel. It develops on newly deposited alluvium. The soils are predominantly sand, although silt, clay, or loam may be present. Soils are poorly developed. The water table fluctuates with the level of the river or stream and flooding is common, especially in the spring. In Wyoming, height above the stream channel varies from 1.5 to 10 feet (Jones and Walford 1995).

MOST ABUNDANT SPECIES

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<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Populus deltoides</i> , <i>Salix amygdaloides</i>
Short Shrub	<i>Salix exigua</i> , <i>Symphoricarpos occidentalis</i>
Herbaceous	<i>Glycyrrhiza lepidota</i> , <i>Melilotus alba</i> , <i>M. officinalis</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Populus deltoides</i> , <i>Salix amygdaloides</i>
Short shrub	<i>Salix exigua</i> , <i>Symphoricarpos occidentalis</i>
Forb	<i>Ambrosia psilostachya</i> , <i>Glycyrrhiza lepidota</i> , <i>Helianthus petiolaris</i>
Fern	<i>Equisetum arvense</i>
Graminoid	<i>Carex emoryi</i> , <i>Carex lanuginosa</i> , <i>Pascopyrum smithii</i> , <i>Poa pratensis</i> , <i>Spartina pectinata</i> , <i>Sporobolus cryptandrus</i>

CHARACTERISTIC SPECIES

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Populus deltoides, *Salix amygdaloides*, *Salix exigua*

Globally

Populus deltoides, *Salix amygdaloides*, *Salix exigua*

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VEGETATION DESCRIPTION

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Salix amygdaloides is subdominant to *Populus deltoides*. Contribution of short shrubs to the alliance is minimal. The herbaceous layer is fairly species rich with no clear dominants. However, *Glycyrrhiza lepidota*, *Melilotus alba*, and *M. officinalis* usually appear as the most obvious herbaceous species. This community is probably successional between the *Salix exigua* Temporarily Flooded Shrubland Alliance and the *Populus deltoides* / *Juniperus scopulorum* Woodland.

Globally

This community has an open canopy 6-12 m tall and typically dominated by *Populus deltoides* and *Salix amygdaloides*, though *Salix amygdaloides* can be absent in some examples of this community. *Fraxinus pennsylvanica* may be present, especially on the upland side of this community, and *Elaeagnus angustifolia* or *Juniperus* spp. may invade some sites. This woodland community has closely spaced shrubs and small trees. *Salix exigua* is usually more abundant along the streamside margins of this community and where the canopy of taller trees is most open, which may occur following a scouring (heavy flood) event. This shrub grows to 2-5 m tall. Other shorter shrubs that can be found are *Symphoricarpos occidentalis* and *Toxicodendron rydbergii*. Graminoids adapted to mesic sites dominate the understory of most sites, the most common species including *Carex emoryi*, *C. pellita*, *Elymus canadensis*, *Hordeum jubatum*, *Muhlenbergia racemosa*, *Pascopyrum smithii*, *Poa pratensis*, and *Spartina pectinata*. Forbs that are frequently abundant in relatively undisturbed sites include *Equisetum arvense* and *Glycyrrhiza lepidota*. Flooding often creates open patches in the herbaceous layer that are available for colonization by nearby species. The floristic composition of these patches is greatly affected by the species that are near and can invade the disturbed areas. Because of the high permeability of the sandy floodplain soils, species typical of upland prairie may invade in addition to annual forbs typical of disturbed sites. Widely distributed species that are adapted to these sites include *Ambrosia psilostachya*, *Artemisia campestris* ssp. *caudata*, *A. ludoviciana*, *Calamovilfa longifolia*, *Cenchrus longispinus*, *Euphorbia serpyllifolia*, *E. esula*, *Grindelia squarrosa*, *Helianthus petiolaris*, *Heterotheca villosa*, *Lippia lanceolata*, *Opuntia macrorhiza*, *Poa pratensis*, and *Sporobolus cryptandrus*. These sites are prone to invasion by exotic grasses and forbs, the most widely established being *Agrostis stolonifera*, *Bromus tectorum*, *Cirsium arvense*, *Kochia scoparia*, *Melilotus* spp., *Taraxacum officinale*, and *Tragopogon dubius*.

CONSERVATION RANK G3G4. In the absence of regular flooding, many sites will undergo succession to later seral stages. Many sites are overgrazed and invaded by exotic woody and herbaceous species.

DATABASE CODE CEGL000659

SIMILAR ASSOCIATIONS

Populus deltoides / *Panicum virgatum* - *Schizachyrium scoparium* Woodland (may be a subtype of this community whose character is maintained by winter grazing.)

COMMENTS

Populus deltoides / *Panicum virgatum* - *Schizachyrium scoparium* Woodland (CEGL001454) may be a subtype of this community whose character is maintained by winter grazing. Flooding and scouring by sand and ice are common in most examples of this community. During floods, erosion and deposition of material may occur. Drought stress affects shallow-rooted plants when the water table drops. This community is a seral community. This type is subject to, and maintained by, periodic flooding. Thirty years post-flood, this type will likely transition into a grassland type, as the cottonwood and willow species do not regenerate (Bellah and Hulbert 1974).

REFERENCES

- Bellah, R. G., and L. C. Hulbert. 1974. Forest succession on the Republican River floodplain in Clay County, Kansas. The Southwestern Naturalist. 19(2):155-166.
- Bunin, J.E. 1985. Vegetation of the City of Boulder, Colorado open space lands. Report prepared for the City of Boulder, Real Estate/Open Space, Boulder, Colorado. 114 pp.
- Burgess, R. L., W. C. Johnson, and W. R. Keammerer. 1973. Vegetation of the Missouri river floodplain in North Dakota. Department of Botany, North Dakota State University, Fargo.
- Christy, S. 1973. An analysis of the woody vegetation on the South Platte River flood plain in northeastern Colorado. Unpublished thesis, University of Northern Colorado, Greeley. 82 pp.
- Cooper, D.J. 1988. Advanced Identification of Wetlands in the City of Boulder Comprehensive Planning Area. Unpublished technical report prepared for United States Environmental Protection Agency, Region VIII and the City of Boulder, CO.
- Crouch, G. L. 1961a. Inventory and analysis of wildlife populations and habitat, South Platte River Valley. Final report, Federal Aid in Wildlife Restoration, Project W-104-R-1-2, Colorado Game & Fish Department. 68 pp.
- Crouch, G. L. 1961b. Wildlife populations and habitat conditions on grazed and ungrazed bottomlands in Logan County, Colorado. Unpublished thesis, Colorado State University, Fort Collins.

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- Crouch, G. L. 1978. Effects of protection from livestock grazing on a bottomland wildlife habitat in northeastern Colorado. Pages 118-125 in *Lowland river and stream habitat in Colorado: a symposium*. Greeley, Co. 4-5 October, 1978.*
- Crouch, G. L. 1979. Changes in the vegetation complex of a cottonwood ecosystem on the South Platte River. Pages 19-22 in: *Riparian and wetland habitats of the Great Plains: Proceedings of the 31th annual meeting*. Great Plains Agricultural Council Publication 91. Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.
- Crouch, G. L. 1979. Long-term changes in cottonwoods on a grazed and an ungrazed plains bottomland in northeastern Colorado. USDA Forest Service Research Note RM-370. Rocky Mountain Forest and Range Exp. Station, Fort Collins, Co. 4 pp.
- Currier, P.J. 1982. The floodplain vegetation of the Platte River: phytosociology, forest development, and seedling establishment (Nebraska).
- Fitzgerald, J. P. 1978. Vertebrate associations in plant communities along the South Platte River in northeastern Colorado. Pages 73-88 in: Graul, W. D. and J. Bissell eds. *Lowland river and stream habitat in Colorado: a symposium*, Greeley, Colorado, Oct 4-5, 1978. Colorado Chapter of the Wildlife Society and Colorado Audubon Council.
- Hefley, H. M. 1937. Ecological studies on the Canadian River floodplain in Cleveland County, Oklahoma. *Ecol. Monogr.* 7:347-402.
- Hoagland, B. W. 1997. Preliminary plant community classification for Oklahoma. Unpubl. draft doc. version 35629. Univ. of Okla., Okla. Nat. Heritage Inv. Norman, Okla. 47 p.
- Jackson, J. R. 1972. Vegetation of the flood plain of the South Platte River in the proposed Narrows Reservoir site. Unpublished thesis, University of Northern Colorado, Greeley 83 pp.
- Jackson, J. R. and I. E. Lindauer. 1978. Vegetation of the flood plain of the south Platte River in the proposed Narrows Reservoir site. *Transactions of the Missouri Academy of Science* 12:37-46.
- Johnson, W. C. 1994. Woodland expansion in the Platte River, Nebraska: patterns and causes. *Ecological Monographs*. 64(1):45-84.
- Johnston, B. C. 1987. Plant associations of region two: potential plant communities of Wyoming, South Dakota, Nebraska, Colorado, and Kansas. Edition 4. USDA Forest Service, Rocky Mountain Region. R2-Ecol-87-2. 429 pp.
- Jones, G. P., and G. M. Walford. 1995. Major riparian vegetation types of eastern Wyoming. A Report Submitted to the Wyoming Department of Environmental Quality, Water Quality Division. Grant 9-01136. 244 pp.
- Knopf, F.L. 1985. Significance of riparian vegetation to breeding birds along an altitudinal cline. Pages 105-111 in Johnson, R.R., et al., eds., *Riparian ecosystems and their management*. USDA Forest Service General Technical Report RM-120.
- Lindauer, I. E. 1970. The vegetation of the flood plain of the Arkansas River in southeastern Colorado. Unpublished dissertation, Colorado State University, Fort Collins. 92 pp
- Lindauer, I. E. and J. P. Fitzgerald. 1974. Ecological survey and analysis of terrestrial communities at the Weld County (Hardin) proposed reservoir site. Unpublished report to U.S. Bureau of Reclamation, Denver, Colorado by University of Northern Colorado, Greeley. 45 pp.
- Lindauer, I. E., J. P. Fitzgerald and L. L. Lindauer. 1973. Ecological analyses of flood plain communities, Narrows Reservoir Site, Colorado. Unpublished report to U.S. Bureau of Reclamation, Denver, Colorado by the University of Northern Colorado. Department of Biology, Greeley. 108 pp.
- Lindauer, I.E. 1978. A comparison of the vegetative communities of the South Platte and Arkansas River drainages in eastern Colorado. Pages 56-72 in Graul, W.D. and S.J. Bissel, eds., *Lowland River and Stream Habitat in Colorado: A Symposium*, 4-5 October 1978. Colorado Chapter of Wildlife Society and Audubon Council.
- Lindauer, I.E. and S.J. Christy. 1972. An analysis of the woody vegetation on the South Platte River floodplain in northeastern Colorado. Unpublished report to the U.S. Bureau of Rec., Denver, CO. by the University of N. Colorado Biol. Dept., Greeley, CO.
- McAdams, A.G., D.A. Stutzman, and D. Faber-Langendoen. 1998. Black Hills Community Inventory, unpublished data. The Nature Conservancy, Midwest Regional Office, Minneapolis, MN.
- Ramaley, F. 1939. Sand-hill vegetation of northeastern Colorado. *Ecol. Mono.* 9(1):1-51.
- Steinauer, G. 1989. Characterization of the natural communities of Nebraska. Appendix D, p. 103-114 in: M. Clausen, M. Fritz, and G. Steinauer. *The Nebraska Natural Heritage Program, two year progress report*. Unpubl. doc. Nebr. Game and Parks Comm., Nat. Heritage Prog. Lincoln, NE.