III.A.4.N.C. TEMPORARILY FLOODED MICROPHYLLOUS SHRUBLAND

III.A.4.N.c.1. TAMARIX SPP. SEMI-NATURAL TEMPORARILY FLOODED SHRUBLAND ALLIANCE
Tamarisk species Semi-natural Temporarily Flooded Shrubland Alliance

Alliance Identifier: A.842
Tamarix spp. Temporarily Flooded Shrubland
Tamarisk species Temporarily Flooded Shrubland

ELEMENT CONCEPT

GLOBAL SUMMARY: This broadly defined association is composed of shrublands which form moderately dense to dense thickets on banks of larger streams across the western Great Plains, interior and southwestern U.S. and northern Mexico. Stands are dominated by introduced species of *Tamarix*, including *Tamarix ramosissima, Tamarix chinensis, Tamarix gallica*, and *Tamarix parviflora*. *Tamarix* spp. were introduced from the Mediterranean and have become naturalized in various sites, including salt flats and other saline habitats, springs, and especially along streams and regulated rivers, where it replaces the native vegetation, such as shrublands dominated by species of *Salix* or *Prosopis*. A remnant herbaceous layer may be present, depending on the age and density of the shrub layer. *Tamarix* species have become a critical nuisance along most large rivers in the semi-arid West and, because of the difficulty to remove, may have irreversibly changed the vegetation on many sites.

ENVIRONMENTAL DESCRIPTION

USFWS WETLAND SYSTEM: PALUSTRINE

Ouray National Wildlife Refuge Environment: *Tamarix ramosissima* readily becomes established as seedlings on moist silt and sand of sand bars and point bars; it also readily colonizes drying mudflats and Green River channels. Salt-cedar competes with native species such as *Salix exigua, Salix amygdaloides,* and *Populus fremontii* on these sites.

Global Environment: These widespread shrublands are common along larger streams, rivers, and around playas in the western U.S. and Mexico. Elevation ranges from 75 m below sea level to 1860 m. *Tamarix* spp. have become naturalized in various sites including riverbanks, floodplains, basins, sandbars, side channels, springs, salt flats, and other saline habitats. Stands grow especially well along regulated rivers where flood-regenerated native species like *Populus* are declining. Substrates are commonly thin sandy loam soil over alluvial deposits of sand, gravel or cobbles.

VEGETATION DESCRIPTION

Ouray National Wildlife Refuge Vegetation: *Tamarix ramosissima* is the dominant species in all stands, but because of its very small leaves foliar cover for this shrub usually is recorded at the 40-60% range. The lowest foliar cover value recorded (40%) was in a young stand in Leota Bottom where the shrub height was between 0.5 and 1 m. One stand in Sheppard Bottom was extremely tall and dense and was estimated at 90% foliar cover for salt-cedar, where shrub heights were nearly 5 m. Stand height is typically recorded in the 2-5 m range for *Tamarix ramosissima*, although a stand averaging over 5 m tall was recorded in Johnson Bottom. Salt-cedar stands that have established on point bars and islands are more dense than stands that are invading into adjacent grasslands and shrublands. Other shrubs or sapling trees that are present in *Tamarix ramosissima* stands at various densities include *Populus fremontii, Salix amygdaloides, Salix exigua, Sarcobatus vermiculatus,* and *Rhus trilobata*. Foliar cover values for associated shrub species are usually less than 5% in a salt-cedar stand. The most common grasses and forbs present in salt-cedar stands include *Distichlis spicata, Sporobolus airoides, Polypogon monspeliensis, Hordeum jubatum, Iva axillaris, Conyza canadensis,* and *Lepidium latifolium*. Foliar cover for herbaceous species ranged from approximately 5-50% for the stands sampled, e.g., less herbaceous cover in dense salt-cedar stands colonizing point bars vs. more herbaceous cover where salt-cedar shrubs are invading grasslands.

Global Vegetation: This semi-natural shrubland occurs along streams, rivers and playas where it forms a moderate to dense tall-shrub layer that is solely or strongly dominated by species of *Tamarix* including *Tamarix ramosissima, Tamarix chinensis, Tamarix gallica*, and *Tamarix parviflora*. Other shrubs may include species of *Salix* (especially *Salix exigua*) and *Prosopis, Rhus trilobata*, and *Sarcobatus vermiculatus* but with low cover (if shrub species are codominant then stand is classified as a natural shrubland). Scattered *Acer negundo, Salix amygdaloides, Populus* spp., or *Elaeagnus angustifolia* trees may also be present. Depending on stand age and density of the shrub layer, an herbaceous layer may be present. Associated species include *Distichlis spicata, Sporobolus airoides*, and introduced forage species such as *Agrostis*

gigantea, Agrostis stolonifera, and *Poa pratensis*. Introduced herbaceous species such as *Polypogon monspeliensis, Conyza canadensis, Lepidium latifolium*, and others have been reported from shrublands in this association.

Dynamics: *Tamarix* spp. are highly competitive shrubs that have invaded many riparian and wetland environments in the western U.S. Hansen *et al*. (1995) report that these shrubs are extremely drought- and salt-tolerant, produce prolific wind-dispersed seeds over much of the growing season, can resprout after burning or cutting, and if kept moist, buried or broken branches will develop adventitious roots and grow. Stands seem to favor disturbed and flow-regulated rivers, but establish well in pristine areas, too. Under optimum conditions riparian areas can be converted to a dense thicket in less than 10 years (Hansen *et al*. 1995). Once established stands are extremely difficult to eradicate, requiring cutting with herbicide application on stumps to prevent resprouting (Smith 1989).

MOST ABUNDANT SPECIES

Ouray National Wildlife Refuge

Stratum	**Species**
SHRUB	*Tamarix ramosissima, Populus fremontii, Salix exigua*
HERBACEOUS	*Distichlis spicata, Sporobolus airoides, Polypogon monspeliensis, Iva axillaris, Lepidium latifolium*

Global

Stratum	**Species**
TALL SHRUB	*Tamarix* spp.

CHARACTERISTIC SPECIES

Ouray National Wildlife Refuge

Species

Tamarix ramosissima, Salix exigua, Distichlis spicata, Lepidium latifolium

Global

Species

Tamarix spp.

OTHER NOTEWORTHY SPECIES

Ouray National Wildlife Refuge

Stratum	***Species***
N/A	

Global

Stratum	***Species***
N/A	

GLOBAL SIMILAR ASSOCIATIONS:

Tamarix spp. - (*Baccharis halimifolia*) Shrubland (CEGL004918)

SYNONYMY:

Tamarix chinensis Community Type (Hansen et al. 1995)
Tamarisk Scrub (Holland 1986b)
Saltcedar Alliance (Muldavin et al. 2000a) includes 8 community types.
Tamarix ramosissima/Salix exigua Community Type (Muldavin et al. 2000a) includes 8 community types.
Tamarix ramosissima/Sporobolus airoides Community Type (Muldavin et al. 2000a) includes 8 community types.
Tamarisk series (Sawyer and Keeler-Wolf 1995) includes 8 community types.
Tamarix ramosissima (Salt cedar) Association (Nachlinger and Reese 1996) classified within the Disturbed Spring Habitats.
Salt cedar series (Paysen et al. 1980) classified within the Disturbed Spring Habitats.
Tamarix pentandra Community Type (Szaro 1989) classified within the Disturbed Spring Habitats.

CLASSIFICATION COMMENTS

Ouray National Wildlife Refuge: *Tamarix ramosissima* is a common understory shrub of *Populus fremontii* woodlands and forests within the Refuge.

Global Comments: *Tamarix* spp. Temporarily Flooded Shrubland (CEGL003114) is a broadly defined plant association that is composed of many diverse *Tamarix* spp.-dominated vegetation communities from a wide variety of environments. Muldavin et al. (2000a) described 8 community types that will be reviewed as possible NVCS associations.

ELEMENT DISTRIBUTION

Ouray National Wildlife Refuge Range: *Tamarix ramosissima* Temporarily Flooded Shrubland is becoming established along the Green River, its floodplain and basins, and along the unnamed tributary drainage near the Refuge entryway. This exotic shrub type occupies sand bars and islands, side channels, basin edges, drying basins, dikes, levees, roadsides, and riparian habitats within the Refuge.

Global Range: This semi-natural shrubland is found along drainages in the semi-arid western Great Plains, interior and southwestern U.S. and northern Mexico, from central and eastern Montana, south to Colorado, western Oklahoma and Texas, west to California.

Nations: MX US
States/Provinces: AZ CA CO MT MXCH MXCO MXSO NM NV OK TX UT WY?
TNC Ecoregions: 10:C, 19:C, 22:C, 23:C, 24:C, 26:C, 27:C, 28:C
USFS Ecoregions: 261A:CC, 261B:CC, 262A:CC, 313A:CC, 313C:CC, 313D:CC, 313E:CC, 321:C, 322:C, 331I:CC, 331J:CC, 341C:CC, M261A:CC, M261E:CC, M261F:CC, M262A:CC, M262B:CC
Federal Lands: NPS (Big Bend, Wupatki, Zion); USFWS (Ouray)

ELEMENT SOURCES

Identifier: CEGL003114 **Confidence:** 2 **Conservation Rank**:GW
REFERENCES: Hansen et al. 1995, Hoagland 1997, Holland 1986b, Muldavin et al. 2000a, Nachlinger and Reese 1996, Paysen et al. 1980, Sawyer and Keeler-Wolf 1995, Smith 1989, Szaro 1989, Thompson 2001, Von Loh 2000.