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Index of Species Information

SPECIES: Salix lemmonii

Introductory

SPECIES: Salix lemmonii

AUTHORSHIP AND CITATION :
Uchytil, Ronald J. 1989. Salix lemmonii. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2008, April 15].

ABBREVIATION :
SALLEM

SYNONYMS :
Salix austinae (Bebb)

SCS PLANT CODE :
SALE

COMMON NAMES :
Lemmons willow
Lemmon willow

TAXONOMY :
The currently accepted scientific name of Lemmons willow is Salix lemmonii Bebb. [1]. It is closely related and possibly conspecific with Geyer willow (S. geyeriana) [1]. Brunsfeld and Johnson [1] reported that plants referred to in the past by numerous authorities as S. geyeriana var. meleiana differ from S. geyeriana in a number of respects and more closely match descriptions of S. lemmonii found in Idaho. Hitchcock and Cronquist [11] have stated that although S. geyeriana and S. lemmonii are obviously closely related, they should be retained as distinct species until the necessity to combine them is clearly demonstrated.

LIFE FORM :
Shrub

FEDERAL LEGAL STATUS :
No special status

OTHER STATUS :
NO-ENTRY

DISTRIBUTION AND OCCURRENCE

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GENERAL DISTRIBUTION :
Lemmon willow is found from the Sierra-Cascade region of California, north to Oregon along the eastern side of the Cascade Mountains, and east to Montana, Nevada, and Colorado [7,11].

ECOSYSTEMS :
FRES20 Douglas-fir
FRES23 Fir - spruce
FRES26 Lodgepole pine

STATES :
CA CO ID MT NV OR WY

BLM PHYSIOGRAPHIC REGIONS :
2 Cascade Mountains
4 Sierra Mountains
5 Columbia Plateau
6 Upper Basin and Range
7 Lower Basin and Range
8 Northern Rocky Mountains
9 Middle Rocky Mountains
10 Wyoming Basin

KUCHLER PLANT ASSOCIATIONS :
K005 Mixed conifer forest
K007 Red fir forest
K012 Douglas-fir forest
K014 Grand fir - Douglas-fir forest
K015 Western spruce - fir forest

SAF COVER TYPES :
206 Engelmann spruce - subalpine fir
207 Red fir
210 Interior Douglas-fir
218 Lodgepole pine

243 Sierra Nevada mixed conifer

SRM (RANGELAND) COVER TYPES :
NO-ENTRY

HABITAT TYPES AND PLANT COMMUNITIES :
Lemmon willow occurs in riparian habitats, usually bordered by coniferous forests of lodgepole pine (Pinus contorta) or Douglas-fir (Pseudotsuga menziesii); or zones of mountain big sagebrush (Artemisia tridentata ssp. vaseyana) [6,12]. Only one published classification scheme listing Lemmon willow as a dominant was found:

Area	Classification	Authority
OR: Deschutes, Ochoco, Fremont & Winema NFs	riparian rzas, cts	Kovalchik 1987

rzas = riparian zone associations
cts = community types

MANAGEMENT CONSIDERATIONS

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IMPORTANCE TO LIVESTOCK AND WILDLIFE :
Willows (Salix spp.) in general are a preferred food of moose and beaver; Lemmons willow occurs in riparian habitats which these animals frequent [4,25]. Lemmons willow also provides browse for deer and elk [12]. Information regarding the importance of Lemmon willow to livestock is lacking.

PALATABILITY :
In the West, willows in general are considered to be more palatable to sheep than to cattle, but cattle may make greater use of willows because they tend to frequent riparian areas [24].

NUTRITIONAL VALUE :
NO-ENTRY

COVER VALUE :
Lemmons willow provides cover for mammals and songbirds, and provides shade for salmonids [12].

VALUE FOR REHABILITATION OF DISTURBED SITES :
Cuttings of Lemmons willow can be used to revegetate disturbed riparian

areas. Cuttings quickly stabilize disturbed alluvium, allowing other plants to become established. Unrooted willow stem cuttings (slips) should be planted on sites that provide sufficient moisture to start and maintain growth throughout the growing season [26]. Since willows are sensitive to both competition and shading, dense tall grasses will reduce transplant survival [20] and may need to be removed by cutting or by herbicide application [16]. Although harder to plant, rooted stock is recommended for use because it has higher survival rates [20,26]. Prerooting can be accomplished by growing cuttings under greenhouse conditions, allowing roots to grow 0.8 to 1.2 inches (2-3 cm) in length [20]. Slips should be obtained from local native stands. They should be 12 to 20 inches (30-50 cm) long and taken in the spring from dormant 2- to 4-year-old wood greater than 0.4 inch (1 cm) in diameter [20]. A 20-inch (50 cm) cutting should be planted to a depth of 12 inches (30 cm), with 8 inches (20 cm) left aboveground [20]. This deep planting allows for more rooting surface to extract soil moisture, and higher amounts of carbohydrates as stored food reserves [20,26]. If serious streambank erosion has resulted in a nearly vertical cut bank, slope reshaping may be necessary to enhance success of transplants. Reshaping may not be necessary if, through protective measures, existing vegetation is able to stabilize the site [20,26]. Under any method of revegetation, sites should be fenced to protect them from grazing and trampling.

OTHER USES AND VALUES :
All willows produce salicin, which chemically is closely related to acetylsalicylic acid, commonly known as aspirin. This is probably why Native Americans used various preparations from willows to treat toothache, stomach ache, diarrhea, dysentery, and dandruff [6]. Native Americans also used the stems for basketry and bow making, and the bark for tea and fabric making [4].

Lemmons willow has been used in landscape plantings for the past 30 years in the Tahoe Basin of California and Nevada [2].

OTHER MANAGEMENT CONSIDERATIONS :
Many Lemmons willow communities in Oregon have a long history of overuse by cattle. Plants in these disturbed stands experience loss of vigor, as shown by uneven stem age distribution, highlining, clubbing, or dead clumps. If rested for 5 to 6 years, new shoots may grow 5 to 8 feet feet (1.5-2.4 m) tall and be more resistant to damage from browsing [12]. Herbage production in these stands can be doubled if stands are rested for 2 to 3 years.

BOTANICAL AND ECOLOGICAL CHARACTERISTICS

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GENERAL BOTANICAL CHARACTERISTICS :
Lemmons willow is a deciduous shrub with numerous slender crooked stems arising in a loose basal cluster. It is usually about 3 to 10 feet (1-3

m) tall but may grow up to 16 feet (5 m) tall [6,7,18]. Leaves are alternate, simple, pinnately veined, entire or inconspicuously toothed, green shiny above and pale glaucous below [6,7]. Male and female flowers occur on separate plants in catkins. Staminate catkins are 0.4-0.6 inch (1-1.5 cm) long, on occur on leafy flowering branchlets up to 0.2 inch (5 mm) in length. Pistillate catkins are 0.4 to 1.6 inches (1-4 cm) long, on leafy flowering branchlets up to 0.4 inch (1 cm) long [6,7]. The capsules are pubescent.

RAUNKIAER LIFE FORM :

Undisturbed State: Phanerophyte (microphanerophyte)
Undisturbed State: Phanerophyte (nanophanerophyte)
Burned or Clipped State: Hemicryptophyte

REGENERATION PROCESSES :

Sexual: Lemmons willow reproduces primarily through the dispersal of thousands of small seeds. Like other willows, it probably relies heavily on insect pollination, especially from bees. After fertilization, a capsule develops which eventually splits open during spring or summer, dispersing the numerous tiny seeds [5]. The production of large quantities of seeds ensures that some will fall on favorable sites. Seeds have a cottony down, which allows them to float long distances in wind or water. Seeds are not dormant and remain viable for only a few days. They germinate rapidly, usually within 12 to 24 hours of dispersal if a moist seedbed is reached [5]. The seeds contain significant amounts of chlorophyll, and photosynthesis generally occurs as soon as the seed is moistened.

Vegetative: Lemmons is unable to produce suckers form lateral roots but will resprout from its root crown or stem base after fire or cutting [1,10,12]. Regeneration may also occur through broken pieces of stems or roots, which are transported and deposited by floodwaters, and later sprout [27].

SITE CHARACTERISTICS :

Lemmons willow is a riparian species; it grows near streams and rivers on low gradient floodplains. In Idaho, it inhabits relatively dry portions of riparian zones [6].

Soils: In Idaho it is consistently found on well-drained gravelly or sandy soils, while nearby associated willows grow on wet, fine-textured or coarse-textured soils near the water table [6]. In Oregon it is found on deep, fine textured alluvium over subsurface soils of various textures ranging from silt to silty clay loam [12].

Associates: Lemmons willow is often found with other willows such as Geyer willow, Drummond willow (Salix drummondiana), planeleaf willow (S. planifolia), and wolf willow (S. wolfii). Bog birch (Betula glandulosa) and Kentucky bluegrass (Poa pratensis) are also common [6,12].

Elevation: Lemmon willow is reported to grow from low-middle to upper elevations. Elevational ranges for California and Oregon are presented below [12,19]:

from 5,000 to 10,000 feet (1,524-3,048 m) in CA
4,400 to 6,300 feet (1,341-1,920 m) in OR

SUCCESSIONAL STATUS :

Like many other willows, Lemmon willow is probably an early seral

species.

SEASONAL DEVELOPMENT :
Lemmons willow is a deciduous shrub. Its catkins emerge with, or sometimes before the leaves in the spring [7,18]. After fruits ripen, seeds are dispersed from spring to early summer [5]. It flowers from May to June in California [18].

FIRE ECOLOGY

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FIRE ECOLOGY OR ADAPTATIONS :
Lemmons willow generally sprouts from its root crown or stem base following fire [10,12,27]. Its numerous wind-dispersed seeds are also important in revegetating areas following fire [27].

POSTFIRE REGENERATION STRATEGY :
survivor species; on-site surviving root crown or caudex
off-site colonizer; seed carried by wind; postfire years one and two
off-site colonizer; seed carried by animals or water; postfire yr 1&2

FIRE EFFECTS

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IMMEDIATE FIRE EFFECT ON PLANT :
Most fires kill only aboveground plant parts. However, severe fires can completely remove organic soil layers, leaving willow roots exposed and charred and thus eliminating basal sprouting [12,22,27].

DISCUSSION AND QUALIFICATION OF FIRE EFFECT :
NO-ENTRY

PLANT RESPONSE TO FIRE :
Lemmons willow will generally sprout from its root crown or stem base following fire, althoughhowever sometimes not until the following year [12,22,27]. It is a prolific seeder, and off-site plants are important

seed sources for revegetating burned areas [27].

DISCUSSION AND QUALIFICATION OF PLANT RESPONSE :
NO-ENTRY

FIRE MANAGEMENT CONSIDERATIONS :
"Quick hot" fires may be used to rejuvenate decadent willows and produce abundant browse for big game animals [10]. However, it may take 5 or more years for Lemmon willow plants to attain stem heights and diameters which are resistant to browsing [12].

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