

Project-US 285

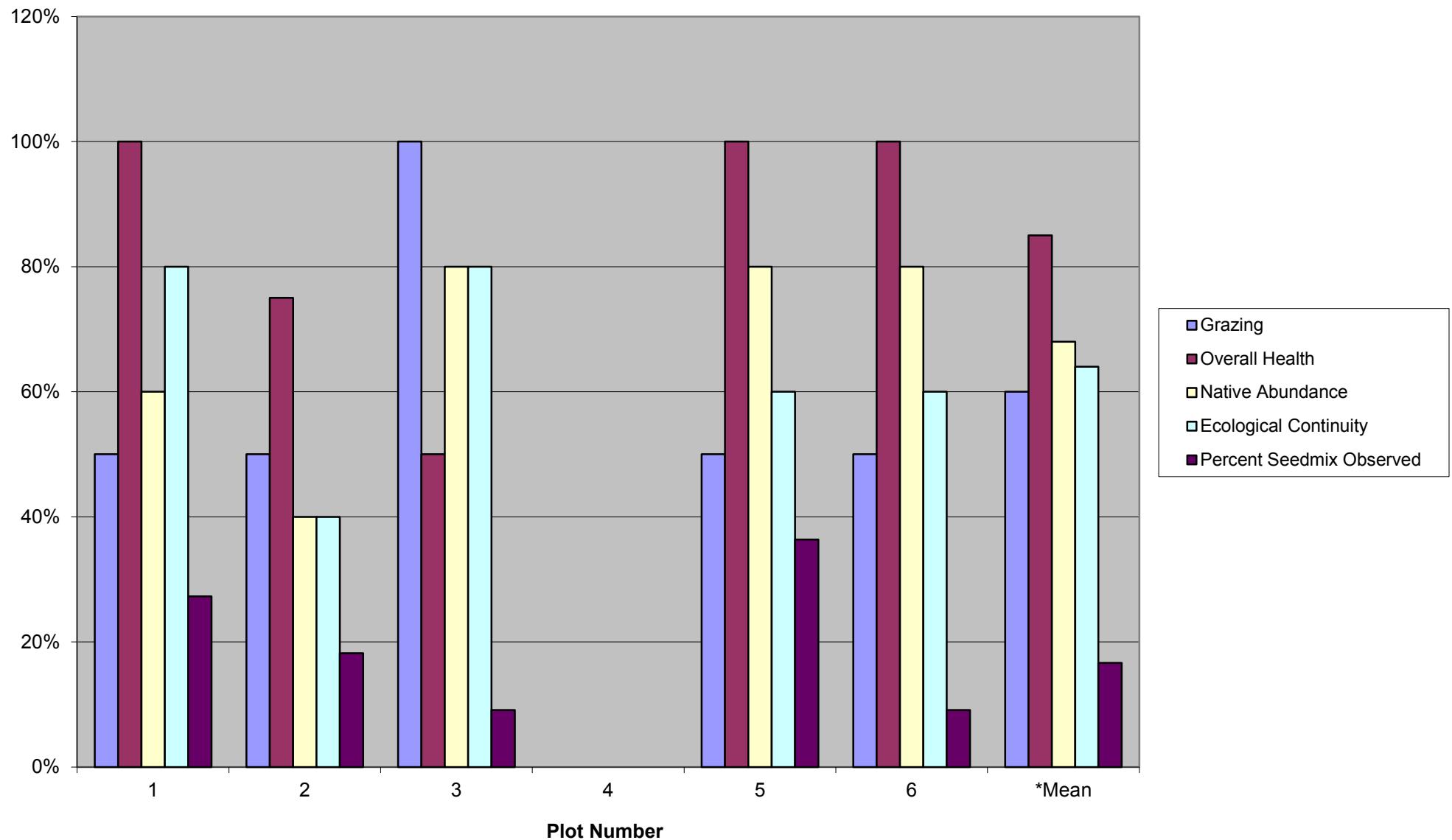
Date: 6/19/14

Plot/Transect #	Original Seed Mix Phase 2	Original Seed Mix Phase 3	1	2	3	4	5	6
Background/Off ROW								
General Location			S. of Park and Ride	N. Double Header	S. Double Header	Above Rest Area	S. Tiny Town Exit	S. of Summer Rd
Top Canopy/Other Layers/ID from Transects								
Dominant Species #1	ANGE	ANGE	FEAR 2	FEAR 2	PASM	SEDGE 4	BRIN2	SPHE
Dominant Species #2	BOGR2	BOGR2	PASM	PASM	ELTR7	HECO26	FEAR2	BRIN2
Dominant Species #3	THIN6	THIN6	THIN6	MOSS	MEOF	NAVI4	PHPR3	PHPR3
Dominant Species #4	BOCU	BOCU	BRIN2		JUARL	BRIN2	TRDI4	GABO2
Dominant Species #5	PASM	PASM	PEST2		ELEL5	ALSI8	PEST2	THIN6
Dominant Species	FEAR2	FEAR2			ALYSSUM	CEDI3	CEDI3	SEDGE 4
Dominant Species	TRHY	TRHY				GABO2	TRPR2	
Dominant Species	ACMI2	ACMI2				ARUV	ACMI2	
Dominant Species	PEST2	PEST2				ARLI	THIN6	
Dominant Species	ROWO	ROWO				SCRB3	ERFL	
Dominant Species		ERNA10				COUM	TAOF	
Dominant Species		LILEL2				SEDGE 3	TRHY	
Dominant Species						ASTER 1	GABO2	
Dominant Species							MOSS	
Vegetative Stage of Dominant Sp			flower, vegetative	flower, vegetative	flowering	varied	varied	flowering
Total pounds seed/acre								
Total PLS lbs / acre	19.5	19.6						
Seeded Acres (native)	36	36						
Mulch Acres	36	36						
Mulch Tackifier	1820 LBS	6000 lbs						
Mulch Application (tons/acre)	1.5 tons/acre	1.5 tons/acre						
Percent Seed Mix Species Identified	Mean = 17%		27%	18%	9%	0%	36%	9%
Grazing (1-5)			1	1	2	2	1	1
Overall Health Value (1-5)			4	3	2	4	4	4
Noxious Weeds Observed			BRTE	EUES	VETH	CEDI3	CEDI3	
Noxious Weeds Observed			CESTM			LIVU2		
Noxious Weeds Observed			CIAR4					
Noxious Weeds Observed			SOAR2					
Noxious Weeds Observed			VETH					

Seed Mix Observed								
Observed Species			ACMI2	ERNA10	FEAR2	ACMI2	ACMI2	ACMI2
Observed Species			FEAR 2	FEAR2	LILEL2		FEAR2	PASM
Observed Species			LILEL2	LILEL2	PASM		PEST2	ROWO
Observed Species			PASM	PASM	PEST2		THIN6	THIN6
Observed Species			PEST2	THIN6	THIN6		TRHY	TRHY
Observed Species			THIN6		TRHY			
Observed Species			TRHY					
Observed Species								
<b>Native Plant Abundance (1-5)</b>			3	2	4	5	4	4
<b>Introduced Species</b>								
Non-Native Species			LAVI	DAGL	BRIN2	BRIN2	BRIN2	BRIN2
Non-Native Species			MESA	PHPR3	MEOF		PHPR3	PHPR3
Non-Native Species			POPR	THIN6	SIAL2		POPR	
Non-Native Species			THAR5		THIN6		TAOF	
Non-Native Species			TRDU		TRHY		TRPR2	
Non-Native Species			TRHY				TRRE3	
Non-Native Species			THIN6					
<b>Native Species</b>			ACMI2	ERNA10	ALYSSUM	ACMI2	ACMI2	ACMI2
Native Species			FEAR2	FEAR2	CANE2	ALSI8	ANPA4	ARCO9
Native Species			GRSQ	JUARL	ELEL5	APAN2	ERFL	GABO2
Native Species			HEVI4	LILEL2	ELTR7	ARFR4	FEAR2	JUCO6
Native Species			KOMA	MOSS	FEAR2	ARLI	GABO2	MARE11
Native Species			LILEL2	PASM	JUARL	ARLU	HEVI4	MELA3
Native Species			LUAR3	PIPO	LILEL2	ARUV	KOMA	PASM
Native Species			PASM	SEDGE 1	LUAR3	ASF2	LUAR3	PIEN
Native Species			PEST2		PASM	ASTER 1	MOSS	PIPU
Native Species					PEST2	CAPR5	PEST2	QUGA
Native Species					RUCR	COUM	PIPU	ROWO
Native Species					SEDGE 1	ERIG 1	SALIX 1	THDI4
Native Species						GABO2	THDI4	
Native Species						HECO26		
Native Species						HEVI4		
Native Species						KOMA		
Native Species						NAVI4		
Native Species						PIPO		
Native Species						QUGA		
Native Species						SCBR3		
Native Species						SEDGE 3		
Native Species						SEDGE 4		
Native Species						TROC		

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Ecological Continuity Value (1-5)			4	2	4	5	3	3
Diversity			Continuous	Monoculture Fescue	Continuous	Native State	Continuous	Forest transition
Topography		Berm Summit	End shoulder	steep slope	Downslope	Top steep slope	Across ditch	
			Salt damage	Good	High	Good	Good	
Hydrology		Good Drainage; Low Erosion	Poor drainage; stressed pines	wet drainage area	Well Drained	Well drained	Good Drainage	
Percent Vegetation Cover								
Percent canopy (foliar) Cover			100%	100%	100%	100%	100%	90%
Percent Bare Ground			0%	0%	0%	0%	0%	0%
Percent Basal/Soil Surface Cover			10%	50%	30%	20%	30%	0%
Amendments		No Information						
Fertilizer (yes/no)	No	no						
Biological nutrient organic based fertilizer (lbs/acre)	data not available	data not available						
Humate (lbs/acre)	data not available	data not available						
Compost (cys/acre)	data not available	data not available						
Spray on organic amendments (lbs/acre)	data not available	Biosol						
Soil Chemistry								
Soil pH		--	7.4	7.6	6.6	7.5	8.4	
Soil EC		--	0.05	0.29	0.12	0.04	0.21	
Surface Depth		0-6	0-4	0-6	0-4	0-6	2-4	
Surface Color		10 YR 3/3	10YR 3/2	2.5Y 3/2	10YR 3/3	2.5Y 4/3	10 YR 4/3	
Subsurface Color		7.5Y 4/4	10YR 4/3	2.5Y 4/4	10YR 3/3	2.5Y 5/4	2.5Y 5/3	

**Relative Health Evaluations**

## Summary Scores for Hwy 285 Vegetation Surveys

Plot	Reference Plot (#4)	Scores			Grazing/ Herbivory	Overall Health	Native Plant Abundance	Ecological Continuity
		Canopy cover	Bare ground	Basal cover				
1		100%	0%	10%	1	4	3	4
2		100%	0%	50%	1	3	2	2
3		100%	0%	30%	2	2	4	4
4	Reference	100%	0%	20%	2	4	5	5
5		100%	0%	30%	1	4	4	3
6		90%	0%	0%	1	4	4	3
	Ave. Score Excluding Plot 4	98%	0%	24%	1.2	3.4	3.4	3.2

## Relative Health Evaluations

Plot	Grazing	Overall Health	Native Abundance	Ecological Continuity	Percent Seedmix Observed
1	50%	100%	60%	80%	27%
2	50%	75%	40%	40%	18%
3	100%	50%	80%	80%	9%
4					0%
5	50%	100%	80%	60%	36%
6	50%	100%	80%	60%	9%
*Mean	60%	85%	68%	64%	17%

**HWY 285 TerraLogic for CDOT**  
**USDA Codes for Plants**

<b>Seed Mix Species</b>	<b>USDA</b>		
<b>Latin Name</b>	<b>Code</b>	<b>Common Name</b>	<b>Notes</b>
<b>Phase 2</b>			
<i>Achillea millefolium</i>	ACMI2	yarrow	looks like fern lvs
<i>Andropogon gerardii</i>	ANGE	big bluestem	tuft or rhizome(short, absent); ligules membranous; blades flat, folded
<i>Bouteloua curtipendula var 'vaughn'</i>	BOCU	sideoats grama	tufted with rhizomes < B gracilis
<i>Bouteloua gracilis var 'hachita'</i>	BOGR2	blue grama	one-sided flags; ligules of hairs; tufted short rhizomes
<i>Festuca ovina v. 'durar' (arizonica)</i>	FEAR2	Arizona; syn F. ovina	tufted; blades filiform, involute; spikelets awned
<i>Linum lewisii</i>	LILEL2	native flax	blue flowers easily falling; thin, delicate stem; early
<i>Pascopyrum smithii var 'arriba'</i>	PASM	western wheatgrass	blue-grn; glumes asymmetrical acute, ciliate; rhizomatous
<i>Penstemon strictus var 'bandera'</i>	PEST2	Rocky Mtn penstemmon	anther hairs > anther sacs
<i>Thinopyrum intermedium</i>	THIN6	Intermediate wheatgrass	leaf smooth, fringed; can be blue-grn, droopy; introduced
<i>Trifolium hybridum</i>	TRHY	Alsike clover	no drought; flwr smaller; introduced
<b>Phase 3 plants in addition to seedmix</b>			
<i>Ericameria nauseosa</i>	ERNA10	rabbitbrush	gray-green shrub with tiny yellow disc flowers
<i>Rosa woodsii</i>	ROWO	Woods rose	prickly & thorns; woody base
<b>Weeds</b>			
<i>Bromus tectorum</i>	BRTE	cheat grass; downy brome	dense white down base; easy to pull; lemmas narrow; I
<i>Centaurea diffusa</i>	CEDI3	diffuse knapweed	dried; head (phyllaries) looks like white fishnet
<i>Centaurea maculosa</i>	CESTM	spotted knapweed	syn C stoebe ssp micranthos; pinnate hairy lvs; spotted involucre
<i>Cirsium arvense</i>	CIAR4	Canada thistle	many heads; involucre of curved red spines
<i>Euphorbia esula</i>	EUES	leafy spurge	milky sap; green spaceship flowers; alternate, entire leaves
<i>Linaria vulgaris</i>	LIVU2	butter n eggs; toadflax	flwrs > 1 cm; pointy yellow & orange palate
<i>Sonchus arvensis</i>	SOAR2	perennial sowthistle	dandelion red stem, spiny lvs; small dandelion yellow flowers
<i>Verbascum thapsus</i>	VETH	common mullein	Indian tp
<b>Introduced</b>			
<i>Bromus inermis</i>	BRIN2	smooth brome	W, M; sandpaper; I-introduced
<i>Dactylis glomerata</i>	DAGL	orchard grass	chimney brush; ligule uneven light grn ragged; introduced
<i>Lactuca virosa</i>	LAVI	bitter lettuce	serrated, clasping end-cut lvs with prickles on underside of vein

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<i>Medicago sativa</i>	MESA	alfalfa	purple pea flowers with small clover-like cauline leaves
<i>Melilotus officinale</i>	MEOF	sweet clover	yellow, tall, thin clover
<i>Phleum pratense</i>	PHPR3	timothy	dense spikes; base of culm bulblike; sheaths not inflated
<i>Poa pratensis</i>	POPR	Kentucky bluegrass	rhizomes; wetter area
<i>Sisymbrium altissimum</i>	SIAL2	Jim Hill Mustard	skeleton lvs; tiny yellow 4 petal flwrs
<i>Taraxacum officinale</i>	TAOF	dandelion	
<i>Thinopyrum intermedium</i>	THIN6	Intermediate wheatgrass	leaf smooth, fringed; can be blue-grn, droopy; introduced
<i>Thlaspi arvense</i>	THAR5	pennycress	tiny white flowers; penny fruits
<i>Tragopogon dubius</i>	TRDU	yellow salsify	green sepals > petals; alternate gray-grn entire lvs
<i>Trifolium hybridum</i>	TRHY	Alsike clover	no drought; flwr smaller; introduced
<i>Trifolium pratense</i>	TRPR2	red clover	red clover; heads sessile; subtended few leaves; papery bract
<i>Trifolium repens</i>	TRRE3	white clover	native white clover
<b>Graminoids</b>			
<i>Carex nebrascensis</i>	CANE2	Nebraska sedge	black scales; fatter and more robust than <i>C. aquatilis</i>
<i>Carex praegracilis</i>	CAPR5	clustered field sedge	dry habitat; 3 straw colored spikelets overlapping & ascending
<i>Elymus elymoides</i>	ELEL5	squirreltail	tufted, reddish florets, open stars; > delicate <i>H. jubatum</i> ; lots of dead lvs at base
<i>Elymus trachycaulus</i>	ELTR7	slender wheatgrass	glumes as long as entire spikelet
<i>Hesperostipa comata</i>	HECO26	needle and thread grass	1 floret/spike; ligules membranous, short ciliate; awns long, bent
<i>Juncus arcticus</i> ssp <i>littoralis</i>	JUARL	mountain rush	star flwrs; clusters mid-stem
<i>Koeleria macrantha</i>	KOMA	prairie June grass	2 florets/spike/shiny, glume long; boat tips; tufted; awnless
<i>Nassella viridula</i>	NAVI4	green needlegrass	tufted; culms 5-10 dm tall; blades involute; spikelets 7-12mm; awns 2-3cm long
<i>Sedge 1</i>	SEDGE1	sedge	edges; wetlands
<i>Sedge 3</i>	SEDGE3		no perigynia; cannot ID to species
<i>Sedge 4</i>	SEDGE4		no perigynia; cannot ID to species
<i>Sporobolus heterolepis</i>	SPHE	prairie dropseed	1 floret/spike; ligules ciliate, glumes<lemmas; no awns; open panicle
<b>Forbs</b>			
<i>Adenolinum lewisii</i>	LILEL2	prairie flax	erect narrow stem; alternate tiny lvs
<i>Alyssum sp</i>	ALYSSUM		unknown alyssum perennial
<i>Alyssum simplex</i>	ALSI8	alyssum	annual; yellow; short; lvs gone at seeding
<i>Antennaria parvifolia</i>	ANPA4	small leaf pussytoes	blue-gray tiny succulent lvs; groundcover; white heads many flwrs
<i>Arabis lignifera</i>	ARLI	desert rockcress	2 ft; sticklike; terete siliques

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<i>Arnica cordifolia</i>	ARCO9	heratleaf arnica	heart-shaped lvs; shady, wet; opposite lvs; yellow ray flowers
<i>Artemisia frigida</i>	ARFR4	prairie sagewort	finely dissected lvs
<i>Artemisia ludoviciana</i>	ARLU	white sagebrush	smaller lvs in internodes
<i>Aster</i>	ASTER1	perennial aster	unknown and not flowering aster
<i>Astragalus flexuosus</i>	ASFL2	flexile milkvetch	pinnate lvs; long stems; white to purple flwrs; pea fruits
<i>Comandra umbellata</i>	COUM	bastard toadflax	tiny mustard; white flwrs; green-brown ball bearing like seeds
<i>Erigeron sp</i>	ERIG	fleabane	
<i>Erigeron flagellaris</i>	ERFL	trailing fleabane	stolons
<i>Galium boreale</i>	GABO2	bedstraw	whorled leaves
<i>Grindelia squarrosa</i>	GRSQ	curlycup gumweed	clasped leaves
<i>Heterotheca villosa</i>	HEVI4	hairy false goldenaster	hairy, sticky though soft
<i>Linum lewisii</i>	LILEL2	prairie flax	stamens and styles equal
<i>Lupinus argenteus</i>	LUAR3	<i>Lupinus argenteus</i>	whorled hairy lvs gray appearance; flwrs off-white to purple
<i>Mertensia lanceolata</i>	MELA3	prairie bluebells; chiming bells	dryer habitat; alternate, entire lvs; filaments attached top of tube
<i>Rumex cripus</i>	RUCR	curly dock	curly lvs; lacking ancillary shoots (with-altissimus)
<i>Scutellaria brittonii</i>	SCBR3	skullcap	tiny purple tube flowers with opposite pairs of leaves alternating on the stem
<i>Thermopsis divaricarpa</i>	THDI	golden banner	bright yellow pea flowers
<i>Tradescantia occidentalis</i>	TROC	prairie spiderwort	triangular purple blue flwr; sepals succulent whorled > 3-7 in
<b>Shrubs &amp; Trees</b>			
<i>Apocynum androsaemifolium</i>	APAN2	spreading dogbane	pink flwrs; opposite lvs, bright red veins and stems
<i>Arctostaphylos uva-ursi</i>	ARUV	kinnikinnick	groundcover with shiny, penny-size oblong leaves
<i>Ericameria nauseosa</i>	ERNA10	rubber rabbitbrush	
<i>Juniperus communis</i>	JUCO6	common juniper	ground cover; blue berries
<i>Mahonia repens</i>	MARE11	oregon grape; barberry	yellow flwrs; holly lvs
<i>Picea engelmannii</i>	PIEN	Engelmann spruce	tips of cone toothed, notched, pointed, <6 in; not as sharp to touch as blue spruce
<i>Picea pungens</i>	PIPU	Colorado blue spruce	6-8 inch cones
<i>Pinus ponderosa</i>	PIPO	Ponderosa pine	3 lvs 4-9 in; cone w/ sharp pointed
<i>Quercus gambelii</i>	QUGA	gamble oak	shrub with oak lvs
<i>Rosa woodsii</i>	ROWO	Wood's rose	broad based thorns and prickles; red stems
<i>Salix</i>	SALIX 1	willow	narrow leaf low shrub usually in wet areas