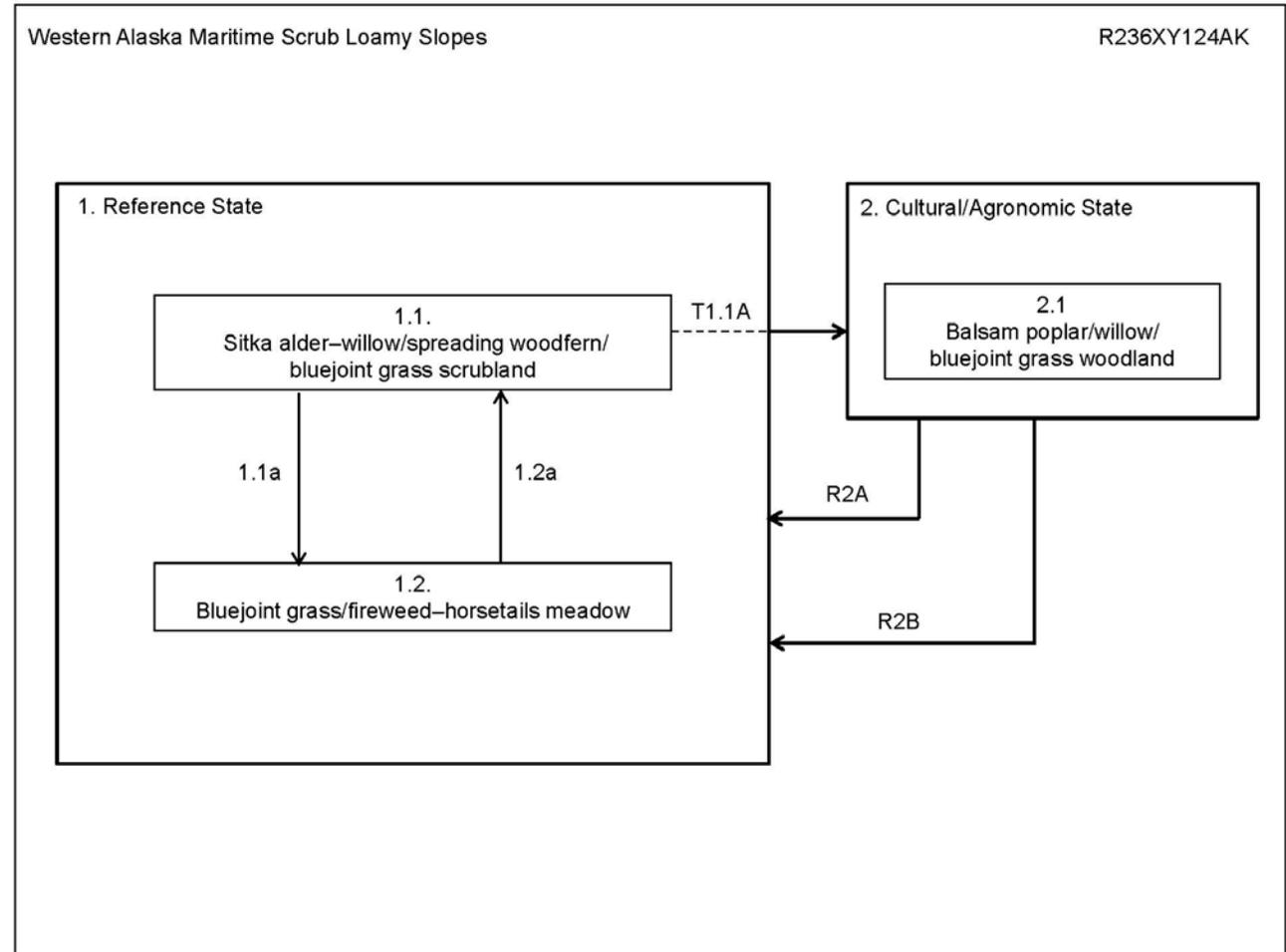


Ecological Site Description ID:	R236XY124AK—Western Alaska Maritime Scrub Loamy Slopes
Ecological Dynamics of the Site:	
<p>This western Alaska maritime ecological site is located on upland plains and hills that are rolling and convex or are along lake margins. These areas are typically found at elevations between sea level and 1,980 feet with slopes of 0 to 60 percent. Slope aspect does not appear to influence the plant community dynamics of this site as it is found on all aspects.</p> <p>This ecological site is correlated to D36-Western maritime scrub loamy eolian slopes and Rolph and Clarkspoint soils. Soil characteristics that are likely to influence plant community dynamics include a cryic soil temperature regime, an udic moisture regime with slow permeability to a depth of 10 inches and slow or very slow permeability between depths of 10 and 40 inches, and a strongly acidic to ultra acidic (pH 5.3 to 3.4) first mineral horizon. These soils are somewhat poorly to well drained with medium to very high runoff potential. Organic material content is commonly 10 to 30 percent in the surface layer. Annual precipitation is between 21 and 57 inches, and the annual frost-free period ranges from 80 to 140 days. Parent material varies; it can consist of organic material over coarse-silty volcanic ash over coarse-silty loess, herbaceous organic material over coarse-loamy eolian deposits, or herbaceous organic material over coarse-silty cryoturbate over coarse-silty loess.</p> <p>The reference community phase is typified by closed scrubland consisting of medium and tall shrubs with a species-poor understory. No other ecological sites are associated with these landforms. The reference community phase is similar to a community in R236XY105AK (Western Alaska Maritime Mosaic Loamy Slopes). That ecological site, however, consists of a mosaic with no discernible disturbance regime, while this one has a disturbance regime with temporal progression from one community phase to the next. These differences along with ensuing dissimilarities in reference states and community phases make the use of separate ecological sites necessary.</p> <p>Erosion is the main documented disturbance regime for this ecological site, and it is considered to be a natural event that is typically unmanaged. Steep, leading escarpment slopes can be susceptible to landslides, tree throw, and other disturbances that remove most or all of the existing vegetation. In this ecological site, erosion occurs most frequently near the leading edge of steep embankments. As the bank near the associated river or ocean front erodes, the reference community phase commonly is removed, allowing fast-growing plants to colonize.</p> <p>Slight browsing by moose on willow is also possible on this ecological site, but it does not appear to affect the ecological processes significantly enough to alter the communities.</p> <p>This ecological site has one alternative state. Human-influenced areas in the villages from which the shrub overstory is removed and trees, particularly balsam poplar (<i>Populus balsamifera</i>), are allowed to propagate have been recorded. Free of competition for space and light and aided by management activities, regenerative trees may form a woodland community with an understory of willow and bluejoint grass.</p>	

State and Transition Diagram:



LEGEND

1.1a = Erosion
 1.2a = Erosion recovery
 T1.1A = Anthropogenic land use
 R2A = Tree removal
 R2B = Erosion

State ID Number:	1	State Name:	Reference State
State Narrative:	<p>The reference state supports two community phases, grouped by structure and dominance of the vegetation (e.g., trees, shrubs, graminoids, and forbs) and their ecological function and stability. The reference community phase is represented by tall, dense scrubland with graminoids and forbs throughout. The presence of these communities is temporally dictated by the erosional disturbance regime associated with these slopes. One alternative state, caused by the anthropogenic removal of shrubs, is on these landforms.</p> <p>This report provides baseline vegetation inventory data for this ecological site. Future data collection is needed to provide further information about existing plant communities</p>		

	and the disturbance regimes that would result in transitions from one community to another.		
Phase 1.1			
Community Phase Number:	1.1	Community Phase Name:	Sitka alder-willow/spreading woodfern/bluejoint grass scrubland
Community Phase Narrative:			
<p>The reference community phase is characterized by tall, dense scrubland with graminoids and forbs throughout. Annual plant production is visually estimated to be highest among shrubs, though local dense areas of forbs and graminoids have high production. Typically, this community consists of dense Sitka alder (<i>Alnus viridis</i> ssp. <i>sinuata</i>) with an understory of bluejoint grass (<i>Calamagrostis canadensis</i>), spreading woodfern (<i>Dryopteris expansa</i>), and woodland horsetail (<i>Equisetum sylvaticum</i>). Other species extant in this community include tealeaf willow (<i>Salix pulchra</i>), claspleaf twistedstalk (<i>Streptopus amplexifolius</i>), fireweed (<i>Chamerion angustifolium</i>), field horsetail (<i>Equisetum arvense</i>), arctic starflower (<i>Trientalis europaea</i>), and spirea (<i>Spiraea stevenii</i>). Mosses (total mean cover ~4 percent) are a relatively small component of the ground cover. Other ground cover commonly includes herbaceous litter (~91 percent) and woody litter (~3 percent).</p>			

Community Phase Canopy Cover

(Vegetation data in the table are provided as constancy (percent) and average canopy cover (percent) of the most dominant and ecologically relevant species for this community phase.)

Plant group	Common name	Scientific name	USDA plant code	Constancy (percent)	Average canopy cover (percent)
S	Sitka alder	<i>Alnus viridis ssp. sinuata</i>	ALVIS	92.3	73.3
S	Tealeaf alder	<i>Salix pulchra</i>	SAPU15	26.9	19.1
G	Bluejoint grass	<i>Calamagrostis canadensis</i>	CACA4	96.2	20.9
F	Spreading woodfern	<i>Dryopteris expansa</i>	DREX2	92.3	37.5
F	Woodland horsetail	<i>Equisetum sylvaticum</i>	EQSY	61.5	1.9
F	Claspleaf twistedstalk	<i>Streptopus amplexifolius</i>	STAM2	61.5	1.1
F	Fireweed	<i>Chamerion angustifolium</i>	CHAN9	50.0	1.8

Community Pathways

Pathway Number	Pathway Name & Description
1.1a	<p>Erosion by landslides.</p> <p>The commonly steep, leading edges of the slopes can be susceptible to landslides. As tidal or river action erodes the lower part of the slope, landslides can potentially remove all of the vegetation, providing space for fast-growing pioneer graminoids and forbs to colonize. This transition is temporally determined by the rate of erosion at the base of the leading escarpments.</p>

Phase 1.2			
Community Phase Number:	1.2	Community Phase Name:	Bluejoint grass/fireweed-horsetails meadow
Community Phase Narrative:			
<p>This is the early erosional community phase characterized by a meadow consisting of bluejoint grass (<i>Calamagrostis canadensis</i>) with forbs scattered throughout. Annual plant production is visually estimated to be highest among graminoids. Total annual production is hypothesized to be lower in this community than in the reference community phase due to a decrease in shrub production. Typically, this community consists of bluejoint grass with fireweed (<i>Chamerion angustifolium</i>), spreading woodfern (<i>Dryopteris expansa</i>), and horsetails (<i>Equisetum spp.</i>). Other species present in small amounts are arctic starflower (<i>Trientalis europaea</i>) and purple marshlocks (<i>Comarum palustre</i>). The ground cover is dominantly herbaceous litter (total mean cover ~96 percent).</p>			

Community Phase Canopy Cover

(Vegetation data in the table are provided as constancy (percent) and average canopy cover (percent) of the most dominant and ecologically relevant species for this community phase.)

Plant group	Common name	Scientific name	USDA plant code	Constancy (percent)	Average canopy cover (percent)
G	Bluejoint grass	<i>Calamagrostis canadensis</i>	CACA4	100.0	88.3
F	Fireweed	<i>Chamerion angustifolium</i>	CHAN9	100.0	10.0
F	Spreading woodfern	<i>Dryopteris expansa</i>	DREX2	100.0	1.7
F	Horsetails	<i>Equisetum spp.</i>	EQUIS	66.7, 66.7 [#]	3.5, 2.5 [#]

[#] Horsetails are represented by two species—field horsetail (*Equisetum arvense*) and woodland horsetail (*E. sylvaticum*), respectively.

Note: The vegetation and soils for this community were sampled at three separate locations. Due to the limited data available for this community phase, personal field observations were used to aid in describing this plant community.

Community Pathways

Pathway Number	Pathway Name & Description		
1.2a	<p>Natural succession: Normal time and growth without disruptive erosion.</p> <p>It is likely that as time passes, shrubs capable of competing in this area, such as willows and nitrogen-fixing alder, may colonize. They can create a shaded understory that supports shade-tolerant forbs and graminoids. The time required for this transition is unknown, though it is at least partially dependent on the rate of colonization, growth, and reproduction of the plants.</p>		
State ID Number:	2	State Name:	Cultural/Agronomic State
State Narrative:	<p>This alternative state results from cultural or agronomic activity, typically in towns and villages. The thick shrub community is cleared, as described in community phase 1.1, which can allow balsam poplar (<i>Populus balsamifera</i>) to propagate. Eventually, these areas may develop into a woodland community with many understory species extant in the reference state.</p> <p>Continued anthropogenic use typically prevents the woodland from returning to the reference state; however, two processes may allow this to occur. First, if embankment erosion removes all of the vegetation, it is likely that the area will transition to the early erosional community phase (1.2). Second, if the woodland is clearcut and managed to prevent tree propagation, the area may hypothetically transition toward community 1.1. No evidence of either of these restorative pathways was documented <i>in situ</i>.</p>		

Phase 2.1			
Community Phase Number:	2.1	Community Phase Name:	Balsam poplar/willow/bluejoint grass woodland
Community Phase Narrative:			
<p>This phase is the only recorded community for the alternative state. It is characterized by deciduous woodland with an understory of bluejoint grass (<i>Calamagrostis canadensis</i>), willow, and some forbs. Annual plant production is dependent on tree growth and reproduction, but it is visually estimated to be less than that of the dense scrubland reference community phase. Typically, this community consists of an overstory of balsam poplar (<i>Populus balsamifera</i>) with an understory of grayleaf willow (<i>Salix glauca</i>), bluejoint grass, highbush cranberry (<i>Viburnum edule</i>), and fireweed (<i>Chamerion angustifolium</i>). Other common understory species include seacoast angelica (<i>Angelica lucida</i>), northern bedstraw (<i>Galium boreale</i>), spirea (<i>Spiraea stevenii</i>), and horsetails (<i>Equisetum spp.</i>). The ground cover typically is dominantly herbaceous litter (total mean cover >90 percent), but mosses and woody litter may also be present.</p>			

Community Phase Canopy Cover

(Vegetation data in the table are provided as constancy (percent) and average canopy cover (percent) of the most dominant and ecologically relevant species for this community phase.)

Plant group	Common name	Scientific name	USDA plant code	Constancy (percent)	Average canopy cover (percent)
T	Balsam poplar	<i>Populus balsamifera</i>	POBA2	100.0	85.0 [^]
S	Grayleaf willow	<i>Salix glauca</i>	SAGL	100.0	15.0
S	Highbush cranberry	<i>Viburnum edule</i>	VIED	100.0	5.0
G	Bluejoint grass	<i>Calamagrostis canadensis</i>	CACA4	100.0	70.0
F	Fireweed	<i>Chamerion angustifolium</i>	CHAN9	100.0	2.0
F	Seacoast angelica	<i>Angelica lucida</i>	ANLU	100.0	2.0

[^] Though normally excluded, regenerative individuals were included to numerically show the presence of this species in the community.

Note: The vegetation and soils for this community were sampled at one location. Due to the limited data available for this community phase, personal field observations were used to aid in describing this plant community.

State Transitions and Restoration Pathways

State Transition Pathways			
Transition Number	From	To	Transition Narrative
T1.1A	1	2	Cultural or agronomic pressures can cause a shift to an alternative state. This transition begins with the removal of medium and tall shrubs from the reference community phase. Balsam poplar trees are allowed to colonize or are planted. In conjunction with continued alder management, a new woodland understory may become established that is somewhat similar to that of community phase 1.1 but has fewer shrubs and forbs and more graminoids.
State Restoration Pathways			
Restoration Pathway Number	From	To	Restoration Pathway Narrative
R2A	2	1	It is proposed that this restorative pathway occurs with the anthropogenic removal of the woodland tree species. This removal may allow alder to resprout from remaining root masses and then regrow, reproduce, and spread, which may lead the area back toward the reference community phase. There is no known timeframe in which this may occur.

R2B	2	1	The natural erosion regime, as described by pathway 1.1a, may remove all of the vegetation from the woodland community. This would allow pioneer forbs and graminoids to colonize, potentially creating an early community phase in the reference state. There is no known timeframe in which this will occur, though the distance from the leading edge of the escarpments is a factor.
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This report is interim and subject to change.