Ecological Site Description ID:	R236XY135AK—Western Alaska Maritime Scrub Loamy Plains, Coastal

Ecological Dynamics of the Site:

This western Alaska maritime ecological site is located on lowland, coastal plains adjacent to tidal guts. These areas are typically found at elevations between sea level and 120 feet with slopes of 0 percent. Slope aspect does not appear to influence the plant community dynamics of this site as it is found on all aspects.

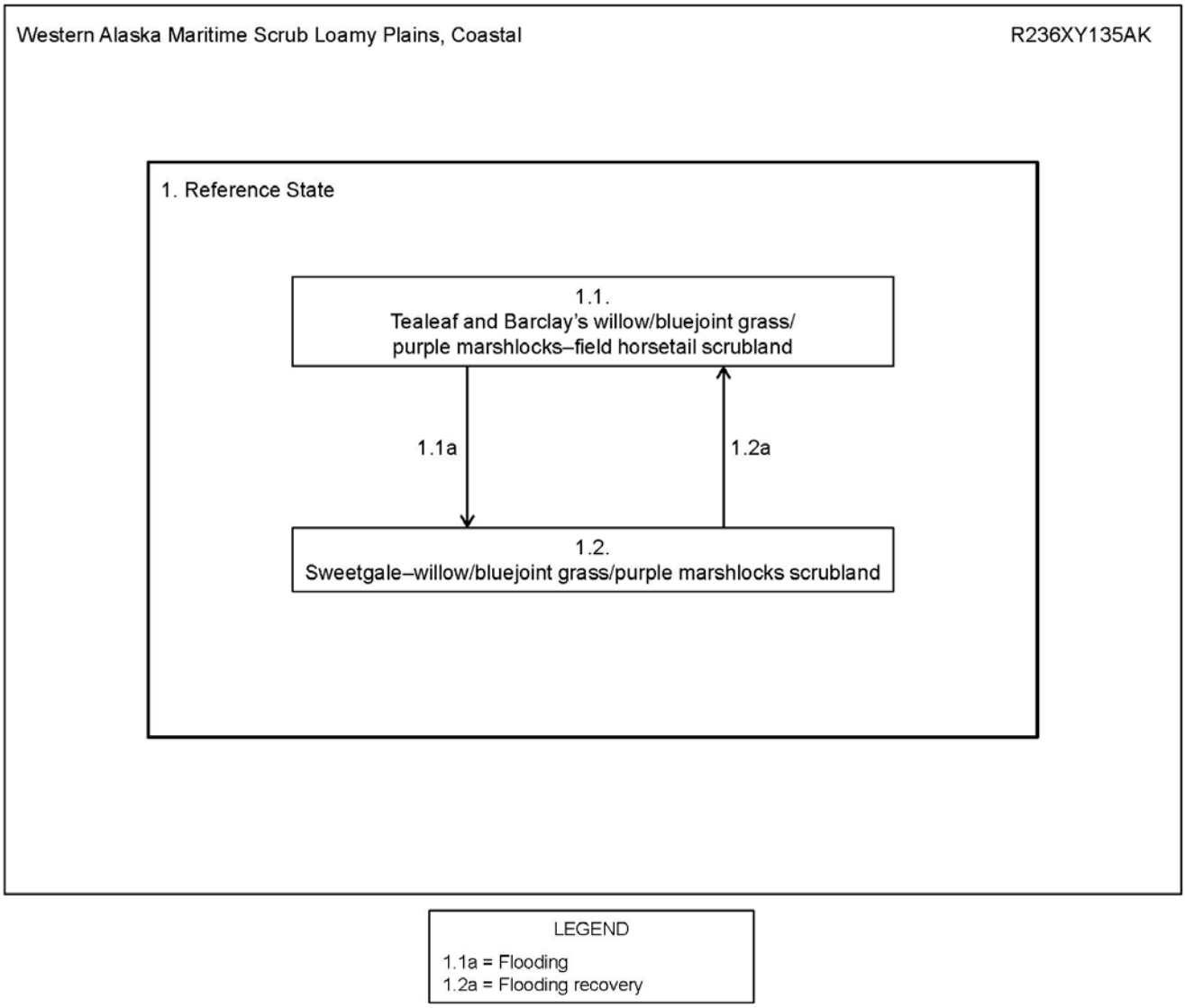
This ecological site is correlated to soil component D36-Western maritime scrub silty coastal plains. Soil characteristics that are likely to influence plant community dynamics include a cryic soil temperature regime, an aquic moisture regime with slow soil permeability to a depth of 40 inches, and a moderately acidic to very strongly acidic (pH 6.0 to 5.0) surface layer. These soils are poorly drained with a low runoff potential. Organic material content is 50 to 80 percent in the surface layer. Annual precipitation is commonly between 21 and 28 inches, and the annual frost-free period averages 85 to 140 days. Parent material consists of grassy organic material over silty marine deposits.

The reference community phase is typified by dense willow scrubland with an understory of bluejoint grass (*Calamagrostis canadensis*) and various forb species. When compared to other ecological sites that are on lowland coastal plains in the survey area, including R236XY129AK (Western Alaska Maritime Scrub Peat Plains, Coastal), R236XY133AK (Western Alaska Maritime Graminoid Loamy Plains, Coastal), and R236XY170AK (Western Alaska Maritime Graminoid Gravelly Plains, Coastal), only this ecological site is adjacent to tidal guts. This site does not have surface silt, gravel, or water; nor does R236XY170AK. Site R236XY135AK is wetter than R236XY170AK because it is at lower elevations and the soil is less easily drained; therefore, it supports facultative to obligate wetland plants that are not present in R236XY170AK. For these reasons, the use of unique ecological sites is necessary.

Coastal flooding is the major documented disturbance regime for this ecological site, and it is considered to be a natural event that is typically unmanaged. This disturbance is responsible for one early community phase. The low elevation, minimal slope, and coastal proximity make this ecological site susceptible to flooding. Frequent, extremely brief periods of flooding commonly occur from April through October. The available background information suggests that coastal flooding in Alaska can influence the distribution and abundance of plant species in disturbed areas (Pollock *et al.*, 1998; Pennings and Callaway, 1992). Though the topographic differences may be marginal, vegetation may be influenced by factors such as the frequency of flooding, content of soil organic matter, salinity, and rate of siltation (Vine and Snow, 1984). Furthermore, occasional, brief periods of ponding can occur from April through October, and a water table may be present in April and May. Ponding during the growing season may affect the composition of the plant community, as hypoxic or anoxic conditions are a major abiotic stress that helps to determine the presence or absence of vascular plants (Vartapetian and Jackson, 1996). The effects of ponding depend not only on coastal flooding but also on the yearly and monthly variations in rainfall, snowmelt, and seepage.

Moderate browsing of willow by moose may occur on this ecological site, but it does not appear to affect the ecological processes significantly enough to alter the communities.

State and Transition Diagram:



State ID Number:	1	State Name:	Reference State
State Narrative:	The reference state supports two community phases, grouped by the structure and dominance of the vegetation (e.g., shrubs, graminoids, and forbs) and their ecological function and stability. The presence of these two communities is temporally dictated by a frequent flooding regime. The reference community phase is represented by a dense scrubland community with graminoids and forbs in the understory. No alternative states have been observed. This report provides baseline vegetation inventory data for this ecological site. Future data collection is needed to provide further information about existing plant communities and the disturbance regimes that would result in transitions from one community to another.		

Phase 1.1	Photograph not available.		
Community Phase Number:	1.1	Community Phase Name:	Tealeaf & Barclay's willow/bluejoint grass/purple marshlocks-field horsetail scrubland

Community Phase Narrative:

The reference community phase is characterized by willow scrubland with grass and hydrophilic forbs in the understory. Annual plant production is visually estimated to be highest among shrubs and then among graminoids. Typically, this community consists of medium-sized tealeaf willow (*Salix pulchra*) and Barclay's willow (*Salix barclayi*) with an understory of bluejoint grass (*Calamagrostis canadensis*) and purple marshlocks (*Comarum palustre*). Various other hydrophilic species may also be present, including Sitka alder (*Alnus viridis* ssp*. sinuata*), field horsetail (*Equisetum arvense*), tall Jacob's-ladder (*Polemonium acutiflorum*), seacoast angelica (*Angelica lucida*), marsh pea (*Lathyrus palustris*), western water hemlock (*Cicuta douglasii*), and others. Low concentrations of mosses are typically present, and concentrations of lichens are negligible. The ground cover is dominantly herbaceous litter, but woody litter may also be present. Some areas of the surface may be covered with water.

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	Tealeaf willow	*Salix pulchra*	SAPU15	100.0	60.0
S	Barclay's willow	*Salix barclayi*	SABA3	100.0	20.0
G	Bluejoint grass	*Calamagrostis canadensis*	CACA4	100.0	50.0
F	Purple marshlocks	*Comarum palustre*	COPA28	100.0	15.0
F	Western water hemlock	*Cicuta douglasii*	CIDO	100.0	Trace

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.

Community Pathways

Pathway Number	Pathway Name & Description
1.1a	Coastal flooding. Major flooding events, commonly coinciding with coastal storm surges, can scour the vegetation and soil, deposit silt, and influence the salinity of the soil. Ponding can stress and drown susceptible plants and limit the types and species of plants that can colonize post-disturbance. Damage to vegetation or complete removal of the reference community can open up dense scrubland, generally allowing for colonization of hydrophilic graminoids and forbs and shorter, less shade-tolerant shrubs. The time required for this transition to take place is unknown, but it likely depends on the duration and strength of flooding and ponding events and the colonization and growth rates of the associated graminoids, forbs, and shrubs.

Phase 1.2			
Community Phase Number:	1.2	Community Phase Name:	Sweetgale-willow/bluejoint grass/purple marshlocks scrubland
Community Phase Narrative:			
The early flooding community phase is characterized by open scrubland with myriad graminoids and forbs interspersed throughout. Annual plant production is visually estimated to be highest among shrubs. The total production is hypothesized to be less than that of the reference community phase due to the smaller extant shrub species and decreased shrub cover. Typically, this community consists of various shrubs, including sweetgale (*Myrica gale*), dwarf birch (*Betula nana*), spirea (*Spiraea stevenii*), and willows (*Salix spp.*). The most common and abundant understory species are bluejoint grass (*Calamagrostis canadensis*) and purple marshlocks (*Comarum palustre*). Other species include Lyngbye's sedge (*Carex lyngbyei*), angelica (*Angelica spp.*), fragrant bedstraw (*Galium triflorum*), and tall Jacob's-ladder (*Polemonium acutiflorum*). Low concentrations of mosses may be present, and concentrations of lichens are generally negligible. The ground cover commonly includes herbaceous litter.			

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	Sweetgale	*Myrica gale*	MYGA	100.0	30.0
S	Dwarf birch	*Betula nana*	BENA	100.0	15.0
G	Bluejoint grass	*Calamagrostis canadensis*	CACA4	100.0	10.0
F	Purple marshlocks	*Comarum palustre*	COPA28	100.0	10.0

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.

Community Pathways

Pathway Number	Pathway Name & Description
1.2a	Natural succession: Normal time and growth without disruptive flooding. It is likely that as time passes, taller hydrophilic shrubs, such as willows, may colonize and spread. As the growing conditions improve, total species richness will typically increase and the population of extant plants may increase. The time required for this transition is unknown, but it likely depends on a variety of factors, including the distance to a seed source and the competitiveness of the colonizing and extant species.

Bibliography

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Pollock, Michael M., Robert J. Naiman, and Thomas A. Hanley. 1998. Plant species richness in riparian wetlands—a test of biodiversity theory. Ecology. Volume 79: 94-105.

Vartapetian, Boris B., and Michael B. Jackson. 1996. Plant adaptations to anaerobic stress. Annals of Botany. Volume 79 (Supplement A): 3-20.

Vince, Susan W., and Allison A. Snow. 1984. Plant zonation in an Alaskan salt marsh: I—distribution, abundance, and environmental factors. Journal of Ecology. Volume 72: 651-667.

This report is interim and subject to change.