

LANDFIRE Biophysical Setting Model

Biophysical Setting 7716560

**Alaskan Pacific Maritime Shrub and
Herbaceous Floodplain Wetland**

☐ This BPS is lumped with:

☐ This BPS is split into multiple models:

General Information

Contributors (also see the Comments field)

Date 7/30/2008

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Modeler 2

Reviewer

Modeler 3

Reviewer

Vegetation Type

Wetlands/Riparian

Map Zone

77

Model Zone

- | | |
|--|--|
| ☒ Alaska | ☐ N-Cent.Rockies |
| ☐ California | ☐ Pacific Northwest |
| ☐ Great Basin | ☐ South Central |
| ☐ Great Lakes | ☐ Southeast |
| ☐ Northeast | ☐ S. Appalachians |
| ☐ Northern Plains | ☐ Southwest |

Dominant Species*

CARO6 VAUL
CAAQ ALVIS
EQFL SALIX
MYGA MYAL3

General Model Sources

- ☒ Literature
☐ Local Data
☒ Expert Estimate

Geographic Range

This system is found along glacial and non-glacially-fed rivers and streams along the Gulf Coast of AK, from Kodiak Island through southeastern AK. It occurs within the floodplain boundaries.

Biophysical Site Description

The following information was taken from the draft Boreal Ecological Systems description (NatureServe 2008a):

Floodplain wetlands occur within the active and inactive portions of floodplain systems. Wetlands develop on poorly drained deposits, oxbows, and abandoned channels and are often mosaiced with well-drained floodplain vegetation.

Vegetation Description

Species composition is variable due to diverse environmental conditions such as water depth, substrate and nutrient input. Existing vegetation map classes include: Temperate Pacific Freshwater Aquatic Bed, Temperate Pacific Freshwater Emergent Marsh, Alaskan Pacific Maritime Fen and Wet Meadow, Alaskan Pacific Maritime Wet Low Shrub, and North Pacific Shrub Swamp. Below is a partial list of species that can be found in these BpS (species taken from NatureServe 2008b). For more information on species composition, refer to the description for the individual BpS.

Aquatic Bed: *Nuphar lutea*, *Myriophyllum alterniflorum*, *M. spicatum*, *Potamogeton* spp., and *Sparganium* spp. (Shephard 1995, Boggs 2000, Boggs et al. 2008).

Freshwater Emergent Marsh: *Carex rostrata*, *Equisetum fluviatile*, *Carex sitchensis*, *Menyanthes trifoliata*, *Comarum palustris*, *Eleocharis palustris* and *Scirpus validus* (Banner et al. 1986, Shephard et

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al.1995, Boggs 2000).

Fen and Wet Meadow: *Carex aquatilis* var. *dives*, *Dodecatheon pulchellum*, *Parnassia fimbriata*, *Eriophorum russeolum*, *Menyanthes trifoliata*, *Comarum palustris*, *Calligeron giganteum*, *Sphagnum squarrosum*, *S. riparum*, *Carex saxatilis*, *C. lyngbyei*, *Sanguisorba canadensis*, *Swertia perrenis*, *Platanthera dilatata*, *Equisetum varigatum* and *Equisetum fluviale* (Shephard 1995, Boggs 2000, McClellan et al. 2003).

Wet Low Shrub: *Myrica gale*, *Vaccinium uliginosum*, *Alnus viridis* ssp. *sinuata*, *Kalmia microphylla*, *Carex pauciflora*, *Carex livida*, *C. sitchensis*, *C. pluriflora*, *C. viridula* ssp. *viridula*, *Trichophorum caespitosum*, *Eriophorum angustifolium*, *Equisetum varigatum*, *Drosera rotundifolia*, *Sanguisorba canadensis*, *Sanguisorba officinalis*, *Calamagrostis canadensis*, *Rubus arcticus* and *Sphagnum* spp.

Shrub Swamp: *Alnus viridis* ssp. *sinuata*, *Salix* spp., *Carex sitchensis*, *C. utriculata*, *Equisetum fluviale*, *Lysichiton americanus* and *Sphagnum* spp.

Disturbance Description

Frequent river channel migration and associated flooding and fluvial processes constitute the major disturbances (NatureServe 2008b). Wetland succession and species composition is variable due to diverse environmental conditions such as water depth, substrate, and nutrient input (NatureServe 2008b). Floodplain wetland vegetation may include the following BpS: Aquatic Bed, Freshwater Emergent Marsh, Fen and Wet Meadow, Wet Low Shrub, and Shrub Swamp. These BpS have been described as unique systems for the North Pacific Maritime region of AK, but because floodplain wetland dynamics are different from wetland dynamics outside the floodplain, we will consider floodplain wetlands a distinct system, and model succession accordingly.

It is unlikely that this type could support a fire.

Adjacency or Identification Concerns

Floodplain wetland vegetation includes the following classes: Aquatic Bed, Freshwater Emergent Marsh, Fen and Wet Meadow, Wet Low Shrub, and Shrub Swamp. These classes have also been described as unique Ecological Systems, but because floodplain wetland dynamics are different from wetland dynamics outside the floodplain, they are considered a distinct BpS and modeled accordingly.

Native Uncharacteristic Conditions

Scale Description

Linear, small patch

Issues/Problems

The lack of information about the successional dynamics of this system and the variability of environmental conditions across floodplain wetlands make it difficult to quantitatively model this BpS. As currently modeled several distinct communities, which are not necessarily successional related, are lumped together based on two criteria: 1) all communities are located in the floodplain and are characterized by poor drainage, and 2) their fine scale pattern make them difficult to map separately in the floodplain (however, they are treated as separate BpS outside of the floodplain).

A reviewer suggested that floodplain wetlands be combined with the non-floodplain wetlands even though geomorphic placement defines these two types differently. This suggestion was not followed to maintain

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consistency with the treatment of floodplain wetlands in the sub-boreal and boreal regions of AK but should be considered in future refinements of the AK models.

Comments

This model was developed for the maritime region of AK by Tom DeMeo. This model takes a different view of floodplain wetlands than is represented in the same model for the boreal region. This model assumes that floodplain wetlands are composed of a mosaic of different communities (Aquatic Bed, Freshwater Emergent Marsh, Fen and Wet Meadow, Wet Low Shrub and Shrub Swamp) which occur on the floodplain but do not necessarily have a successional relationship to one another. Hydrology, drainage and other site factors likely dictate the community in a given area.

Vegetation Classes

Class A 100%

Mid Development 1 All Structures

Upper Layer Lifeform

- ☐ Herbaceous
☒ Shrub
☐ Tree

Indicator Species* and Canopy Position

CARO6 Upper
CAAQ Upper
ALVIS Upper
MYGA Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	Open Shrub (25-74% shrub cover)	Closed Shrub (> 75% shrub cover)
Height	Dwarf Shrub (< 20 cm)	Tall Shrub (>1.5 m)
Tree Size Class	None	

- ☐ Upper layer lifeform differs from dominant lifeform.

The upper layer lifeform may either be herbaceous or shrub dominated.

Description

Zero plus years

Floodplain wetlands include a diverse mix of species and species assemblages possibly including the following BpS: Aquatic Bed, Freshwater Emergent Marsh, Fen and Wet Meadow, Wet Low Shrub and Shrub Swamp. The Class Indicator Species listed are not true indicators -- refer to the Vegetation Description for species information.

This community will persist in its various forms. Flooding (represented by Option 1 in the model) is included in the model to represent this important disturbance but its probability (0.1) is only included as a placeholder. Flood frequency varies by location within the floodplain.

Class B 0%

[Not Used] [Not Used]

Upper Layer Lifeform

- ☐ Herbaceous
☐ Shrub
☐ Tree

Indicator Species* and Canopy Position

Structure Data (for upper layer lifeform)

	Min	Max
Cover		
Height		
Tree Size Class		

- ☐ Upper layer lifeform differs from dominant lifeform.

Description

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Class C 0 %

[Not Used] [Not Used]

Upper Layer Lifeform

- ☐ Herbaceous
☐ Shrub
☐ Tree

**Indicator Species* and
Canopy Position**

Structure Data (for upper layer lifeform)

	Min	Max
Cover		
Height		
Tree Size Class		

☐ Upper layer lifeform differs from dominant lifeform.

Description

Class D 0 %

[Not Used] [Not Used]

Upper Layer Lifeform

- ☐ Herbaceous
☐ Shrub
☐ Tree

**Indicator Species* and
Canopy Position**

Structure Data (for upper layer lifeform)

	Min	Max
Cover		
Height		
Tree Size Class		

☐ Upper layer lifeform differs from dominant lifeform.

Description

Class E 0 %

[Not Used] [Not Used]

Upper Layer Lifeform

- ☐ Herbaceous
☐ Shrub
☐ Tree

**Indicator Species* and
Canopy Position**

Structure Data (for upper layer lifeform)

	Min	Max
Cover		
Height		
Tree Size Class		

☐ Upper layer lifeform differs from dominant lifeform.

Description

Disturbances

Fire Regime Group:** NA

Historical Fire Size (acres)

Avg 0

Min 0

Max 0

Sources of Fire Regime Data

- ☐ Literature
☐ Local Data
☒ Expert Estimate

Fire Intervals

	Avg FI	Min FI	Max FI	Probability	Percent of All Fires
Replacement					
Mixed					
Surface					
All Fires					

Fire Intervals (FI):

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is central tendency modeled. Minimum and maximum show the relative range of fire intervals, if known. Probability is the inverse of fire interval in years and is used in reference condition modeling. Percent of all fires is the percent of all fires in that severity class.

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Additional Disturbances Modeled

- ☐ Insects/Disease ☐ Native Grazing ☒ Other (optional 1) Flooding
☐ Wind/Weather/Stress ☐ Competition ☐ Other (optional 2)

References

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