Development of Ecological Systems for Mapping Vegetation for the LANDFIRE Project in Alaska

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Mapping Characteristics

• Map All Lands & Vegetative Communities
  – Same level of detail
    • (Federal & Non-Federal lands)
    • Forestlands, Shrublands, and Grasslands

• Repeatable
  – Quick and affordable

• Consistent for the Nation
  – Map units mean the same thing in Florida as they do in Colorado
Map Unit Requirements

✓ Identifiable
  • from field or plot data

✓ Map-able
  • 30 meter resolution
  • LANDSAT data

✓ Model-able
  • provide required model inputs

✓ Scalable
  • link with existing classifications
Vegetation Characteristics
Existing vegetation type (EVT), cover (EVC), and height (EVH)
Environmental Site Potential (ESP)
Bio-physical Settings (BpS)

Fire behavior
Fire behavior fuel models- 13
Fire behavior fuel models- 40
Canopy bulk density
Canopy base height
Canopy cover
Canopy height

Fire ecology
Historical fire return interval
Historical fire severity
Historical fire regime
Current Succession Class
Existing Vegetation (EVT)

- Used directly for predicting current vegetation composition
- Augmented with canopy and height information
- Framework for mapping current fuel distribution and loadings
- Framework for mapping succession classes for use in departure mapping
Environmental Site Potential (ESP)

- Useful for predicting current vegetation composition
- Framework for mapping current fuel distribution and loadings
- Succession *without* disturbance

Biophysical Settings (BpS)

- Foundation for historical fire regimes modeling
- Framework for mapping departure from historical condition
- Succession *with* disturbance
In Natural Systems, “Vegetation” Layers are Hierarchically Related

ESP – late-seral community without disturbance

BpS – late-seral community with natural disturbance

EVT – existing seral community

Context

Existing Veg. Height  Existing Veg. Cover
WHY NOT VIERECK?

Good existing veg classification

Lacks the necessary information for potential veg

Difficult to integrate into the LANDFIRE process
Terrestrial Ecological System

“Group of vegetative associations that tend to co-occur within landscapes with similar ecological processes, substrates, and/or environmental gradients”.

Eco logical Systems of the United States
A Working Classification of U.S. Terrestrial Systems

NatureServe
Thematic Target Legend
Developed with NatureServe

~ NVC Class/Subclass
~ 20 units
MRLC 2000

NVC Formation
~ 300 units

NatureServe Ecological Systems
~ 600 units
Gap Analysis Program

NVC Alliance
~ 1,800 units
National Park Mapping

NVC Association
~ 5,000 units
Standard Nomenclature:

1. Name of the Ecological Divisions or nested Provinces that describe the distribution of the type.

2. Characteristic vegetative composition and physionomy

3. Environmental modifiers

“Rocky Mountain Dry-Mesic Spruce-Fir Forest and Woodland”
“Inter-Mountain Basins Big Sagebrush Shrubland”
“Colorado Plateau Pinyon-Juniper Woodland”
LANDFIRE Alaska Vegetation Map Units

Ecological Systems

- ~ 20 Aleutian map units
- ~ 35 Arctic map units
- ~ 42 Boreal map units
- ~ 33 Pacific Maritime map units
- ~ 8 Coastal map units
LANDFIRE Alaska

Vegetation Map Units

National Land Cover Classes
~ 7 NLCD land cover/land use types

Ecological Systems
~ 138 map units total
~ 60 wetland-riparian units
~ 33 forest and woodland units
~ 51 shrubland/steppe units
~ 40 herbaceous units
~ 14 sparsely vegetated units