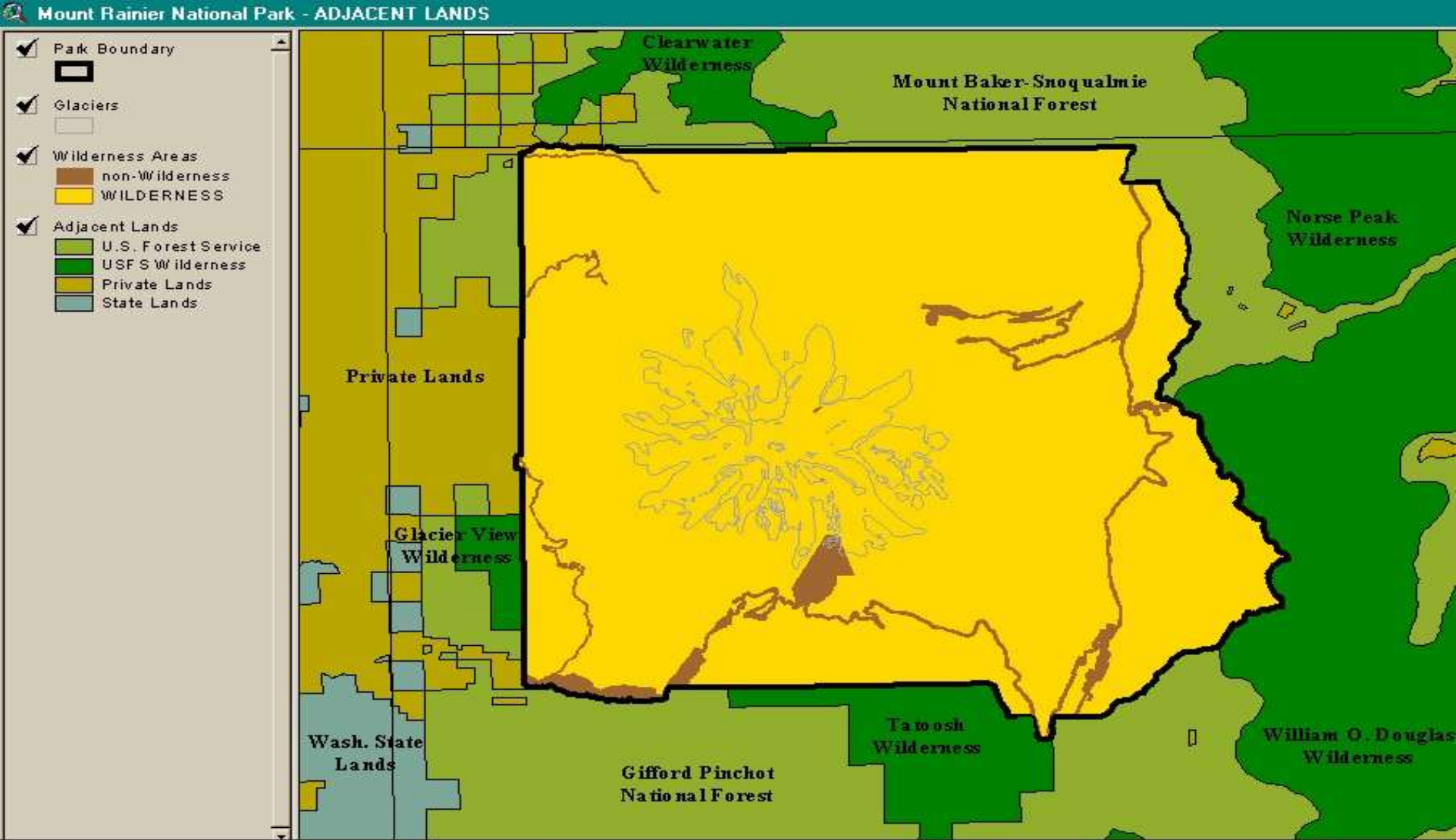


Mount Rainier National Park

Vegetation Program





Mount Rainier Total Area: 235,625 acres

Wilderness Acres: 228,480 acres (97%)

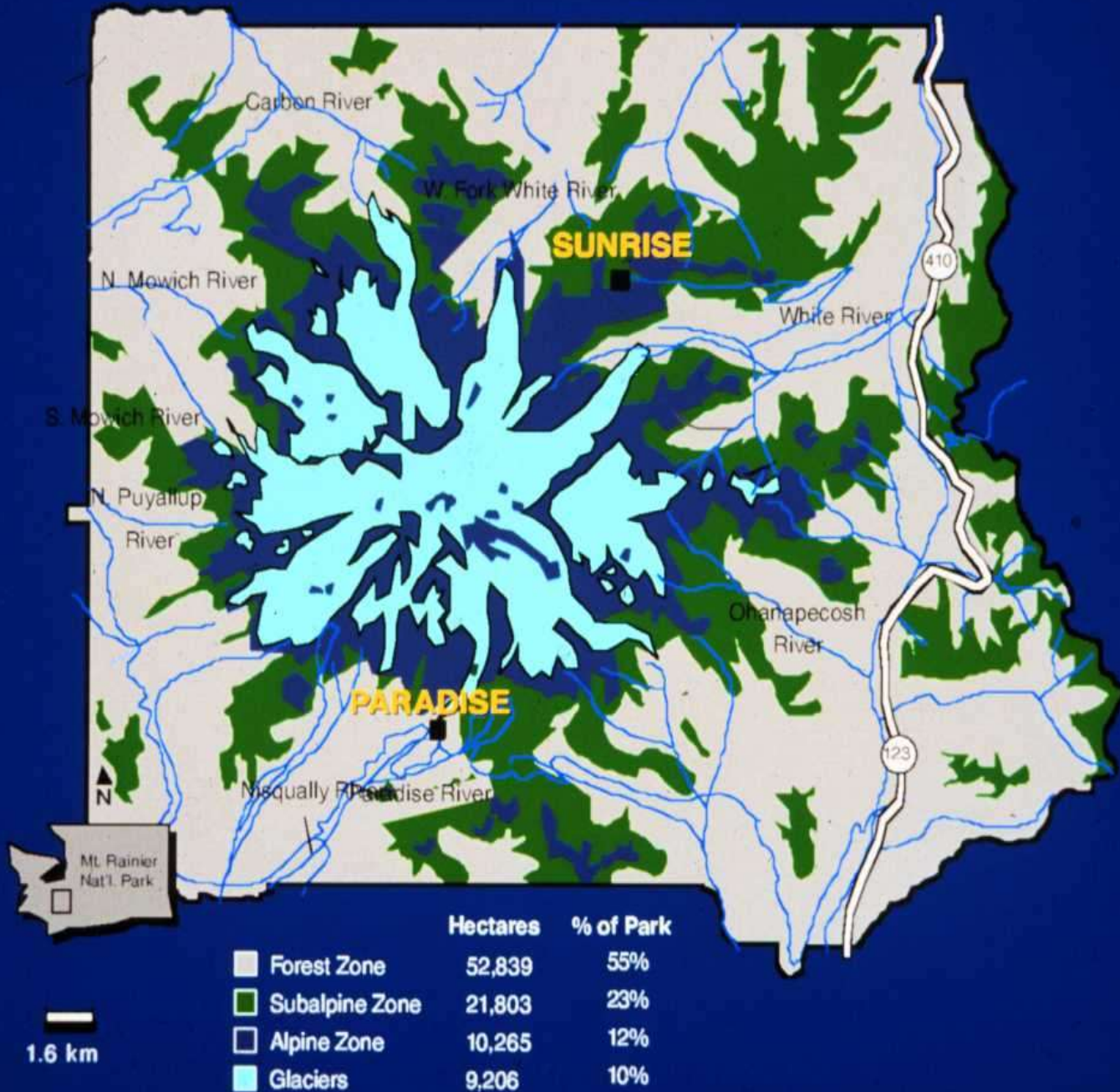
Butter Creek Research Natural Area: 2,000 acres

Non-Wilderness: 7,145 acres

Developed Areas: Roads, Campgrounds, Administration Facilities

Sensitive Resource/Recreation: Paradise Meadows, Sunrise

Vegetation Zones in Mt. Rainier National Park



Forests



***ages- <100 to 1000years**

***low-elevation - Douglas fir, western hemlock, western red cedar**

***mid-elevation - silver fir, noble fir, Alaska yellow cedar**

***high-elevation- subalpine fir, mountain hemlock, whitebark pine, Engelmann spruce**

Subalpine Parkland



- Extends from forest line to treeline
- Mosaic of tree clumps & subalpine meadows

Alpine Zone



- Lower limit is treeline – upright trees
- Upper limit – permanent snow and ice



Krummholz on Ptarmigan Ridge

Ecological Restoration of Native Plant Communities

Purpose: To restore native plant communities where they have been damaged by human use or are threatened by introduced plant species.

Program Components: Stabilization and Revegetation of Human Impacts and Control of Introduced Invasive Plants

Subalpine Vegetation Restoration



Site Stabilization



Fill Site to Original Contour



Seed Collection



Greenhouse Propagation



Revegetation - Planting

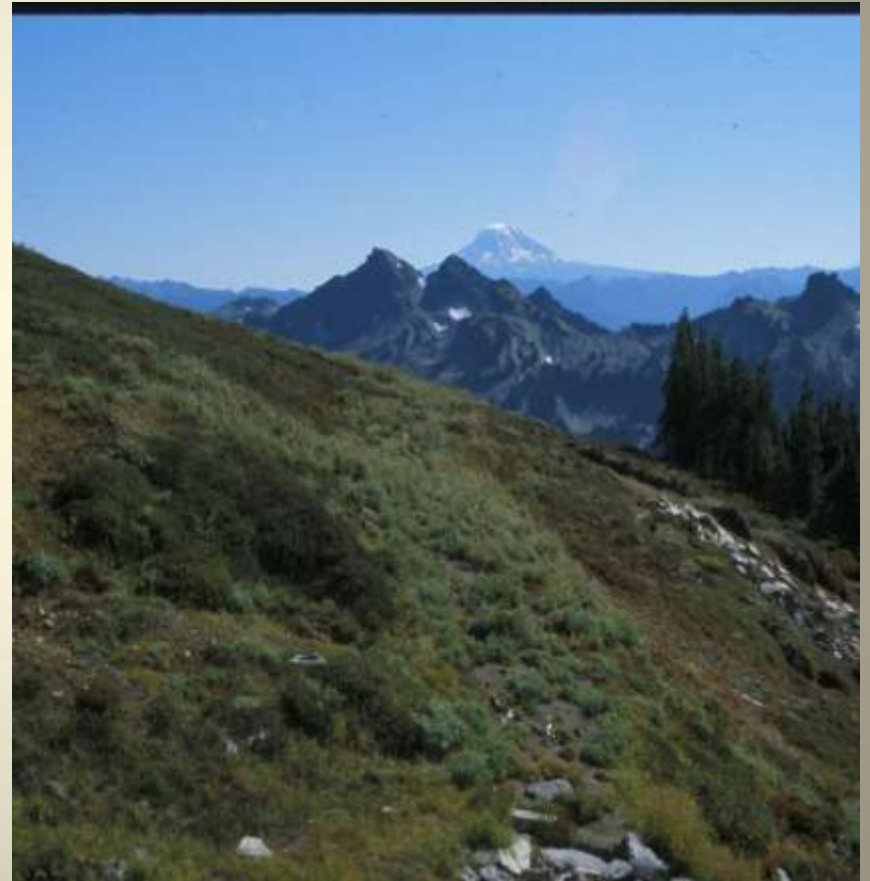


Results

1985



2003



Restoration After Construction



Same methods used
Total Planted 2008-2011: 340,460 plants
(herbaceous and woody)



Exotic Plant Control Program Components

Research/Surveys

Priority Setting

Control/Treatment

Effectiveness Monitoring

Refinement of Methods

Prevention

Collaboration

Excerpt from 2010 Mt Rainier Ecological Restoration Program Exotic Species/Priority List

Species	Scientific Name	Common Name	Priority	Treatment(s)
CYTSCO	<i>Cytisus scoparius</i>	Scotch Broom	1	man
DAUCAR	<i>Daucus carota</i>	Wild Carrot	1	man
DIGPUR	<i>Digitalis purpurea</i>	Foxglove	1	man
GERROB	<i>Geranium robertianum</i>	Stinky Bob	1	man
HIEATR	<i>Hieracium atratum</i>	Polar Hawkweed	1	chem
HIEAUR	<i>Hieracium aurantiacum</i>	Orange Hawkweed	1	chem
HIECAE	<i>Hieracium caespitosum</i>	Yellow or Meadow Hawkweed	1	chem
HIEFLO	<i>Hieracium floribundum</i>	Yellow-Devil Hawkweed	1	chem
HIEMUR	<i>Hieracium murorum</i>	Wall Hawkweed	1	chem
HIEPIL	<i>Hieracium pilosella</i>	Mouse-ear Hawkweed	1	chem
HYPPER	<i>Hypericum perforatum</i>	St. Johns Wort	2,3	man/chem
CENDIF	<i>Centaurea diffusa</i>	Diffuse Knapweed	1	chem
CENMAC	<i>Centaurea stoebe</i>	Spotted Knapweed	1	chem
CENMON	<i>Centaurea montana</i>	Montana Knapweed	1	chem
CHRLEU	<i>Leucanthemum vulgare</i>	Ox-Eye Daisy	1,2,3	man/chem
CIRARV	<i>Cirsium arvense</i>	Canada Thistle	1	chem
CIRVUL	<i>Cirsium vulgare</i>	Bull Thistle	1	man
LATLAT	<i>Lathyrus latifolius</i>	Everlasting Peavine	1	chem
LATSYL	<i>Lathyrus sylvestris</i>	Narrow-Leaved Everlasting Peavine	1	chem
LINDAL	<i>Linaria dalmatica</i>	Dalmatian Toadflax	1	chem
LINVUL	<i>Linaria vulgaris</i>	Butter and Eggs, Yellow Toadflax	1	chem
POLBOH	<i>Polygonum bohemicum</i>	Bohemium Knotweed	1	man
POLCON	<i>Polygonum convolvulus</i>	Black Bindweed	1	man
POLCUS	<i>Polygonum cuspidatum</i>	Japanese Knotweed	1	man
POLLAP	<i>Polygonum lapathifolium</i>	Willow Weed	3	man
POTREC	<i>Potentilla recta</i>	Sulfur Cinquefoil	1	man/chem
SENJAC	<i>Senecio jacobea</i>	Tansy Ragwort	1	man
TANVUL	<i>Tanacetum vulgare</i>	Common Tansy	1	man/chem
LAMGAL	<i>Lamiastrum galeobdolon</i>	Yellow Archangel	1	chem

Invasive Species Treatment Priority Scale

1	always control species wherever it is found; high invasive potential and/or small populations; treatment effort is eradication
2	always control in some areas; control limited to certain areas of the park; moderate to high invasive potential and widespread; treatment effort is local eradication and parkwide control, minimum treatment is removal of reproductive structures and propagules to prevent seed dispersal
3	try to control in some areas; control greatly limited to only a few areas of the park; moderate to low invasive potential and species is widespread in park;
4	no control yet attempted: widespread throughout park; most have no to low invasive potential

Fire Management Goals and Objectives

- 1. Ensure that firefighter and public safety is the first priority in every fire management activity.**
- 2. Restore and maintain natural fire regimes to the maximum extent practicable to ensure unimpaired natural ecosystem functioning.**
- 3. Protect Cultural Resources (including prehistoric sites, ethnographic resources, cultural landscapes, and historic structures) through the use of hazard fuel reduction, and prescribed fire.**
- 4. Protect Natural Resources (including flora, fauna, air quality, geologic resources, aquatic resources and wilderness character) from adverse effects of unwanted wildland fires, fire suppression, use fire, prescribed fires, and manual/mechanical treatments.**
- 5. Reduce hazardous accumulations of fuels near structures, roadways and wildland-urban interface areas.**
- 6. Maintain preparedness for park, agency and interagency fire response. Actively participate in regional and national wildland fire response, analysis and management.**
- 7. Maximize the efficiency of the fire management program by coordinating with other park divisions, neighboring agencies, Native American Tribes and private land owners. Promote educational awareness of the fire management program in park staff and the general public.**
- 8. Evaluate the costs and benefits of alternative fire management strategies to ensure that financial costs are commensurate with protection or enhancement of resource and wilderness values.**
- 9. Employ adaptive management strategies. Scientifically manage wildland fire using the best available technology. Use information gained through inventory and monitoring to evaluate and improve the program. Develop a better understanding of the role played by humans in historic and pre-historic fire regimes.**
- 10. Integrate fire management with all other aspects of park management.**

5. Reduce hazardous accumulations of fuels near structures, roadways and wildland-urban interface areas.

- Initial Objectives:
- Complete a needs assessment/survey of the fire hazards around Park's historic and developed areas upon approval of the Fire Management Plan, pending the project is funded.
- On approval of the Fire Management Plan, once the project is funded, create defensible space using an appropriate fuel reduction technique around structures, roadways and wildland-urban interface areas.
- On approval of the Fire Management Plan, in 80% of the park's developed zones, change ground fuel conditions so that predicted flame lengths under extreme weather conditions will be less than four feet.

Mount Rainier National Park

Treatment Categories For

Hazard Fuel Reduction and Cultural Resource Maintenance

Treatment Category	Type of Treatment (see discussion following table for detailed description)	Characteristics of Structures in this Category	Examples of Structures in this Category
A	No Treatment	Non-Wilderness or Wilderness setting: Small structures isolated from hazard by lawns or compounds. No historic	Structures at Tahoma Woods headquarters
B	0-15 Feet Routine brushing, limbing to keep branches away from roof, gutters, doors.	Non-Wilderness or Wilderness Setting: Small, low value structures without historic significance; or historic materials such as fence lines.	Rustic outbuildings and entrance stations
C	0-30 Feet Intensive Mgmt.	Non-Wilderness: Low to moderate value structures without historic significance. Wilderness: Shelters, may have historic significance.	Campground restrooms, vault toilets, backcountryshelters.
D	0-30 feet Intensive Mgmt. 30-90 Feet Selective Mgmt.	Non Wilderness: Moderate value structures or higher value structures in areas of low fire potential. Wilderness: Isolated cabins. Structures may have historic significance.	Patrol Cabins
E	0-30 feet Intensive Mgmt. 30-90 feet Selective Mgmt. 90-150 feet: Remove Brush and Ladder Fuels	Non-Wilderness or Wilderness: Building complexes, or high value structures, or close to boundary or inholdings. Any projects undertaken in cooperative mgmt. with neighbors/inholders. Structures may have historic significance.	Park housing areas
F	0-30 feet Intensive Mgmt. 30-90 feet Selective Mgmt. 90-250 feet: Remove Brush and Ladder Fuels	Non-Wilderness: Structures close to a wildland-urban interface community.	Government structures andHousing areas
G	Treatment of structures as in F, plus manipulation of vegetation as necessary to maintain historic scene.	National Historic Landmark Districts (NHLD)	Longmire NHLD

SOMC Plants MORA

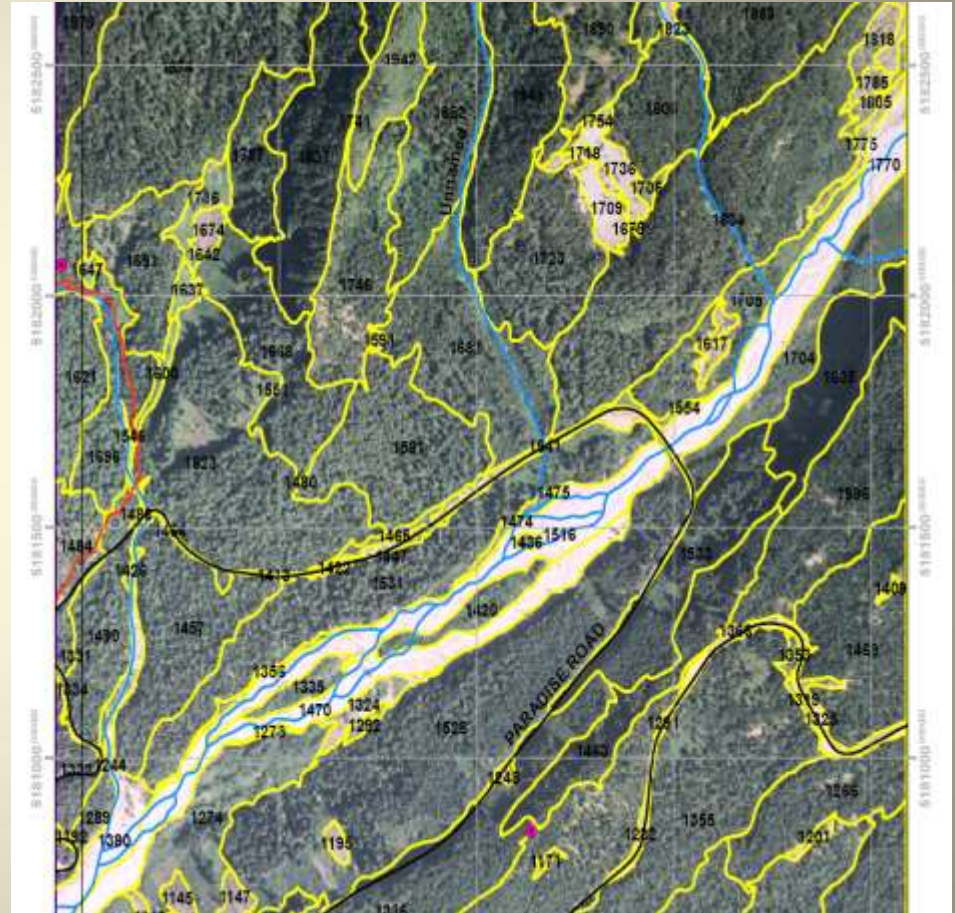
Taxa Group	Family	Scientific Name	Common Name(s)	Category	Notes
Vascular Plant	Asteraceae	Agoseris elata	tall agoseris	SL	
Fungus	Polyporaceae	Bridgeoporus nobilissimus	noble polypore	SL	
Vascular Plant	Cyperaceae	Carex atosquama	lesser blackscale sedge	SL	
Vascular Plant	Scrophulariaceae	Castilleja cryptantha	obscure paintbrush	SL	
Vascular Plant	Dryopteridaceae	Dryopteris cristata	crested woodfern	SL	
Moss	Encalyptaceae	Encalypta brevicolla var. crumiana	Crum's candle snuffer moss	SL	
Vascular Plant	Juncaceae	Luzula arcuata	curved woodrush	SL	
Vascular Plant	Asteraceae	Microseris borealis	northern microseris	SL	
Vascular Plant	Scrophulariaceae	Pedicularis rainierensis	Mt. Rainier lousewort	SL	
Vascular Plant	Pinaceae	Pinus albicaulis	whitebark pine	FC	
Vascular Plant	Poaceae	Poa nervosa	Wheeler's bluegrass	SL	
Vascular Plant	Polemoniaceae	Polemonium viscosum	skunk polemonium	SL	
Vascular Plant	Saxifragaceae	Saxifraga rivularis	pygmy saxifrage	SL	
Vascular Plant	Cupressaceae	Thuja plicata	Western red cedar	O	subsistence
Vascular Plant	Liliaceae	Xerophyllum tenax	Beargrass	O	subsistence
	Documented				
	Voucher				
	Observed				
	Expected				

NCCN Vital Signs Monitoring: Vegetation

- **Vegetation Mapping**
- **Forest Vegetation Monitoring**
- **Subalpine Vegetation Monitoring**
 - **Protocol Development**
- **White Bark Pine Monitoring**
- **Prairie Vegetation Monitoring (SAJH)**
 - **Protocol Development**

Vegetation Mapping: Steps

1. Create polygons.
2. Field sampling.
3. Map classification.
4. Accuracy Assessment



Vegetation Mapping: Status

- draft map of vegetation polygons
- 2008 sampled nearly 800 sites park wide.
- 2009 sampled vegetation types previously not in dataset
- 2010 cooperators will do a final computer classification
- final map will be available in November 2011



Forest Vegetation Monitoring

- Approved Protocol
- Assess tree mortality annually
- Record tree recruitment and growth every five years



White Bark Pine



Monitoring, Boulder Butte NOCA



White pine blister rust

MORA WBP Plots 2010 Sunrise Campground - Lower Loop Restoration Area

