

Natural Resource Monitoring Program Upper Columbia Basin Network



Gordon Dicus, Program Manager
February, 2013

Monitoring Program Overview

- Goals of the natural resource monitoring program
- Legal mandates for monitoring
- Monitoring in the Upper Columbia Basin Network parks
- Science Communication & Outreach

National Park Service Goals for Natural Resource Monitoring

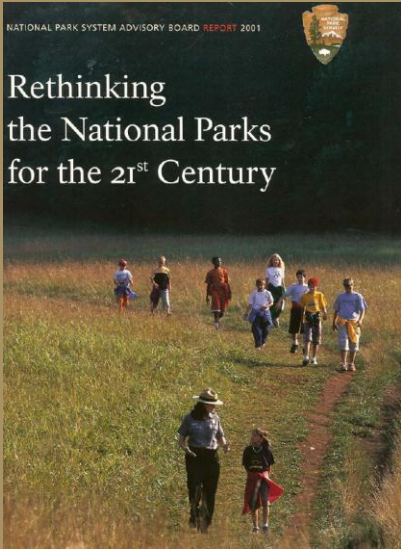
- ❖ Determine status and trends in selected natural resources.
- ❖ Provide early warning signs of abnormal conditions of selected resources.
- ❖ Provide data to better understand the dynamic nature and condition of park ecosystems.
- ❖ Provide data to meet certain legal and Congressional mandates related to natural resource protection and visitor enjoyment.

Legal Mandates

National Parks Omnibus Management Act of 1998

“The Secretary of Interior shall undertake a program of inventory and monitoring of National Park System resources to establish baseline information and to provide information on the long-term trends in the condition of National Park System resources.”





NATIONAL PARK SYSTEM ADVISORY BOARD REPORT 2001

Rethinking the National Parks for the 21st Century

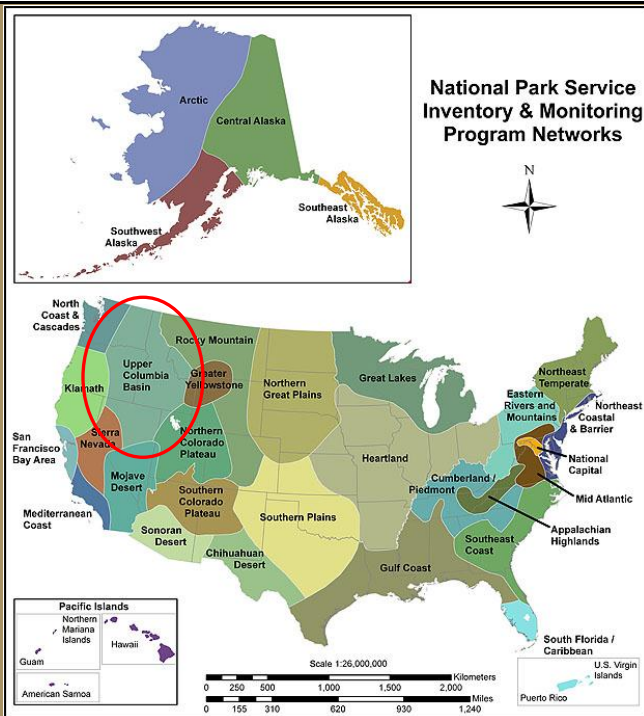
“A sophisticated knowledge of resources and their condition is essential. The Service must gain this knowledge through extensive collaboration with other agencies and academia, and its findings must be communicated to the public. For it is the broader public that will decide the fate of these resources.”

Source: Rethinking the National Parks for the 21st Century. A Report of the National Park System Advisory Board, July 2001

I & M Networks

The 32 I&M networks are large enough for efficiencies through sharing staff & funding.

Networks are small and local enough to respond to park-level issues and data needs and allow for local cost-leveraging opportunities.





National Park Service Upper Columbia Basin Network



UCBN

- Parks vary in size from 138 acres (WHMI) to 465,000 acres (CRMO)
- Cultural landscapes most significant resources in 5/9 parks
- 185+ River miles (176 miles LARO)
- 65+ Stream miles
- Sagebrush-steppe is the most extensive ecosystem type in UCBN



National Park Service Upper Columbia Basin Network



14 “Vital Signs” for Monitoring

1. Aspen
2. Bats
3. Camas lily
4. Riparian vegetation
5. Stream/river channel characteristics
6. Aquatic macroinvertebrates
7. Water chemistry
8. Invasive/exotic plants
9. Land cover and use
10. Limber pine
11. Osprey
12. Pika
13. Sagebrush-steppe vegetation
14. Sage grouse



National Park Service Upper Columbia Basin Network



Science Communication

- Websites
- Newsletters
- Resource briefs
- Monitoring videos
- Annual monitoring reports
- Monitoring protocols & SOPs
- Program brochure
- Annual science meeting
- Field monitoring posters





National Park Service Upper Columbia Basin Network



Education and Outreach

- Citizen Science Programs
 - Camas monitoring (6th year)
 - Osprey nest monitoring (3rd year)

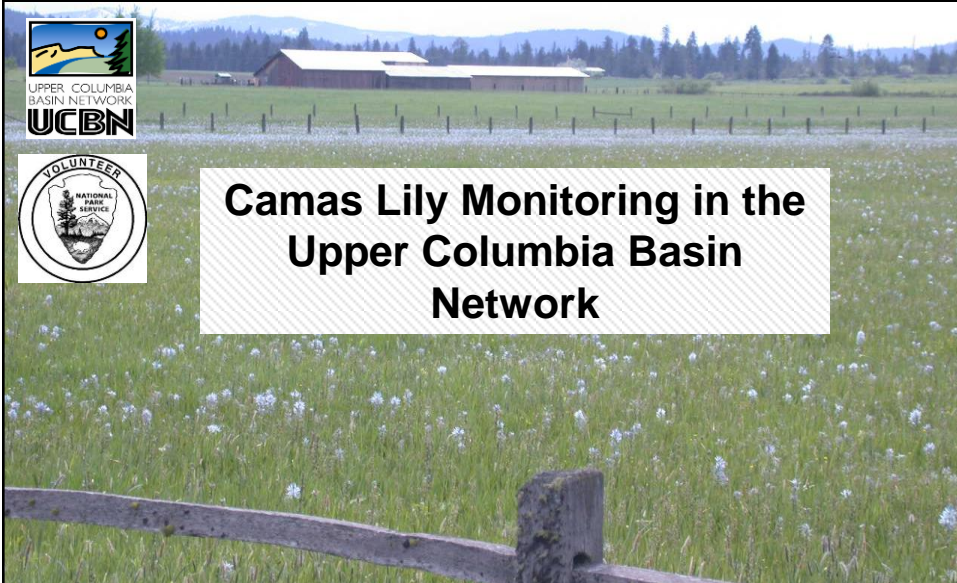


National Park Service

Inventory and Monitoring Program Upper Columbia Basin Network



Camas Lily Monitoring in the Upper Columbia Basin Network



Park Units of the Upper Columbia Basin Network

National Park Service
U.S. Department of the Interior

The camas grounds at BIHO

Alyse Cadez at NEPE's Weippe Prairie

A product of the Upper Columbia Basin Network
Moscow, ID

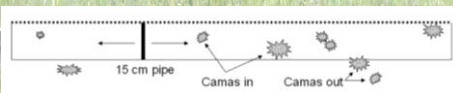
Cultural and Ecological Significance

Camas was the focal resource at the historic events commemorated by NEPE and BIHO.

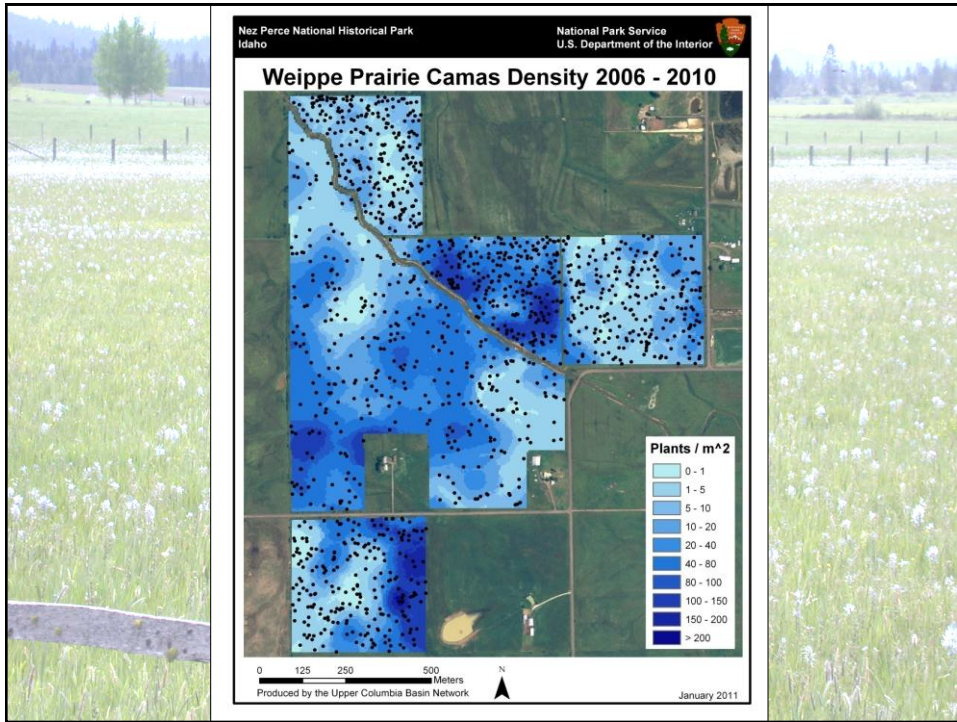
Andrea Four Carbon © 2005



Sampling Design and Methods



4 m x 15 cm plots are used to count camas



Pika Monitoring

At Craters of the Moon NM&P

*Other parks using this protocol: Crater Lake NP,
Lassen Volcanic NP, and Lava Beds NM
(plus parks in Yellowstone and
Rocky Mountain Networks)*

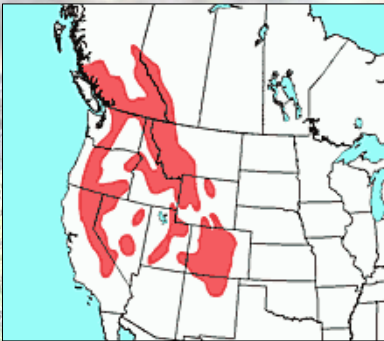




National Park Service
Pacific West Region



American pika (*Ochotona princeps*)



- Rabbit family
 - 1 of 2 N.A. pika species
 - 36 subspecies
 - Lower-latitude = higher elevation
- Small, egg-shaped
 - Round ears
 - ~ ¼ pound
 - ~ 7 inches long



National Park Service
Pacific West Region



Pika Ecology

Habitat specialist

- Talus and broken rock fringed with suitable vegetation

Generalist herbivores

- Grazing year-round and summer haying for winter food



Justification

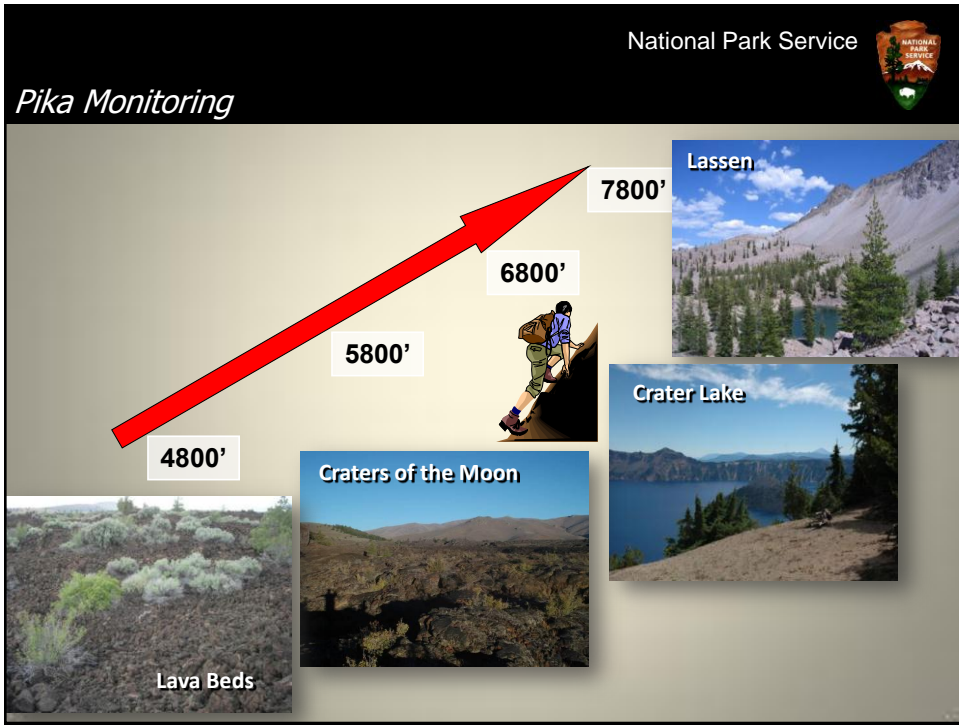
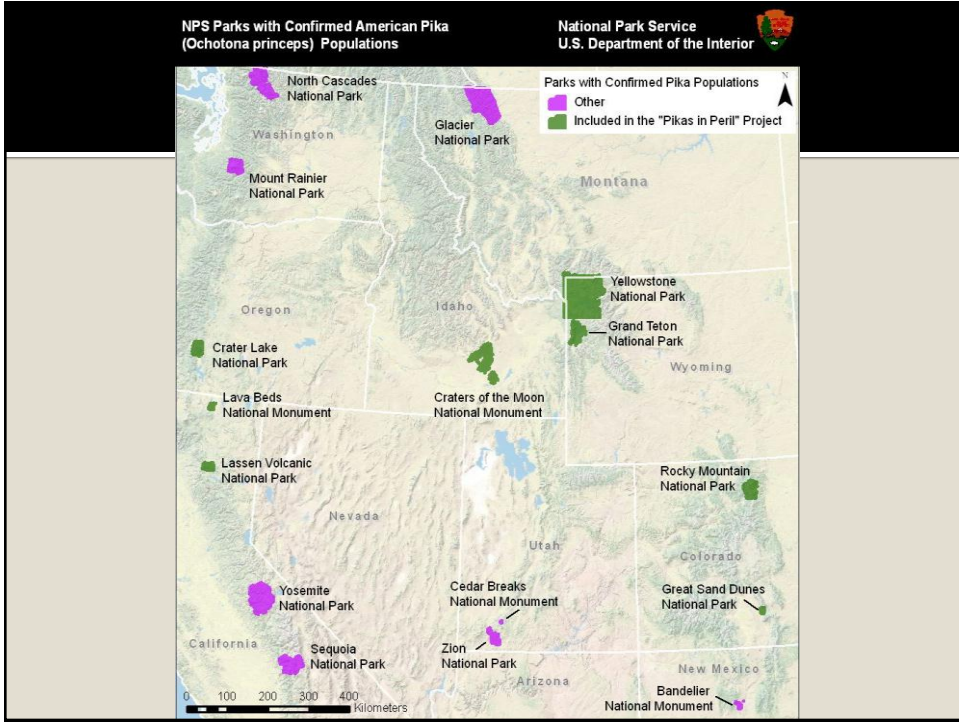
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- Pika
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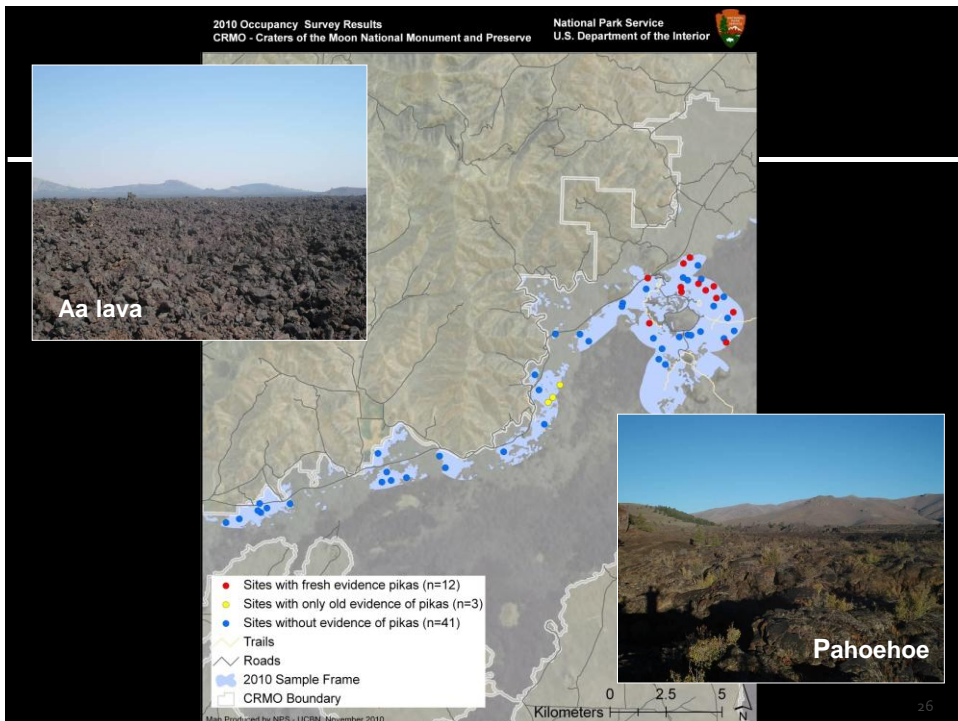
What happens when they reach the top?





Survey Methods

- 2 observers search 12-m radius plot (= site) for:
 - Pikas and pika sign
 - 20 minute survey
 - Record site variables



Monitoring Video

- Pika Monitoring Video (2010)
produced by Michael Durham

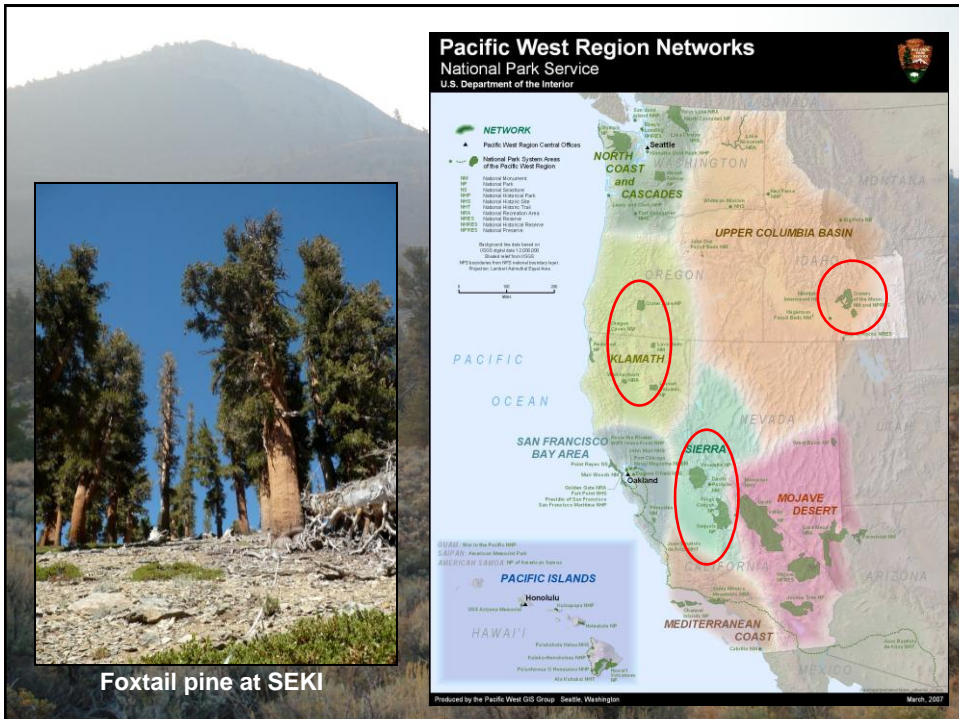
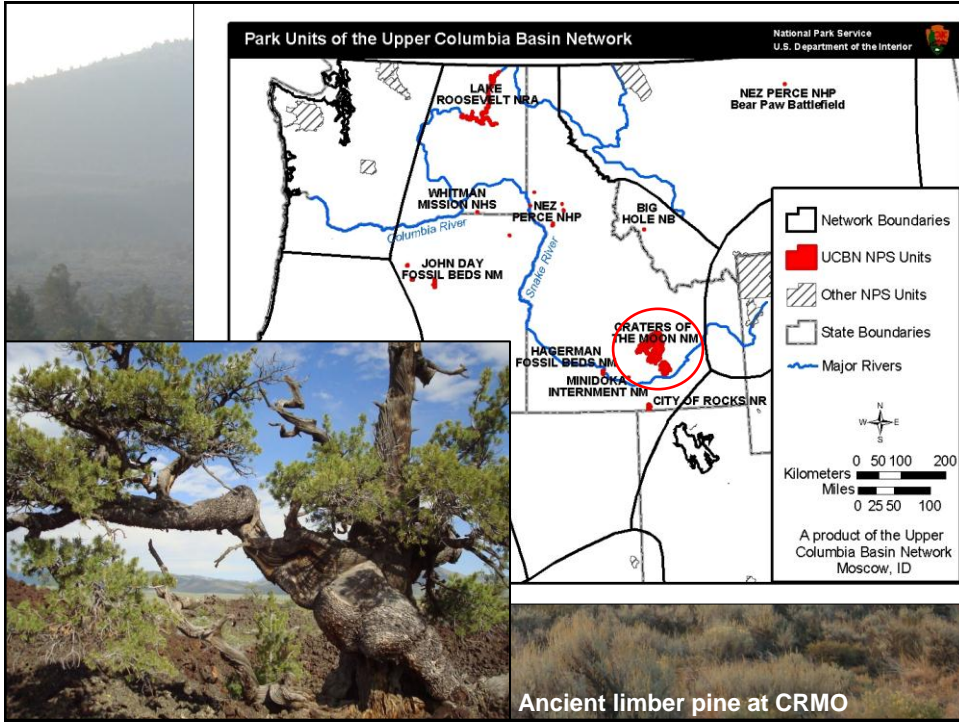


National Park Service

Inventory and Monitoring Program
Upper Columbia Basin Network




**Limber Pine Population
Dynamics Monitoring in the
Upper Columbia Basin
Network**




Justification

Keystone Species

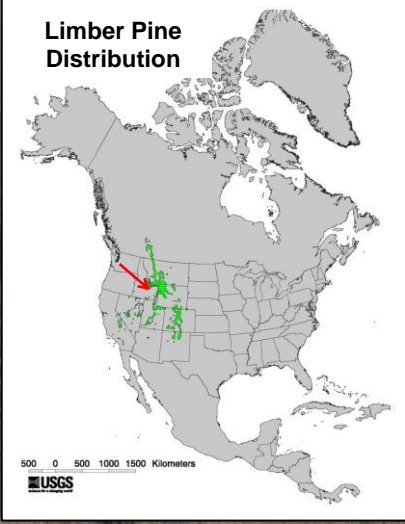
Clark's
Nutcracker




Red
Squirrel



Limber Pine
Distribution





Provides for a striking landscape and is fundamental to visitor experience

Justification

Park Focal Resource



Limber Pine Dwarf Mistletoe Infection



Justification

Park Focal Resource



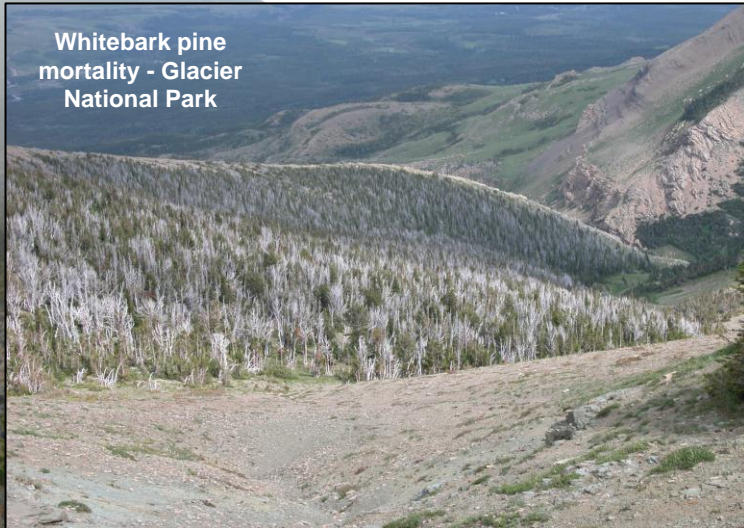
Mountain Pine Beetle Infestations Increasing

Justification



White pine blister rust infections found in CRMO in 2006 and 2010

Whitebark pine mortality - Glacier National Park

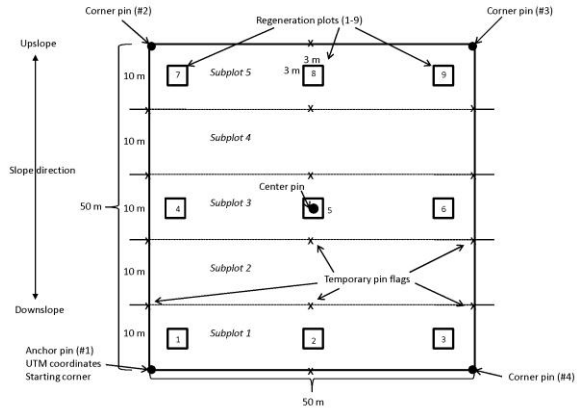


Extensive Die-offs in the Rocky Mountains and Cascade Range

Sampling Design and Methods



Setting up a plot



50 x 50 m plot schematic diagram

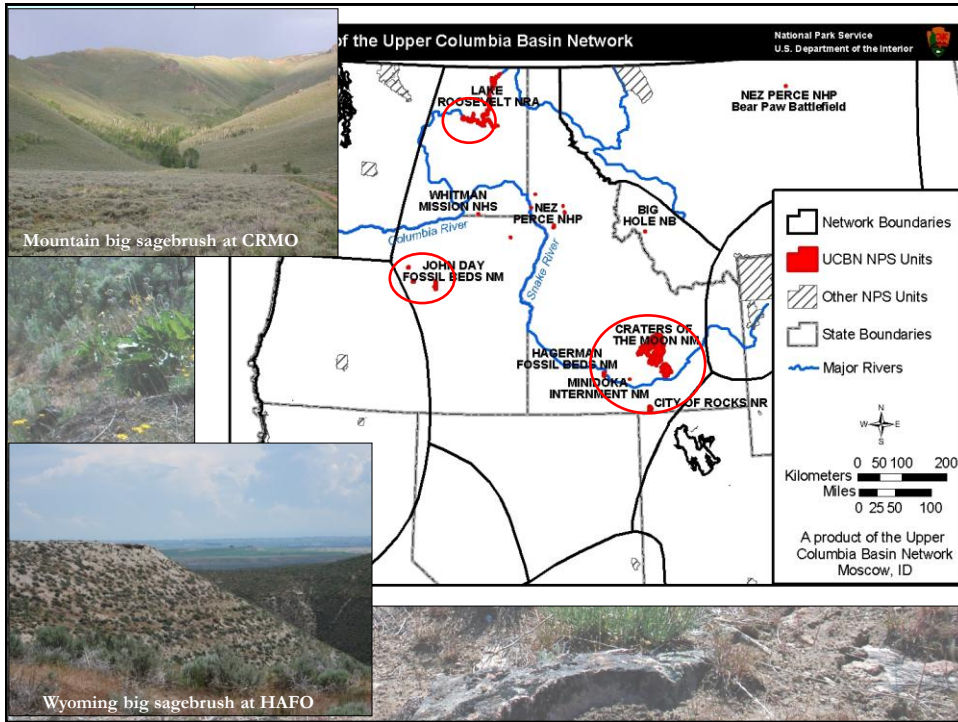
National Park Service

Inventory and Monitoring Program
Upper Columbia Basin Network



Sagebrush Steppe Vegetation Monitoring in the Upper Columbia Basin Network





Justification and Objectives

An Endangered Biome



Land use, altered disturbance regimes, and biological invasions have destroyed or altered most sagebrush steppe communities.



Justification and Objectives

Threats from Inside and Outside Parks

Clarno Boundary, JODA

Wildfire, CRMO

Livestock Damage, LARO

Justification and Objectives

Estimate annual status and trends in composition and abundance of...

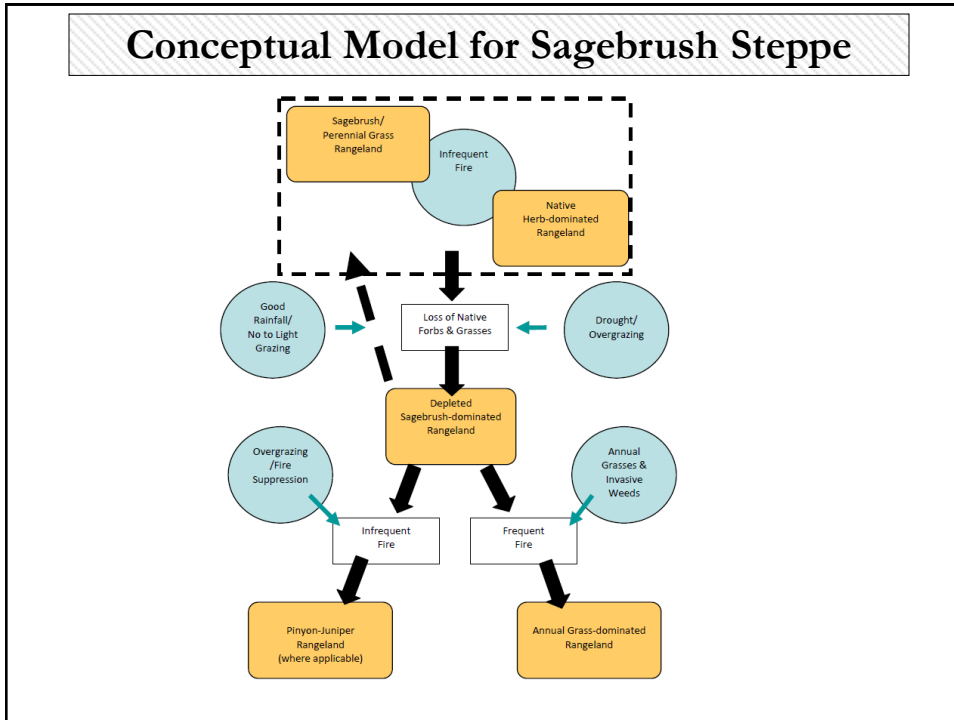
principal native plant species

principal non-native plant species

...and in the amount of exposed bare soil

Rangeland Health

Biotic Integrity, Soil/Site Stability, Hydrologic Function



Sampling Design and Methods

Target Population: Existing or potential sagebrush steppe communities within Park units

Biennial surveys

Stratified Spatially-Balanced Random Sample Design

Sample Sizes range from 50-100 plots per frame, proportional to size

Annual park-wide samples of 300-1700 plots

Craters of the Moon National Monument and Preserve
Idaho

National Park Service
U.S. Department of the Interior

2010 Sagebrush Vegetation Monitoring Sampling Frames (28 Total)

Legend

- 2010 Sampling Frames
- Basin Lava
- CRMO Boundary - NPS Lands

0 5 10 20 Kilometers
Produced by the Upper Columbia Basin Network
Oct. 2010

Sampling Design and Methods



- Frames are easily threaded through dense vegetation.
- Easily viewed from overhead without moving.
- Data entered directly into tablet PC database.
- 15 minutes per plot

Monitoring Video

- Sagebrush Steppe Monitoring Video (2010)
produced by Michael Durham





Volunteer with the National Park Service (NPS) and help care for these special places.

Volunteers-In-Parks (VIPs) work side-by-side with National Park Service employees and partners in parks from Maine to Hawaii, from Alaska to Florida, in big cities and small towns, even in remote wilderness areas.



National Park Service Upper Columbia Basin Network



National Park Service Inventory & Monitoring Program		National Park Service U.S. Department of the Interior	
<input type="text"/> Search Search A to Z			
Nature & Science	Upper Columbia Basin Network		
Inventory & Monitoring	NPS » Nature & Science » Inventory & Monitoring » Networks » Upper Columbia Basin		
Network Home About Us Network Staff Board of Directors Advisory Committee Inventories Inventory Products Vegetation Mapping Monitoring Education & Outreach Reports & Publications Data Management Other Projects NRCA Park Inventory Photomonitoring UCBN Intranet	Upper Columbia Basin Network Inventory and Monitoring Program The Inventory and Monitoring Program is a major component of the National Park Service's strategy to preserve park natural resources "unimpaired for the enjoyment of future generations." The Upper Columbia Basin Network is one of 32 "Vital Signs" Networks developed to help complete the National Inventory and Monitoring Program's objectives. The Upper Columbia Basin Network is composed of nine units managed by the National Park Service located in Idaho, Montana, Oregon, and Washington. These units include: Big Hole National Battlefield (BIHO), City of Rocks National Reserve (CRO), Craters of the Moon National Monument and Preserve (CRMO), Hagerman Fossil Beds National Monument (HAFO), John Day Fossil Beds National Monument (JODA), Lake Roosevelt National Recreation Area (LARO), Minidoka Internment National Monument (MINI), Nez Perce National Historical Park (NEPE), and Whitman Mission National Historic Site (WHMI). The Goals of the I&M Program Are: <ul style="list-style-type: none"> Inventory the natural resources under National Park Service stewardship to determine their nature and status. 		
Vital Signs Aspen Bats Camas Lily	Parks in this Network Please select a park Upper Columbia Basin Network Map National I & M Map Quick Links What's New UCBN Monitoring Plan UCBN Newsletter (January 2009) Calendar Inventory Products		

<http://science.nature.nps.gov/im/units/ucbn/>