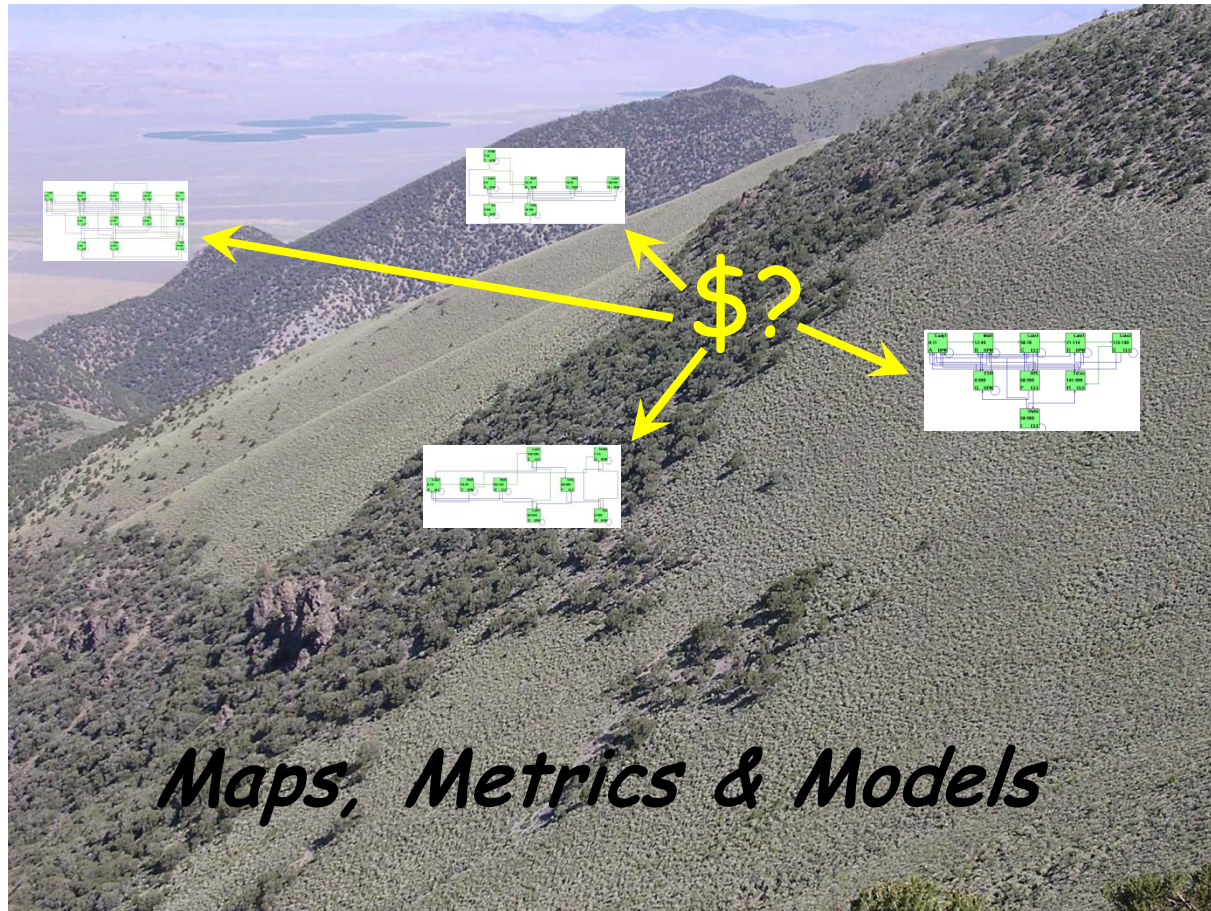


Enhanced Conservation Action Planning





The Maps

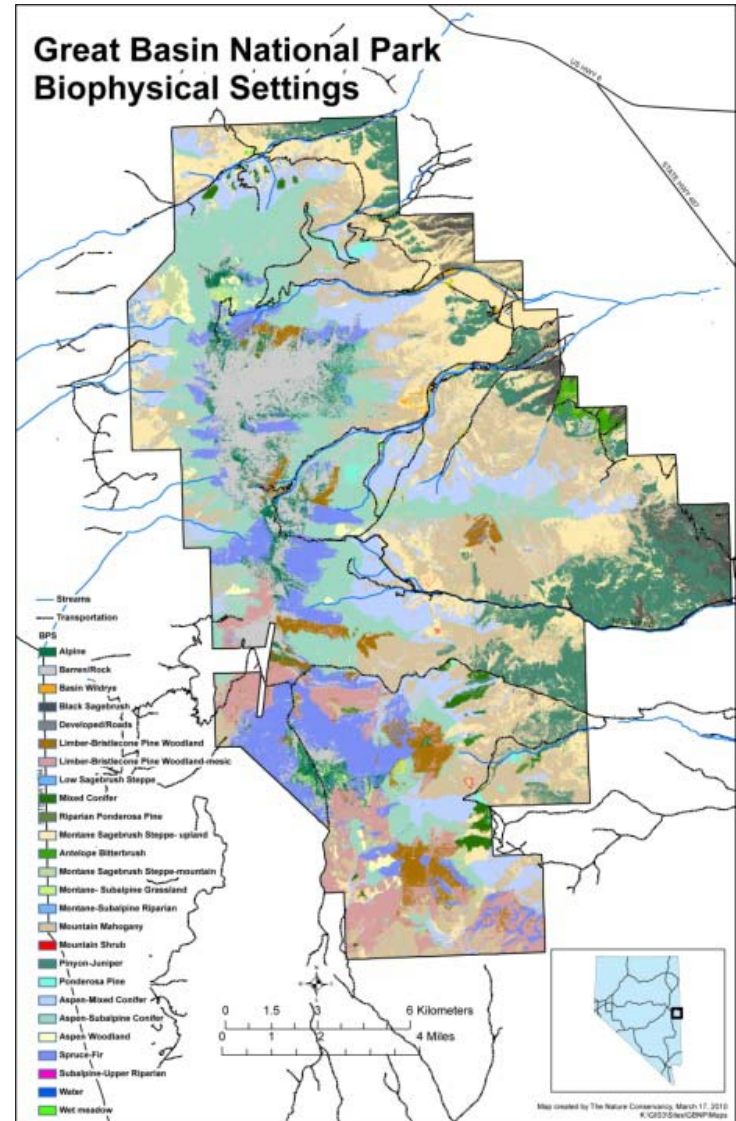
The Metric

The Models

Biophysical Settings

Dominant vegetation type expected in the physical environment (geology & climate) under a natural disturbance regime.

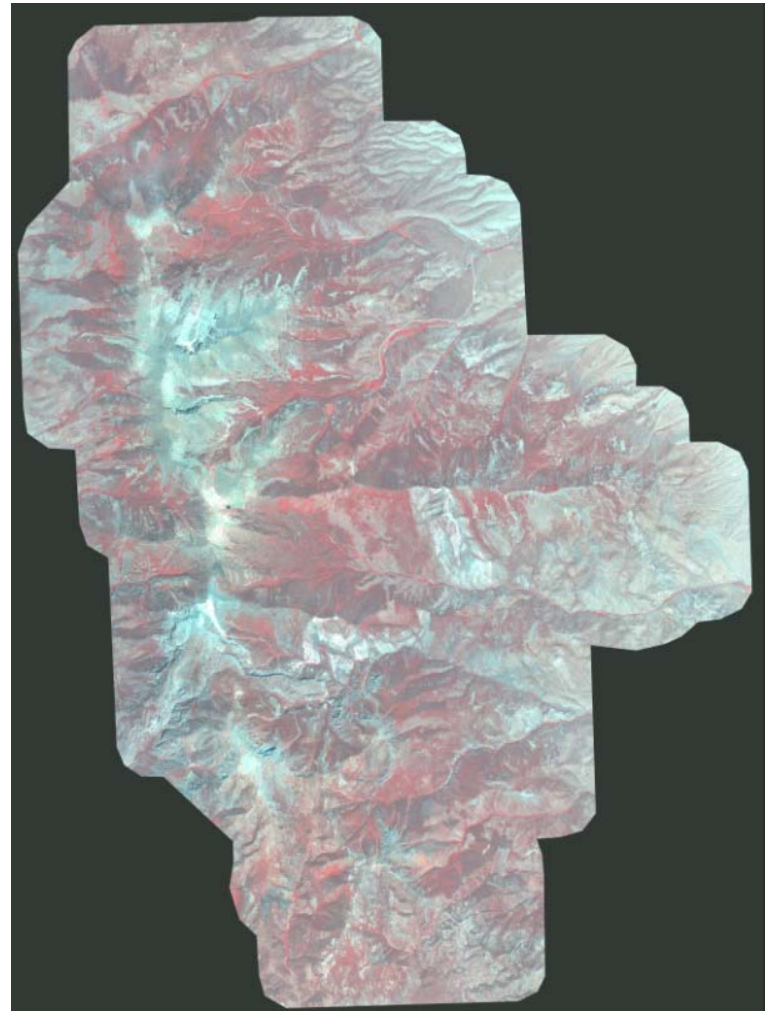
Similar to NRCS Ecological Sites



Current Vegetation Classes

Actual current
vegetation classes for
each biophysical
setting

- early to late succession
- open vs. closed canopy
 - native vs.
uncharacteristic



LANDFIRE Maps vs. Local Remote Sensing

- LANDFIRE geodata
 - Coarse; accuracy varies; limited by available plot data
 - May still be useful for large-scale planning
- Consider your own remote sensing for greater accuracy, fine-tuned treatment planning, treatment area maps





The Maps
The Metric
The Models



Ecological Departure

Which vegetation classes are "out of whack" per BpS

Expected % = Natural Range of Variability (NRV) achieved under post-settlement climate

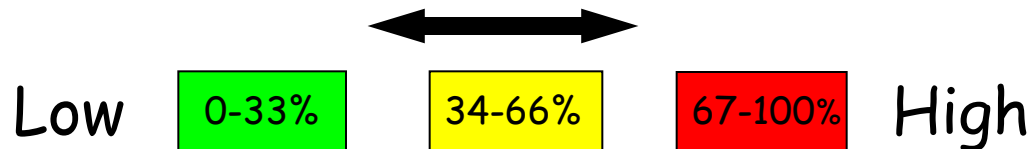
Vegetation Classes	Actual % in Class	Expected % in Class
<u>Class A</u> – Early Development, Open Herbaceous vegetation is dominant; shrub cover is 0 to 10%.	<1%	20%
<u>Class B</u> – Mid Development, Open Mountain big sagebrush cover up to 30%; herbaceous cover typically >50%.	6%	50%
<u>Class C</u> – Mid Development, Closed Shrubs are dominant with canopy cover of 31-50%. Herbaceous cover is typically <50%. Conifer sapling cover is <10%.	49%	15%
<u>Class D</u> – Late Development, Open Conifers are the upper lifeform; conifer cover is 10- 30%, herbaceous cover 10 - 30%, shrub cover 5 - 30%	6%	10%
<u>Class E</u> – Late Development, Closed Conifers are dominant; conifer cover is 31 – 80%, herbaceous cover >10%, shrub cover >5%	<1%	5%
<u>Class U</u> – Uncharacteristic	38%	-

Too Little

Too Much

Metric - Ecological Departure (aka Fire Regime Condition Class)

- Measures each ecosystem's condition *across a landscape*
- Integrated measure based upon vegetation *composition, structure* and *disturbance* regimes -not just about fire!
- Departure of current vegetation from its natural range of variability -- i.e., dissimilarity between expected and current succession classes





Maps

Metric(s)

Models

"All Models Are Wrong But Some Are Useful"-

George E.P. Box



Where Do These Models Come From?

LANDFIRE developed reference condition models for every ecological system in the U.S.



LANDFIRE Biophysical Setting Model

Biophysical Setting: 0610310 **California Montane Jeffrey Pine(-Ponderosa Pine) Woodland**

This RPS is lumped with:
 This RPS is split into multiple models:

General Information

Contributors		Date	9/14/2005	
Modeler 1	Hugh Safford	hughsafford@fs.fed.us	Reviewer	
Modeler 2	Joe Sherlock	jsherlock@fs.fed.us	Reviewer	
Modeler 3	Neil Sugihara	nsugihara@fs.fed.us	Reviewer	

Vegetation Type	Map Zone	Model Zone
Forest and Woodland	6	<input type="checkbox"/> Alaska <input type="checkbox"/> N-Cent Rockies <input checked="" type="checkbox"/> California <input type="checkbox"/> Pacific Northwest <input type="checkbox"/> Great Basin <input type="checkbox"/> South Central <input type="checkbox"/> Great Lakes <input type="checkbox"/> Southeast <input type="checkbox"/> Northeast <input type="checkbox"/> S. Appalachians <input type="checkbox"/> Northern Plains <input type="checkbox"/> Southwest

Dominant Species* **General Model Sources**

PIJE Literature
 PIPO Local Data
 PUTR2 Expert Estimate
 ZGP

Geographic Range
 Primarily eastern slopes of the Sierra Nevada. Some stands mixed with PIPO in the northern Sierra.

Biophysical Site Description
 This system usually occurs on volcanic and granitic substrates, and are shallow with a frigid soil temperature regime.

Vegetation Description
 PIJE stands are a montane forest type. Understory may include mountain big sagebrush, bitterbrush, bunchgrasses, mesic shrubs such as snowberry, and patches of montane chaparral (manzanita and Ceanothus, especially C. velutinus and C. prostratus)

Disturbance Description
 Surface fire regimes dominate this BpS, with infrequent mixed severity and very infrequent high-severity fires, except in patches of highly flammable early-seral shrubs. Insect and disease outbreaks associated with drought and high stem densities.

Adjacency or Identification Concerns
 PIJE stands transition to white fir, red fir, juniper and sagebrush. PIPO are primarily adjacent to mixed conifer, juniper, sagebrush, and grassland communities.

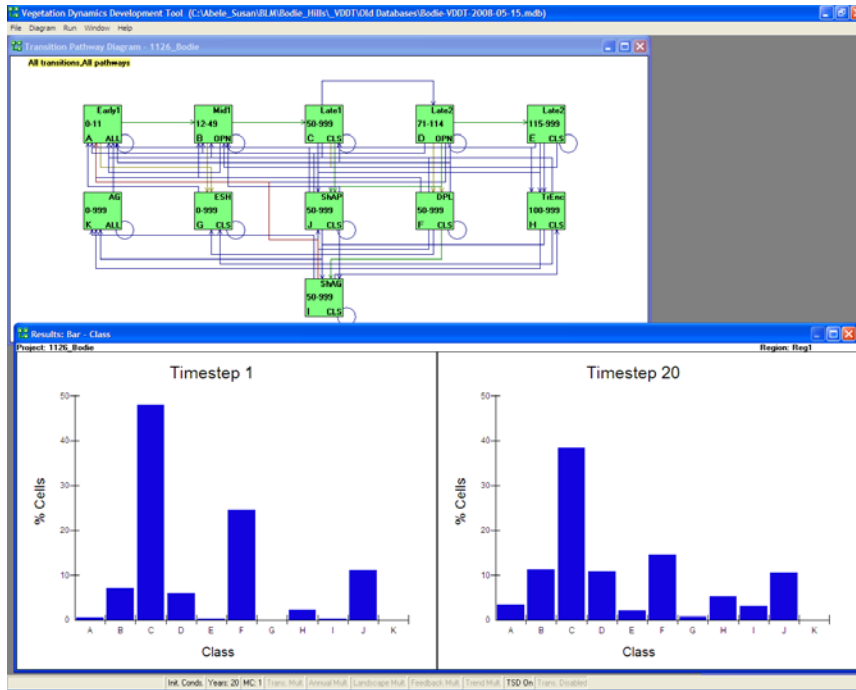
Jeffrey pine is a type that was very common and abundant historically. This, along with red fir, were one of the first trees that were logged. Lodgepole pine came back in its place. Jeffrey pine is less abundant today than it would have been historically (Provencher, pers comm).

*Dominant Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.
 **Fire Regime Groups are: I: 0-35 year frequency, surface severity; II: 0-35 year frequency, replacement severity; III: 35-100+ year frequency, mixed severity; IV: 35-100+ year frequency, replacement severity; V: 200+ year frequency, replacement severity.

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Computer Models



Models for Each System Also Developed in VDDT Software

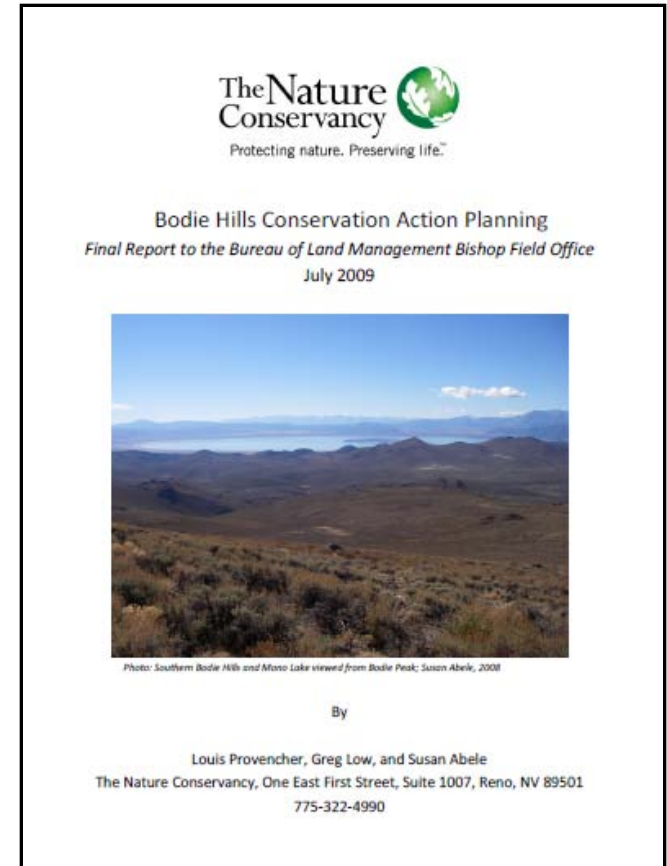


Develop & Test Strategies

Allows land managers and stakeholders to develop and test alternative strategies to restore system health and abate future threats

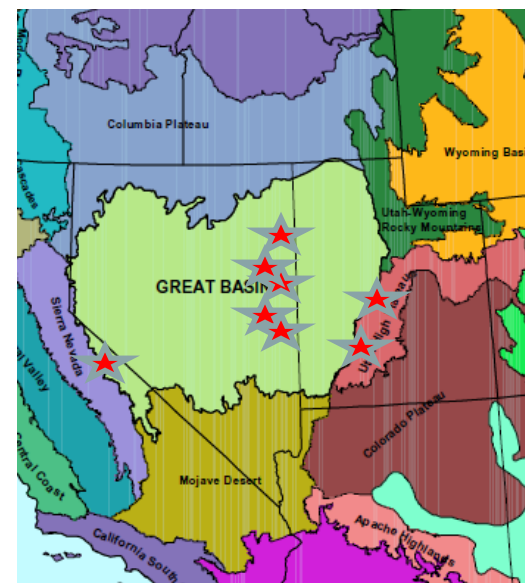


<i>Aspen-Mixed Conifer Woodland</i>	Average acres/yr Years 1-5	Average acres/yr Years 15-20	Cost/acre (\$)
Mechanical thinning of late succession classes	43	20	\$ 150
Prescribed fire applied to late succession classes	95	50	\$ 150
Average Annual Cost	\$ 20,700	\$ 10,500	



Past & Current Applications

Project Area	State	Size	Lead Agency	Product	Status
North Schell Creek Range	Nevada	78,000 acres	USFS	Watershed Assessment; Conservation Action Plan	Completed 2008
Bodie Hills	California	189,000 acres	BLM	Conservation Action Plan (facilitated with multiple stakeholders)	Completed October 2009
Ward Mountain	Nevada	118,000 acres	BLM & USFS	Ecological Assessment	Underway; due July 2010
Powell Ranger District, Dixie National Forest	Utah	375,000 acres	USFS	Landscape strategies	Underway; due September 2010
Fremont River Ranger District	Utah	480,000 acres	USFS	Landscape strategies	Underway; due September 2010
Cave & Lake Valleys	Nevada	550,000 acres	BLM	Watershed Assessment	Underway; due September 2010
Spring Valley	Nevada	775,000 acres	BLM	Watershed Assessment	Underway; due September 2010
Great Basin National Park	Nevada	80,000 acres	NPS	Conservation Action Plan	Underway; due December 2010





Caveats: Toolbox Limitations

1. Not for small sites and/or fragmented landscapes
Works at ~75,000 to 1,000,000+ acres
2. Does not address aquatic ecosystems (e.g., springs)
Conventional Conservation Action Planning can supplement
3. Off-the-shelf LANDFIRE data may not be suitable
Often requires remote sensing investment
4. Ecological departure may need supplemental measures
e.g. some Uncharacteristic classes are especially bad



Questions?