Forecasting the Benefits of Conservation Strategies for Land Managers

Pretend You're the Managers of a Great Basin Landscape

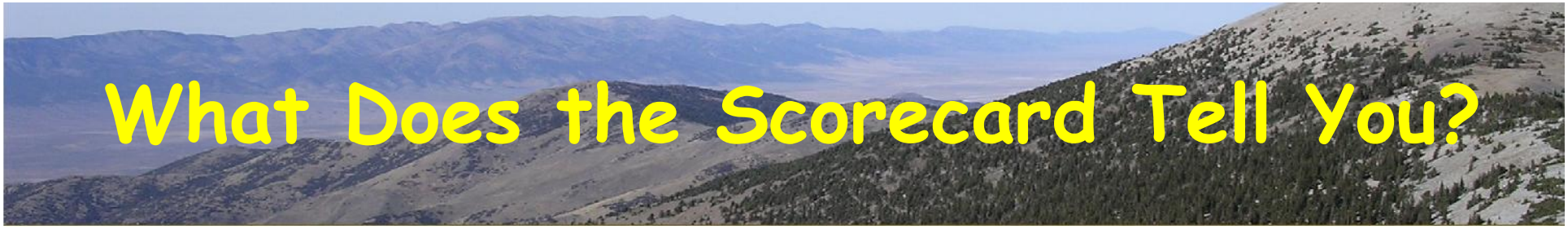
You Need Answers to These Questions

- What's the current condition of each ecosystem in your landscape?
- What is likely to get worse?
- Which management treatments – and how much – will improve altered ecosystems?
- Which management treatments produce the biggest bang for the buck?

And the Genie Gave You the Following Report…

Ecological System	Current	20 Years with No Mgmt	20 Years with Ecological Mgmt Strategies
Aspen	37	49	33
Basin Wildrye	73	79	45
Low Sagebrush	41	42	39
Montane Sagebrush Steppe	67	73	57
Riparian	21	32	27
Wet Meadow	33	49	19

What Does It Tell You?



What Does the Scorecard Tell You?

Departure from Natural Range of Variability

Ecological System	Current	20 Years with No Mgmt	20 Years with Ecological Mgmt Strategies
Aspen	37	49	33
Basin Wildrye	73	79	45
Low Sagebrush	41	42	39
Montane Sagebrush Steppe	67	73	57
Riparian	21	32	27
Wet Meadow	33	49	19

Hint: The higher the number, the greater the ecosystem's departure from its natural range. The scale is 0 to 100, so a score of 10 = very low departure, while a score of 90 = very high departure.

Conservation Forecasting Across U.S.

Benefits to Land Managers

- Scorecards of current & future condition
- Which strategies work
- Best use of limited funds
- Where to do treatments
- Scientific NEPA documentation
- Help attract $$$
- Help build consensus among resource managers and with stakeholders

Bodie Hills, California

Bodie Hills Conservation Action Planning

- 189,000 acres
- BLM & Private Lands
- Multiple Stakeholders
- Management Treatment Recommendations
- July, 2009
- NEPA Now Underway
- $ and Action Underway on Private Lands

Great Basin National Park, Nevada

Landscape Conservation Forecasting

- 80,000 acres
- National Park Service
- Management Treatments Recommendations
- Immediate Fire Management Results with Revised FRCC
- December, 2010

Dixie National Forest, Utah

- 375,000 acres
- Powell Ranger District, U.S. Forest Service
- Management Treatments Recommendations
- September, 2010

Landscape Conservation Forecasting

Fishlake National Forest, Utah

- 480,000 acres
- Fremont River Ranger District
- Management Treatments Recommendations
- September, 2010

Landscape Conservation Forecasting

Ward Mountain, Nevada

- 118,000 acres
- Ely Forest Service Ranger District and BLM Field Office
- Management Treatments Recommendations
- September, 2010

Ward Mountain Restoration Project: Ecological Assessment and Landscape Strategy

Cherokee National Forest Landscape Restoration Initiative

Enhanced Conservation Action Planning

- 380,000 acres
- Multiple Stakeholders
- Management Treatment Recommendations
- Underway

National Conservation Areas: Beaver Dam Wash & Red Hills, Utah

- 63,500 & 45,000 acres
- BLM, FWS & Multiple Stakeholders
- Management Treatments with Focus on Desert Tortoise Habitat
- Underway

Resource Management Plans

Conservation Forecasting

Maps

Models

Metrics

Conservation Forecasting

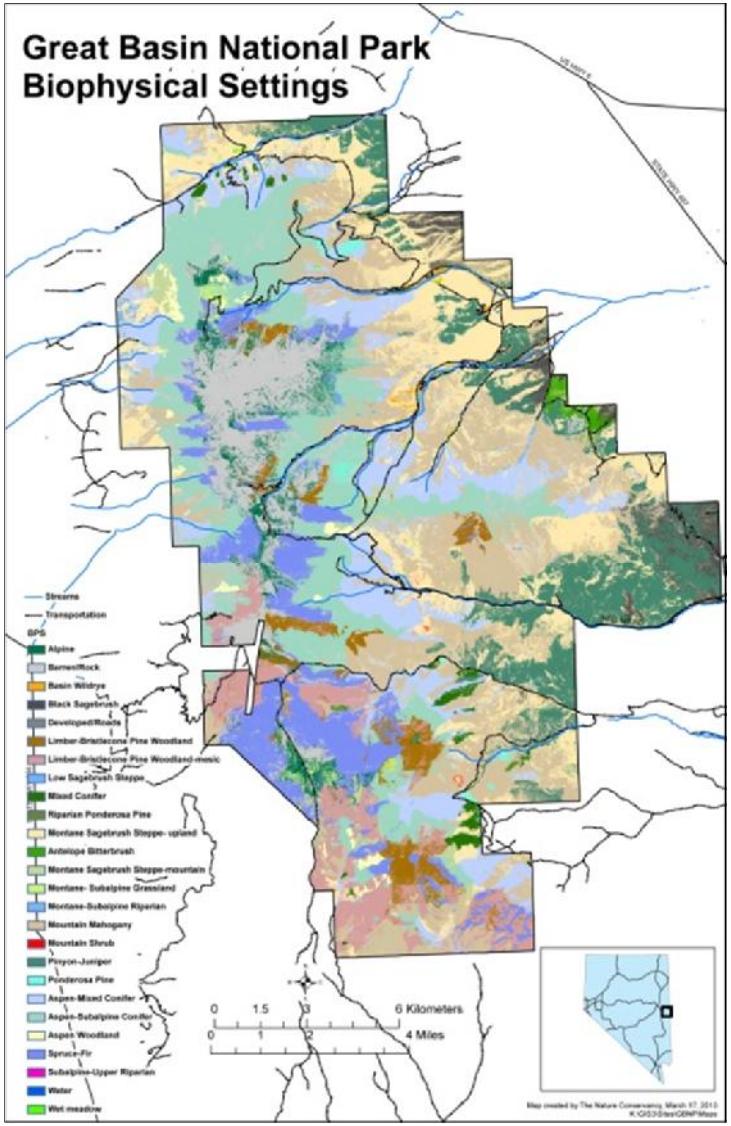
Maps

Models

Metrics

Biophysical Settings

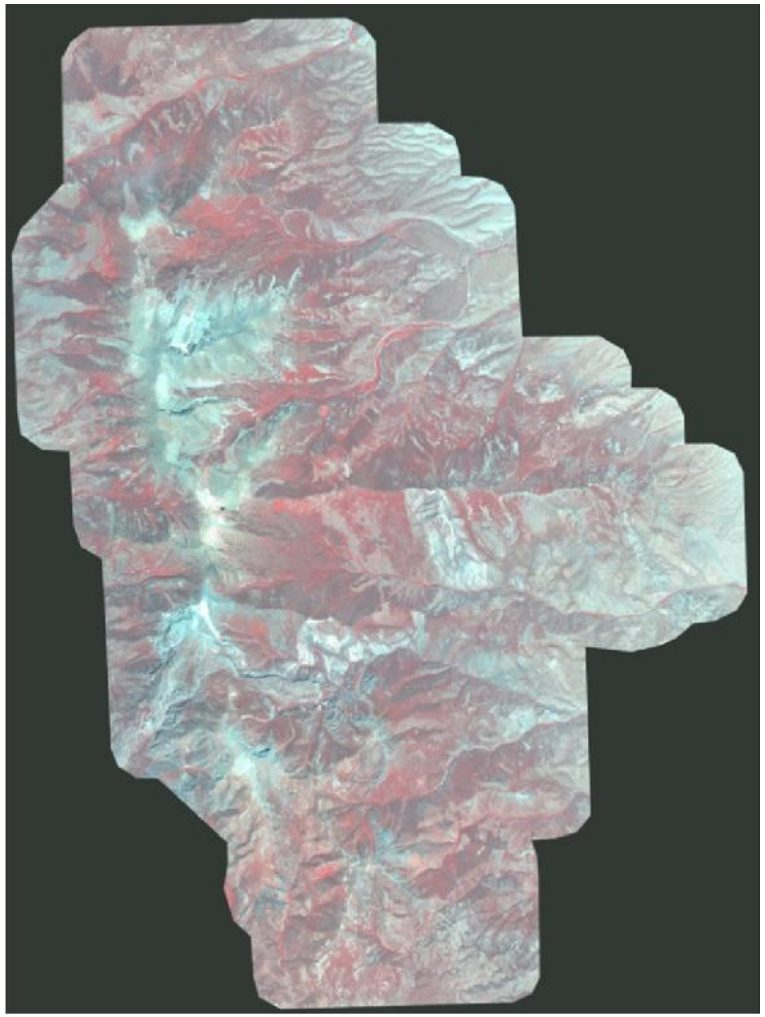
Dominant vegetation type expected in the physical environment (geology & climate) under a natural disturbance regime.



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 Data

- LANDFIRE national maps for BpS & Current Vegetation
  - Accuracy varies; limited by available plot data
  - May be useful for coarse-scale planning

- Consider developing & using your own local geodata
  - Do your own remote sensing, or
  - Use/manipulate existing remote sensing data, and/or
  - Extrapolate existing plot data

  = Greater accuracy, better management treatment planning, treatment area maps

Conservation Forecasting

Maps

Models

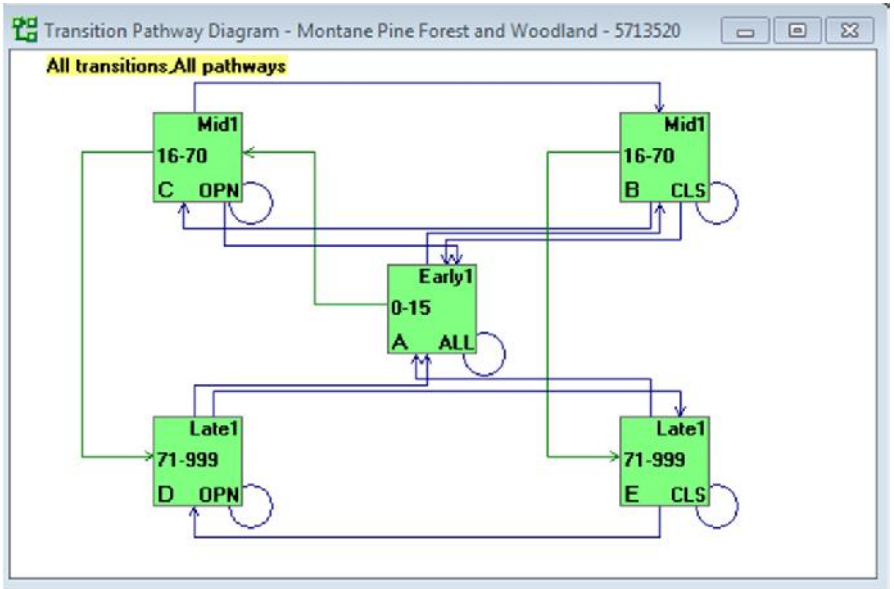
Metrics

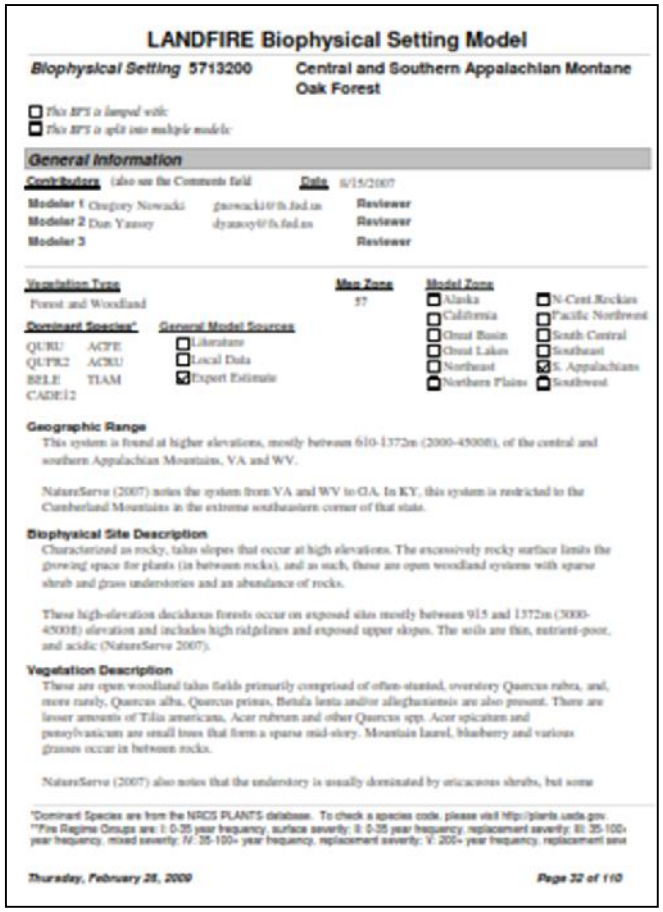
"All Models Are Wrong But Some Are Useful"

George E.P. Box

Where Do The Models Come From?

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





LANDFIRE Biophysical Setting Model

Biophysical Setting 5713200 Central and Southern Appalachian Montane Oak Forest

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

General Information

Contributors (also see the Comments field) Date 8/15/2007

Modeler 1 Gregory Nowacki gnowacki@fs.fed.us Reviewer
Modeler 2 Dan Yaussy dyaussy@fs.fed.us Reviewer
Modeler 3 Reviewer

Vegetation Type: Forest and Woodland
Map Zone: 57
Model Zone: Alaska, California, Great Basin, Great Lakes, Northeast, Northern Plains, N-Cent.Rockies, Pacific Northwest, South Central, Southeast, S. Appalachians, Southwest

Dominant Species*: QURU ACPE QUPR2 ACRU BELE TIAM CADE12

General Model Sources: Literature, Local Data, Expert Estimate

Geographic Range
This system is found at higher elevations, mostly between 610-1372m (2000-4500ft), of the central and southern Appalachian Mountains, VA and WV.

NatureServe (2007) notes the system from VA and WV to GA. In KY, this system is restricted to the Cumberland Mountains in the extreme southeastern corner of that state.

Biophysical Site Description
Characterized as rocky, talus slopes that occur at high elevations. The excessively rocky surface limits the growing space for plants (in between rocks), and as such, these are open woodland systems with sparse shrub and grass understories and an abundance of rocks.

These high-elevation deciduous forests occur on exposed sites mostly between 915 and 1372m (3000-4500ft) elevation and includes high ridgelines and exposed upper slopes. The soils are thin, nutrient-poor, and acidic (NatureServe 2007).

Vegetation Description
These are open woodland talus fields primarily comprised of often-stunted, overstory Quercus rubra, and, more rarely, Quercus alba, Quercus prinus, Betula lenta and/or alleghaniensis are also present. There are lesser amounts of Tilia americana, Acer rubrum and other Quercus spp. Acer spicatum and pensylvanicum are small trees that form a sparse mid-story. Mountain laurel, blueberry and various grasses occur in between rocks.

NatureServe (2007) also notes that the understory is usually dominated by ericaceous shrubs, but some

*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 sev

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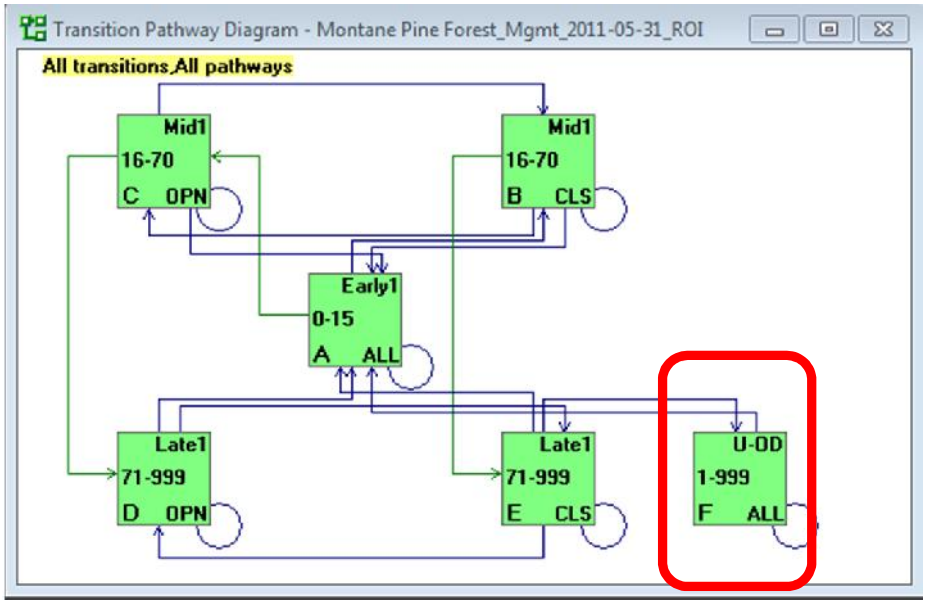
FireLab USDA Forest Service
USGS science for a changing world
The Nature Conservancy Protecting nature. Preserving life.

Modifications & Refinements

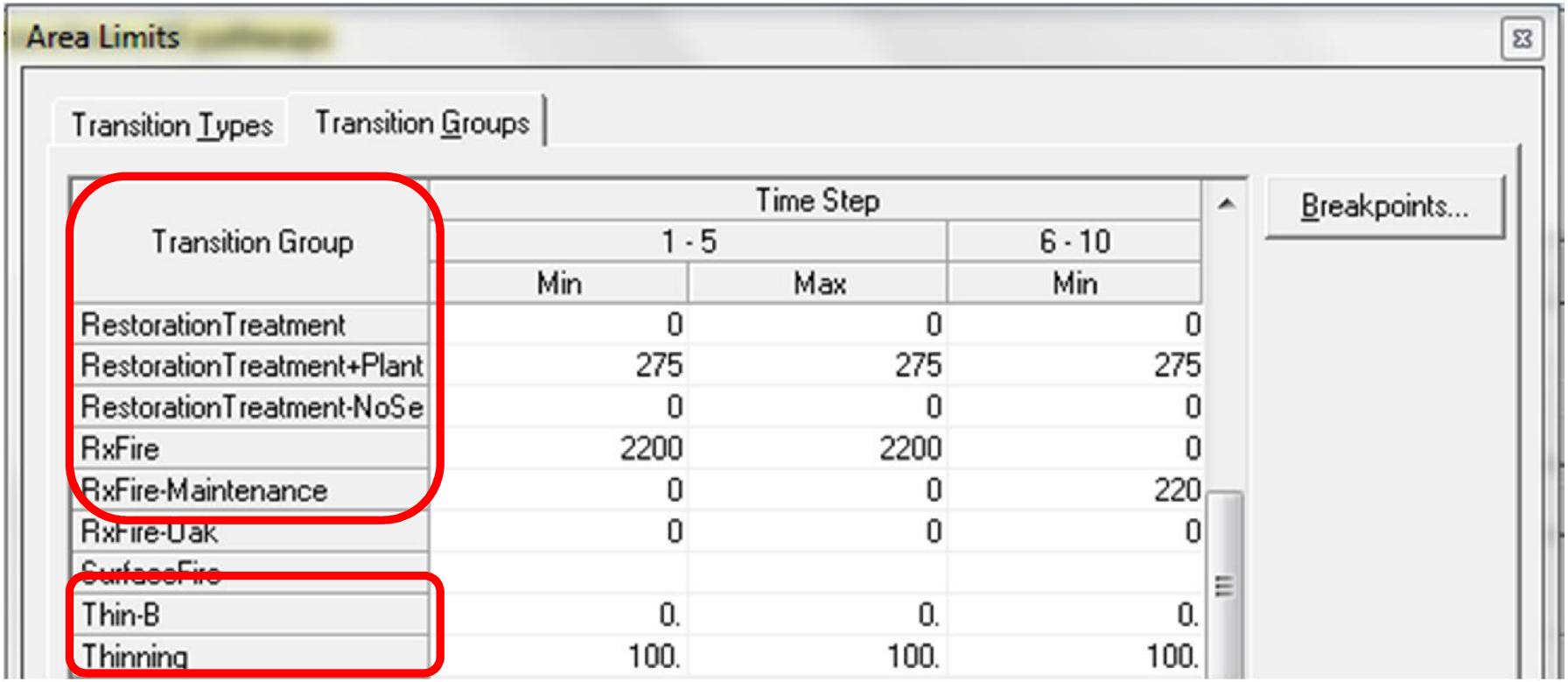


The LANDFIRE models often need to be modified, refined and augmented to reflect local systems

Determine Potential Management Actions

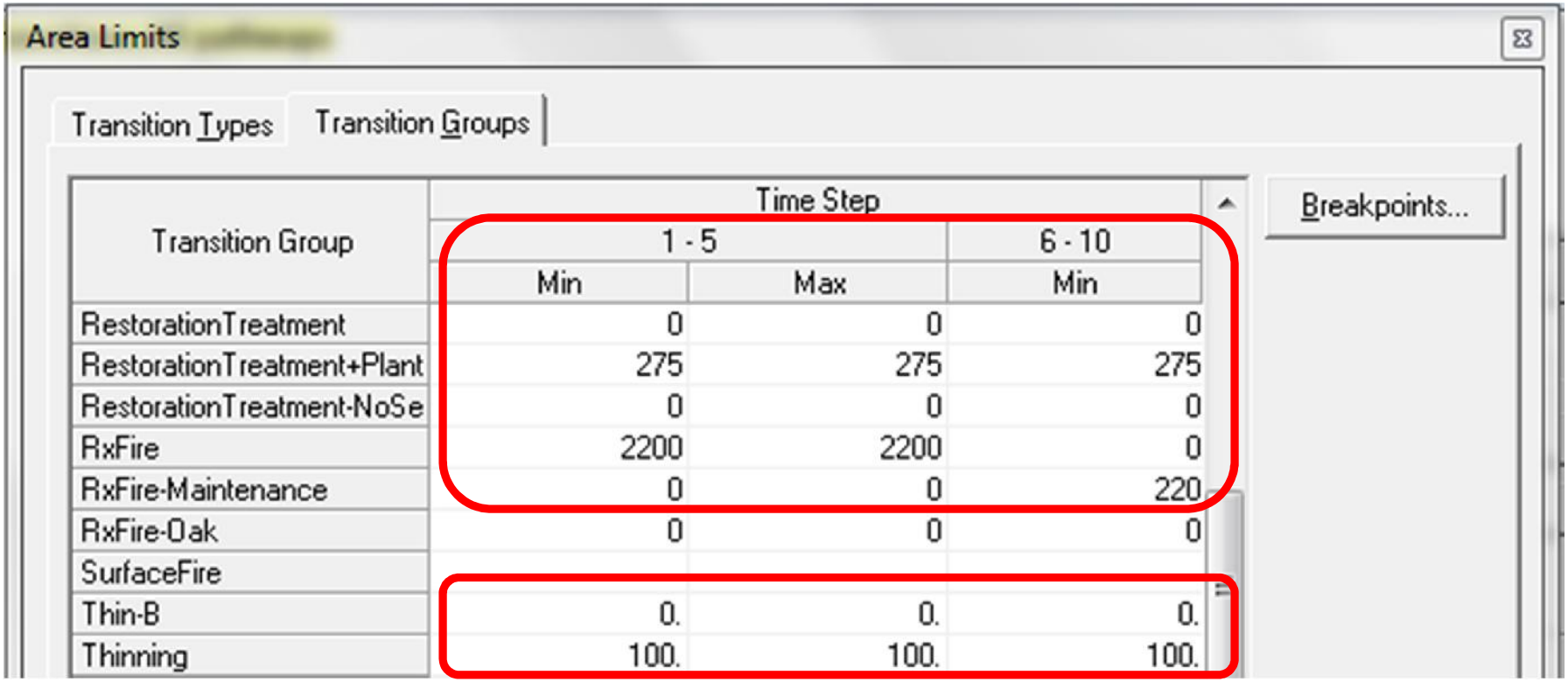
Ecological System	Management Action Name in Model	Management Action Description	From Class	To Class	Cost/ Acre	Model Notes	Management Comments
Montane Pine	RxFire	Prescribed fire to increase open & early succesion classes	All classes but A	Open and A- Early	$50	In Mid-Closed 20% to open and 80% to A; in Late-Closed 80% to Open and 20% to A; in Open classes 10% to A and 90% stays Open; A remains A	80% conversion to A based on current conditions with beetles; wuld be lower in future. Assumes ~1000 block burn including mosaic of systems. Actual outcomes variable; depends upon
Montane Pine	RxFire - Maintenance	Prescribed fire to maintain open classes	All Open (C,D)	Remains in class	$50		Used x years after other manangement treatments to maintain open classes
Montane Pine	Restoration Treatment	Eradicate uncharacteristic oak stands without re-planting; pine seed source present	OD- Oak Dominated	A- Early	$200	80% success rate	Non-commercial. Management treatment would be targeted to areas with seed source; estimated 30% of OD has seed source. Success rate dependent upon continued fire
Montane Pine	Restoration Treatment-No Seed Source	Eradicate uncharacteristic oak stands without re-planting; no pine seed source present	OD- Oak Dominated	A- Early	$200	10% success rate	Non-commercial -- estimated 70% of OD acres does **not** have seed source. Success rate dependent upon continued fire
Montane Pine	Restoration Treatment + Planting	Eradicate uncharacteristic oak stands with pine re-planting	OD- Oak Dominated	A- Early	$300	85% success rate	Non-commerical. Success rate dependent upon continued fire
Montane Pine	Thin-B	Thin mid-closed class to create more open canopy	B- Mid Closed	C- Mid Open	$90		
Montane Pine	RxFire-Oak	prescribed burns where partial pine seed source present	OD- Oak Dominated	A- Early	$50	80% success rate	Non-commercial - targeted to areas with seed source; estimated 30% of OD has seed source.
Montane Pine	Thinning	Thinning of late-closed class to create more open canopy	E- Late Closed	D- Late Open	$600		Non commerical.

Add Management Actions to VDDT



Transition Group	Time Step		
	1 - 5		6 - 10
	Min	Max	Min
RestorationTreatment	0	0	0
RestorationTreatment+Plant	275	275	275
RestorationTreatment-NoSe	0	0	0
RxFire	2200	2200	0
RxFire-Maintenance	0	0	220
RxFire-Oak	0	0	0
SurfaceFire			
Thin-B	0.	0.	0.
Thinning	100.	100.	100.

Test Alternative Actions and Levels



Area Limits

Transition Types | Transition Groups

Breakpoints...

Transition Group	Time Step		
	1 - 5		6 - 10
	Min	Max	Min
RestorationTreatment	0	0	0
RestorationTreatment+Plant	275	275	275
RestorationTreatment-NoSe	0	0	0
RxFire	2200	2200	0
RxFire-Maintenance	0	0	220
RxFire-Oak	0	0	0
SurfaceFire			
Thin-B	0.	0.	0.
Thinning	100.	100.	100.

Conservation Forecasting

Maps

Models

Metrics

Core 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 vegetation succession classes

Low | 0-33% | 34-66% | 67-100% | High

Ecological Departure Worksheet

Ecological Departure Workbook Calculations

Cherokee National Forest Landscape Restoration Initiative

Cove Forest														**Insuff. Data**	
Class	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**U-WP**	**U-YP**	**U-BR**	**U-OD**	**U-PD**	**U-SF**	**No FT/Age**	**Total**
Acres in Class	637	75,545	823	14,907	-	-	5,794	2,026	-	387	-	-	-	2,858	102,977
NRV %	4	30	7	21	-	-	38	0	0	0	0	0	0	0	100
Current % in Class	1	73	1	14	0	0	6	2	0	0	0	0	0	3	100
Ecological Departure															**48**
Montane Red-Chestnut Oak															
Class	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**U-WP**	**U-YP**	**U-BR**	**U-OD**	**U-PD**	**U-SF**	**No FT/Age**	**Total**
Acres in Class	2,018	14,559	107	2,285	42,864	309	5,716	963	1,153	179	-	610	-	1,084	71,847
NRV %	7	26	20	12	18	2	14	0	0	0	0	0	0	0	99
Current % in Class	3	20	0	3	60	0	8	1	2	0	0	1	0	2	100
Ecological Departure															**47**
Dry Oak Forest															
Class	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**U-WP**	**U-YP**	**U-BR**	**U-OD**	**U-PD**	**U-SF**	**No FT/Age**	**Total**
Acres in Class	1,882	8,224	53	870	39,386	200	9,205	1,834	898	29	-	2,204	-	1,096	65,881
NRV %	10	15	31	15	8	7	14	0	0	0	0	0	0	0	100
Current % in Class	3	12	0	1	60	0	14	3	1	0	0	3	0	2	100
Ecological Departure															**61**
Dry-Mesic Oak Forest															
Class	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**U-WP**	**U-YP**	**U-BR**	**U-OD**	**U-PD**	**U-SF**	**No FT/Age**	**Total**
Acres in Class	1,234	6,955	74	3,511	23,393	335	2,178	1,319	166	4	-	974	-	623	40,766
NRV %	7	15	25	23	13	11	6	0	0	0	0	0	0	0	100
Current % in Class	3	17	0	9	57	1	5	3	0	0	0	2	0	2	100
Ecological Departure															**54**
Montane Pine Forest &Woodland															
Class	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**U-WP**	**U-YP**	**U-BR**	**U-OD**	**U-PD**	**U-SF**	**No FT/Age**	**Total**
Acres in Class	1,281	2,839	181	631	12,028	-	-	-	67	57	4,314	-	-	439	21,837
NRV %	12	3	25	55	5	-	-	0	0	0	0	0	0	0	100
Current % in Class	6	13	1	3	55	0	0	0	0	0	20	0	0	2	100
Ecological Departure															**82**

Scorecard of Current Condition

Ecological Departure Summary | Color | Uncolor

Cherokee National Forest Landscape Restoration I

Ecological System	% Departure	Acres (rounded to next 10)
Cove Forest	48	102,980
Montane Red-Chestnut Oak	47	71,850
Dry Oak Forest	61	65,880
Dry-Mesic Oak Forest	54	40,770
Low-Elevation Pine Forest	90	23,810
Montane Pine Forest &Woodland	82	21,840
Northern Hardwood Forest	13	11,640
Riparian & Floodplain Systems	59	2,550
Spruce-Fir Forest	43	2,240
Total Acres		**343,560**

ROI
Return on Investment

- Measures which combination of management strategies produces the "biggest bang for the buck"
- ROI = the change in ecological departure between no management and another proposed management scenario, divided by the total cost

Test Alternative Management Scenarios

	Enter Notes	Enter Management Strategies, Number of Acres/Year, Costs & Number of Years						
Scenarios (enter name below)	**Notes**	RxFire - Years 1-5 & 16-20	Thin B to C for first 10 yrs	Maintenance Fire (10 "off" years)	Thinning	Restoration Treatment No Seed Source (70% of OD)	Restoration Treatmt w Seed Source (30% of OD)	Restoration Harvest + Pine Planting
No mgmt 20 yrs high fire supp								
Max ecological mgmt	Burn & thin 1st & last 5 years	**2200**		**220**	**1500**			**300**
Fire only mgmt	Burn 2500 1st & last 5 years	**2500**		**300**				
Mechanical only mgmt	Thin 2500 1st & 4000 last 5 yrs				**3250**		**100**	**220**
ROI mgmt	Burn 2500 1st & 500 last 5 yrs	**1500**						
ROI - II		**1500**	**250**					
Cost of Strategy (per acre)		$ 50	$ 90	$ 50	$ 600	$ 200	$ 200	$ 300
Number of Years		10	5	10	10	20	20	20

Return on Investment Across Management Scenarios

Strategy Worksheet	*Montane Pine Forest*					*21,837*	*acres*
Vegetation Class (describe) *type x in left box if high-risk*	**NRV**	**Current Condtion**	**No mgmt 20 yrs high fire suppression**	**Max ecological mgmt**	**Fire only mgmt**	**Mechanical only mgmt**	**ROI mgmt (revised)**
A - Early	12%	6%	3%	32%	25%	15%	14%
B - Mid Closed	3%	13%	12%	12%	9%	15%	16%
C - Mid Open	25%	1%	3%	8%	9%	4%	7%
D - Late Open	55%	3%	6%	47%	36%	59%	30%
E - Late Closed	5%	57%	53%	0%	8%	1%	18%
U- Oak Dominated		20%	23%	1%	14%	6%	14%
Ecological Departure		**82**	**80**	**30**	**35**	**25**	**43**
Uncharacteristic Classes		**20**	**23**	**1**	**14**	**6**	**14**
Total Cost			$ -	$ 7,510,000	$ 1,500,000	$ 9,100,000	$ 850,000
ROI (vs. Min. Mgmt)				1.0	3.6	0.8	5.4

Return on Investment Across Systems

Ecological System	Acres (rounded to nearest 100)	Ecological Departure		ROI	Ave. Annual Cost
		No Mgmt w Fire Suppression	ROI Mgmt		
Cove Forest	103,000	34	30	1.7	$ 12,000
Dry Oak Forest	65,900	60	40	1.2	$ 96,500
Dry-Mesic Oak Forest	40,800	49	37	3.2	$ 22,000
Low-Elevation Pine Forest	23,800	77	50	3.6	$ 75,750
Montane Pine Forest	21,800	80	43	5.0	$ 53,750
Montane Red-Chestnut Oak Forest	71,800	39	25	1.4	$ 60,450
Northern Hardwood Forest	11,600	14	-	n/a	
Riparian & Floodplain Systems	2,500	39	-	n/a	$ -
Spruce-Fir Forest	2,200	40	28	25.6	$ 4,500

Conservation Forecasting

Benefits, Constraints, Lessons Learned

Constraints

- Landscape-level tool (50,000 acres +)
- Perceived as "black box"
- Only as good as the data
- Aquatic systems require supplemental assessment
- Focal species require supplemental metrics
- Current spatial model is complex, expensive
- Ideally should have adaptive model runs over time
- Cost, especially new remote sensing

Conservation Forecasting

Benefits

Scorecards

Ward Mountain Ecological Forecasts

June 23, 2010

Ecological System	Ecological Departure		
	Current Condtion	Minimum Mgmt - 20 yrs	Preferred Mgmt
Black Sagebrush	79	69	36
Montane Sagebrush Steppe - Upland	62	41	29
Montane Sagebrush Steppe - Mountain	47	31	31
Aspen Mixed-Conifer	53	50	25
Wyoming Big Sagebrush	77	74	61
Basin Wildrye	86	86	43
Winterfat	78	87	47
Aspen Woodland	45	39	24
Montane-Subalpine Riparian	59	55	32
Mountain Shrub	47	35	27

Which Strategies Work

	Strategy Worksheet	***Black Sagebrush***					*1,880*	*acres*
				Enter percentages from "Final Conditions" as a whole number				
	Vegetation Class (describe) ***type x in left box if high-risk***	**NRV**	**Current Condtion**	**Minimum Mgmt - 50 yrs**	**Maximum Mgmt**	**Streamlined Mgmt**	-	-
	A - Early	17%	0%	10%	19%	16%		
	B - Mid Closed	47%	6%	10%	46%	33%		
	C - Mid Open	24%	38%	17%	6%	13%		
	D - Late Open	10%	16%	8%	3%	5%		
	E - Late Closed	2%	0%	0%	0%	0%		
	Shrubs w Ann & Per Grass		0%	6%	8%	7%		
x	**Tree Encroached**		16%	9%	2%	4%		
	Early Shrub		0%	9%	6%	7%		
x	**Annual Grass**		0%	14%	8%	9%		
x	**Shrubs w Annual Grass**		20%	9%	0%	2%		
x	**Tress w Annual Grass**		0%	6%	1%	2%		
x	**Depleted Shrub**		3%	2%	1%	1%		
	Ecological Departure		**60**	**55**	**28**	**33**	**-**	**-**
	High-Risk Classes		**39**	**40**	**12**	**18**	**0**	**0**
	Vegetation Conversion							
	Total Cost			$ -	$ 617,300	$ 390,800	$ -	$ -
	ROI (vs. Min. Mgmt)				9	11	-	-
		Enter Notes		**Enter Management Strategies, Number of Acres/Year, Costs & Nu**				
	Scenarios (enter name below)	**Transitions & Multipliers**	RxFire (C,D)	Chainsaw -Chip-Herb-Seed (TE,TA)	Thin-Herb-Seed (SA)	Chainsaw Lopping (C)	Seed (DP)	
	Minimum Mgmt - 50 yrs							
	Maximum Mgmt		**350**	**140**	**130**	**10**	**20**	
	Streamlined Mgmt		**175**	**100**	**100**	**10**	**10**	

What They Cost

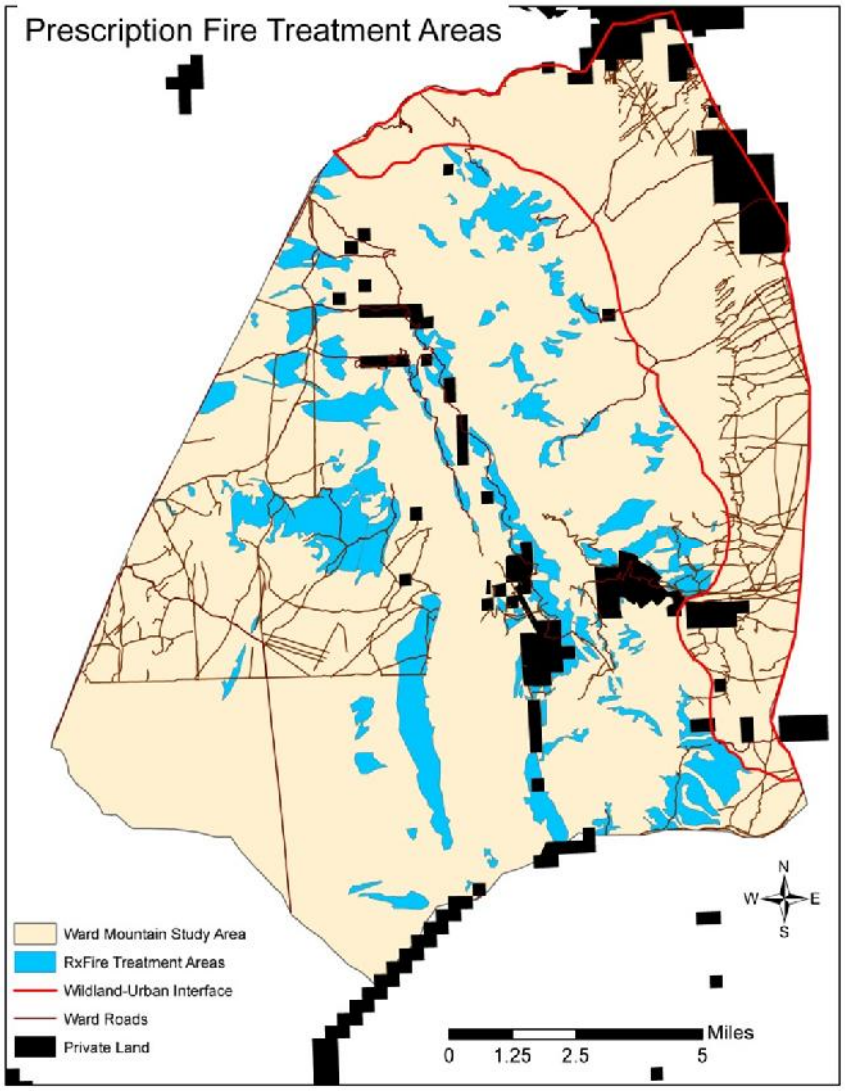
Great Basin National Park Management Costs

Ecological System	Acres	Years 1-3 Mgmt Cost	Years 4-5 Mgmt Cost	Years 6-10 Mgmt Cost	Years 11-50 Mgmt Cost	50 Year Total Est. Cost: Stream-lined Mgmt
Alpine-Subalpine						
Aspen-Subalpine Conifer	11,320	$388,500				$388,500
Limber-Bristlecone Pine - mesic	4,500	$83,200				$83,200
Mid-Elevation Forests						
Aspen-Mixed Conifer	8,110	$243,750	$162,500	$406,250		$812,500
Shrublands						
Antelope Bitterbrush	340	$52,500	$35,000			$87,500
Basin Wildrye	270	$36,700	$2,600	$6,400	$51,200	$96,800
Black Sagebrush	1,880	$390,800				$390,800
Low Sagebrush Steppe	420	$30,000				$30,000
Montane Sagebrush Steppe- upland	12,710	$112,500	$75,000	$187,500	$1,500,000	$1,875,000
Riparian and Wet Meadows						
Montane Riparian	450	$5,880	$3,920	$9,800	$78,400	$98,000
Wet Meadow	90	$1,380	$920	$2,300	$18,400	$23,000
Total Cost		$1,359,900	$279,900	$612,300	$1,648,000	$3,900,000
Ave. Annual Cost		$453,300	$139,950	$122,460	$41,200	$78,000

Best Use of Limited Funds

Ecological System	Acres (rounded to nearest 100)	Ecological Departure		ROI	Ave. Annual Cost
		No Mgmt w Fire Suppression	ROI Mgmt		
Cove Forest	103,000	34	30	1.7	$ 12,000
Dry Oak Forest	65,900	60	40	1.2	$ 96,500
Dry-Mesic Oak Forest	40,800	49	37	3.2	$ 22,000
Low-Elevation Pine Forest	23,800	77	50	3.6	$ 75,750
Montane Pine Forest	21,800	80	43	5.0	$ 53,750
Montane Red-Chestnut Oak Forest	71,800	39	25	1.4	$ 60,450

Where to Act


Prescription Fire Treatment Areas
Ward Mountain Study Area
RxFire Treatment Areas
Wildland-Urban Interface
Ward Roads
Private Land
N
W
E
S
Miles
0
1.25
2.5
5

Scientific NEPA Documentation

Bodie Hills Upland Vegetation Restoration Project: Proposed Action

Bishop Field Office

Bureau of Land Management

Background:

The Bodie Hills is a largely unfragmented landscape that includes a diversity of Great Basin ecological systems. Major fires and invasive species such as cheatgrass have not yet overtaken and highly altered the area, as they have done elsewhere in the Great Basin. However, there are ecological systems (types of vegetation) that are currently departed from their natural range of variability (NRV) [1] due to a lack of a natural disturbance regime. Many of these ecological systems are at a high risk of conversion to invasive species or to woodlands on sites that previously supported shrublands.

The Bureau of Land Management's (BLM) Bishop Field Office entered into a cooperative agreement in September 2007 with The Nature Conservancy (TNC) to analyze of the current condition of the Bodie Hills ecosystems and their future condition under several different management scenarios developed with public input from stakeholders. The study's purpose was to inform and guide the formulation of future site-specific vegetation management projects to protect and enhance the ecological integrity of the area. The analysis used satellite imagery, remote sensing, predictive ecological models, and cost-benefit assessments. Three workshops were held with a diverse group of stakeholders during 2008 to review and refine ecological models, review findings, and identify potential vegetation management scenarios (Provencher, Low et al. 2009).

The current condition of the Bodie Hills ecological systems varies widely in terms of departure from NRV. The study by the BLM and The Nature Conservancy identified 13 ecological systems in the Bodie Hills. Five are slightly departed from their natural range of variability, five are moderately departed and five are highly departed. The primary cause of high departure is that the sagebrush systems are significantly lacking the earliest successional classes (stages of development after a disturbance). Montane sagebrush steppe comprises almost 120,000 acres, over 63% of the project area. It has very little vegetation in the early succession classes and is dominated by late succession classes. In addition, a portion is depleted of native grasses and forbs, cheatgrass has invaded the existing perennial grasses, and conifers have encroached native sagebrush at middle elevations (Provencher, Low et al. 2009).

3. Montane Sagebrush Steppe

Objective:
Work towards the long term (20 year) goals of improving the ecological condition from high departure (72%) from NRV to moderate departure (~55%) and limiting increase in highest risk classes to 20% or less. Establish a fuel break around Bodie State park that will also provide ecological benefits by increasing early successional classes.

Strategy	Classes to be treated (See Appendix B for class descriptions)	Acres over 10 years	Management tools to be used
I. Treat late successional, depleted, and annual grass invaded classes to convert them to early development classes with greater native herbaceous cover.	Mid-closed (C) Late-open (D), Depleted (U DPL), Shrub-Annual grass-Perennial grass (U ShAP)*, Shrub-Annual grass (U ShAG)*	9500	-Broadcast prescribed burning -Mowing -Hand cutting small conifers** -Seeding native species in the most depleted/high risk sites if necessary
II. Remove trees from classes with encroaching conifers to prevent and reduce conversion.	Late-open (D), Late-closed (E), Tree encroached (U TrEnc), Depleted (U DPL), Shrub-Annual grass-Perennial grass (U ShAP), Shrub-Annual grass (U ShAG)	750	-Hand cutting conifers with piling and burning or chipping
III. Construct and maintain a 300 ft. fuel break around structures and values at risk (ex. Bodie State Park) to reduce fire risk and increase early development classes. This may include both BLM and State lands.	Several classes – site selection depends on location, not class.	300***	-Mowing -Hand cutting shrubs with piling and burning or chipping -Broadcast prescribed burning -Seeding native species if necessary
Maximum acres of vegetation treatment		**10550**	

Attract Funding

Priority	Project Name	Requesting Entity	Estimated Costs	10% Contingency	Total Recommended
Eastern Nevada Landscape Restoration Projects					
1	Ward Mountain Restoration	USFS & BLM	$ 306,000	$ 30,600	$ 336,600
2	Kern Mountains & Blue Mass Scenic Area Restoration – Phase One	BLM - Ely	$ 811,021	$ 81,102	$ 892,123
3	Snake Valley Invasive Weeds: Inventory, Treatment, Restoration and Education	NPS, BLM, & USFS	$ 665,041	$ 66,504	$ 731,545
4	North Schell Restoration Project	USFS	$ 1,148,380	$ 114,838	$ 1,263,218
5	Landscape Level Vegetation Management Plan	NPS	$ 486,348	$ 48,635	$ 534,983
6	Camp Success Fuels Reduction	USFS	$ 50,000	$ 5,000	$ 55,000
				Eastern Nevada Landscape Restoration Projects Total	**$ 3,813,469**

Help Build Consensus

… among resource managers and with stakeholders

Cherokee National Forest
Landscape Restoration Initiative

Steering Committee Operating Procedures

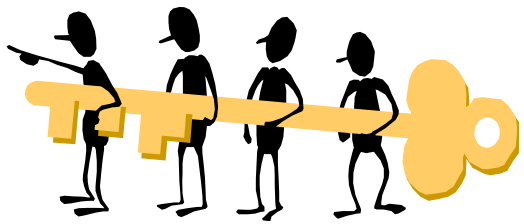
Adopted May 7, 2010

Key Success Factors

Good Project Team

… some skills may reside in same person

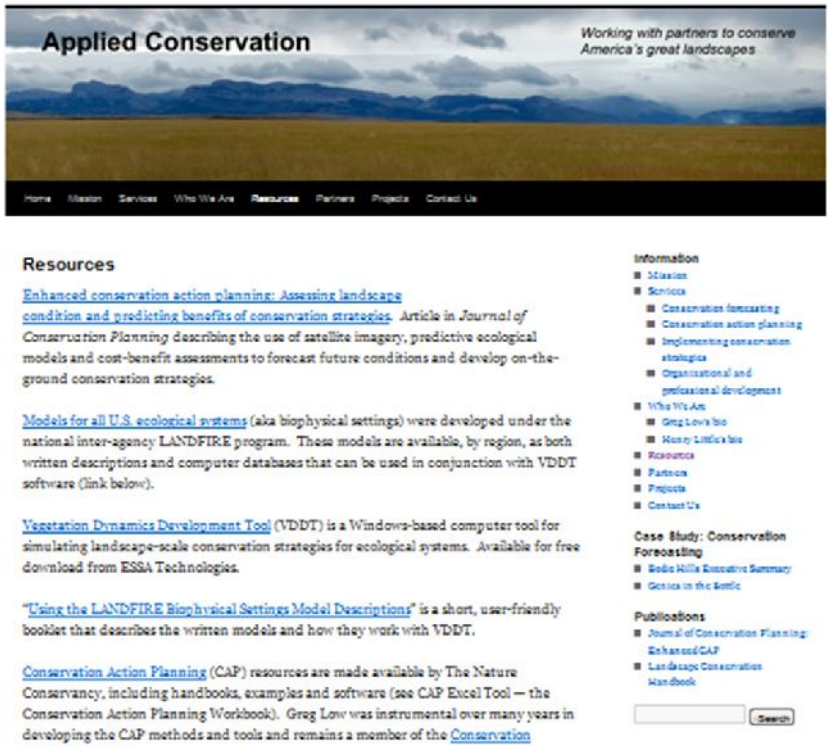
- Ecologist - refines reference models and understands management effects
- GIS – manipulates data & produces maps
- VDDT – builds models and runs scenarios
- Facilitator - orchestrates workshops
- Project director - sees the big pix, herds the cats, lines up $



Agency Engagement

- Support from local agency leader
- Engagement of local agency staff (ecologist, veg, fuels, fire, wildlife managers, etc.)

For More Information…



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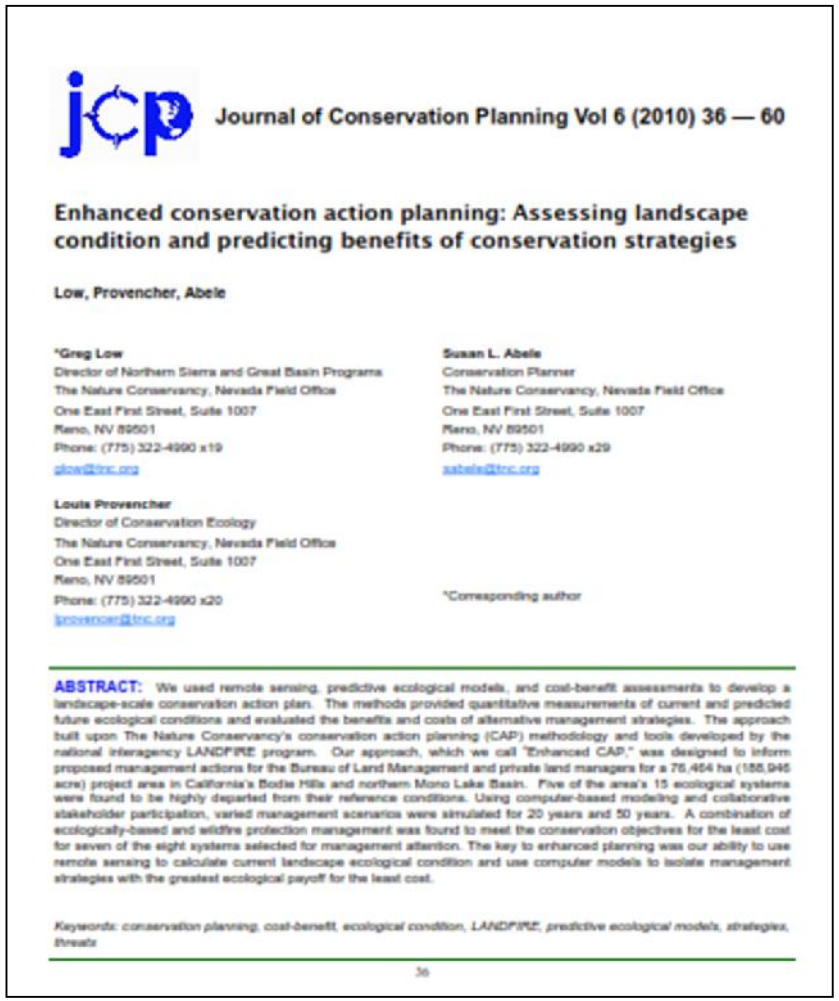

Journal of Conservation Planning

Questions & Discussion?