Draft Report to the U.S. Forest Service Spring Mountains National Recreation Area
USDA Forest Service Solicitation AG-9360-S-08-0004:
R--Fire Regime Condition Class Mapping for the Spring Mountains Southern Nevada
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Photo: Alkali sacaton-mesquite loamy bottom, south Spring Mountains; Louis Provencher, 2008

By

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Subcontractors:
Spatial Solutions, Inc, Bend, OR
Sundance Helicopters, Las Vegas, NV

Executive Summary

The Nature Conservancy was contracted to map Fire Regime Condition Classes (FRCC) and associated products for approximately 1.25 million acres of the Spring Mountains in U.S. Forest Service (USFS), Bureau of Land Management (BLM), and private land management. FRCC is a measure of departure of vegetation structure-composition, and fire regimes between current and reference condition. The Nature Conservancy interpreted ecological site associations from three USDA Natural Resource Conservation Service soil surveys to 20 major vegetation types representing LANDFIRE biophysical settings (potential vegetation types) typical of Mojave Desert high elevation ranges. The natural range of variability (percentage of each succession class per biophysical setting) was either obtained from LANDFIRE or recalculated after adapting LANDFIRE computer models. Biophysical settings are the fundamental stratification of FRCC mapping. Subcontractor Spatial Solutions conducted remote sensing with field help from Conservancy staff from April to August 2008. Spatial Solutions refined associations of biophysical settings to unique ones and mapped succession and uncharacteristic vegetation classes per biophysical settings. The Nature Conservancy processed biophysical settings and current vegetation class geodata, and natural ranges of variability with the inter-agency software FRCC Mapping Tool. Four biophysical settings, including the very extensive creosotebush-white bursage and blackbrush systems, were in FRCC 3, 5 biophysical settings were in FRCC 2, and 11 in FRCC 1. Higher elevation and the lowest elevation biophysical settings (below creosotebush-white bursage) were generally less departed from the natural range of variability. A summary output table was also produced that identified vegetation classes per biophysical settings that were over-represented, similar, or under-represented compared to the natural range of variability. The summary output table is directly relevant to land management decisions.

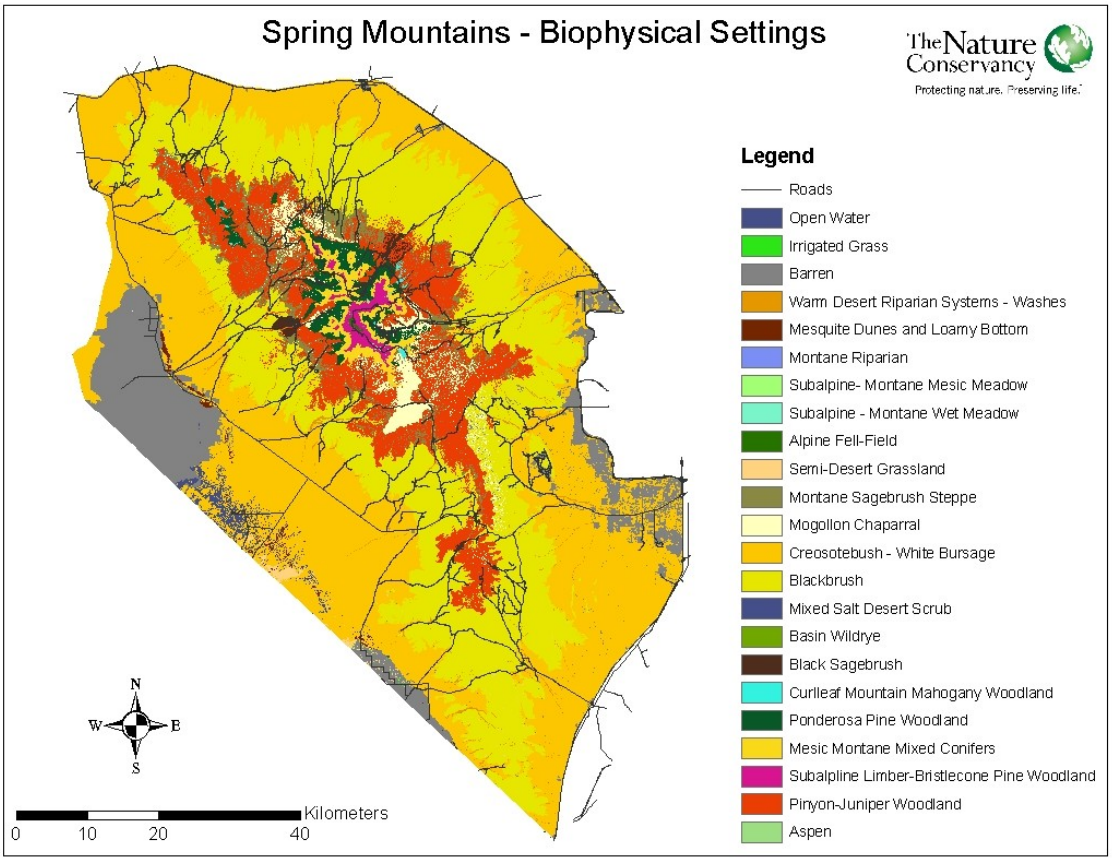

Fig. 2. Biophysical settings of the Spring Mountains, Nevada.

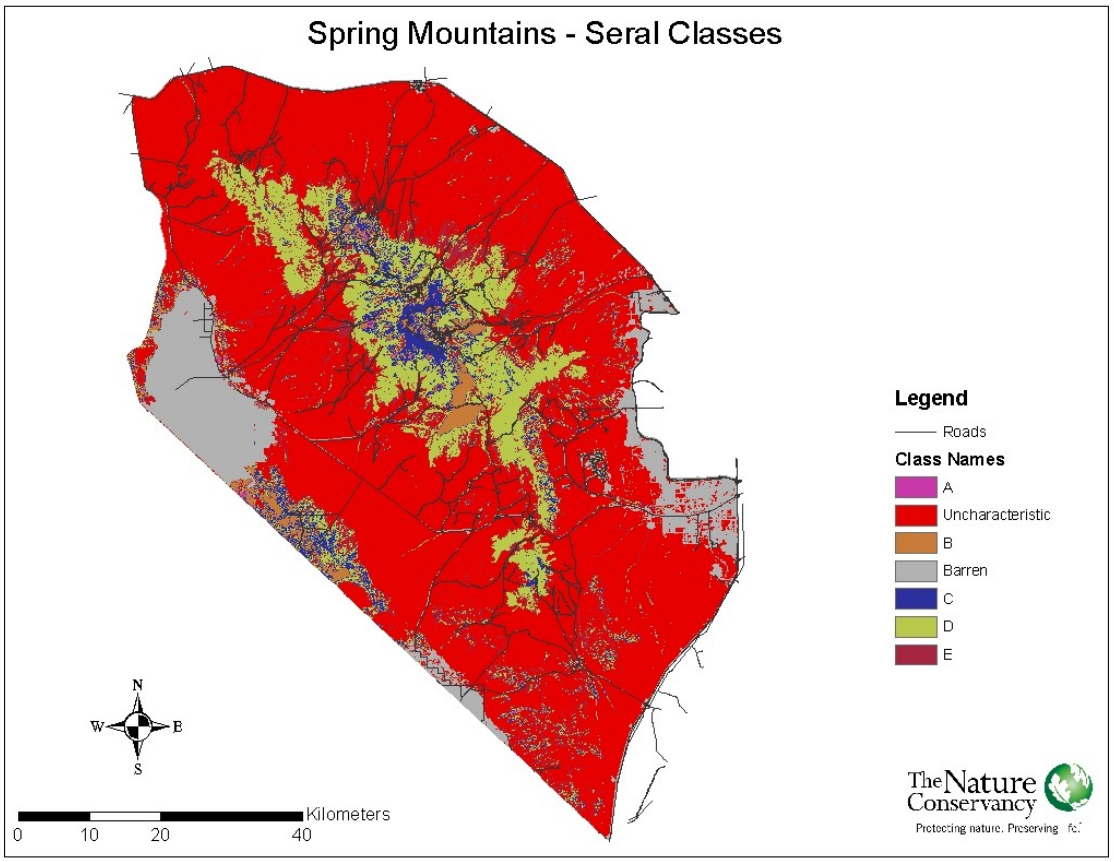

Fig. 3. Current vegetation classes of biophysical settings of the Spring Mountains, Nevada. Legend: Classes A-E are explained in Table 1 and more precisely described in Appendix II. Barren pixels were not assessed.

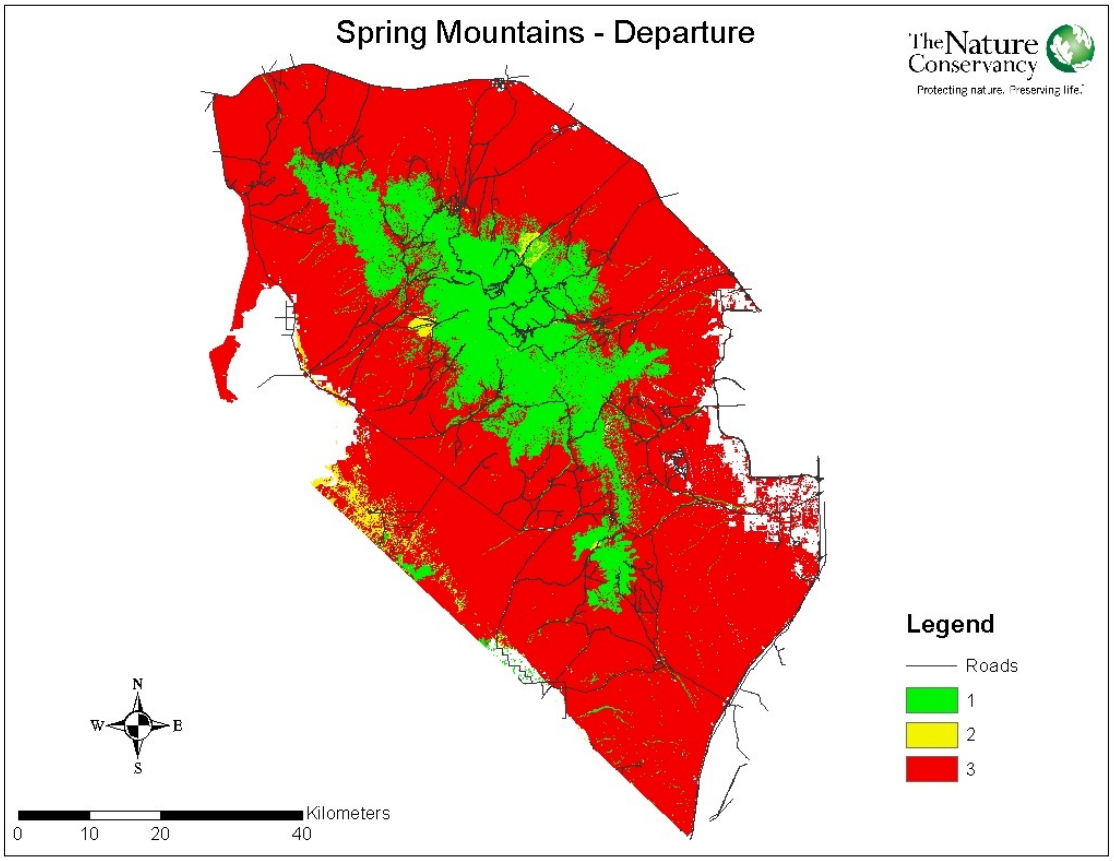

Fig. 4. Fire Regime Condition Class map of the Spring Mountains, Nevada. Legend: FRCC 1 in green, FRCC 2 in yellow, and FRCC 3 in red.

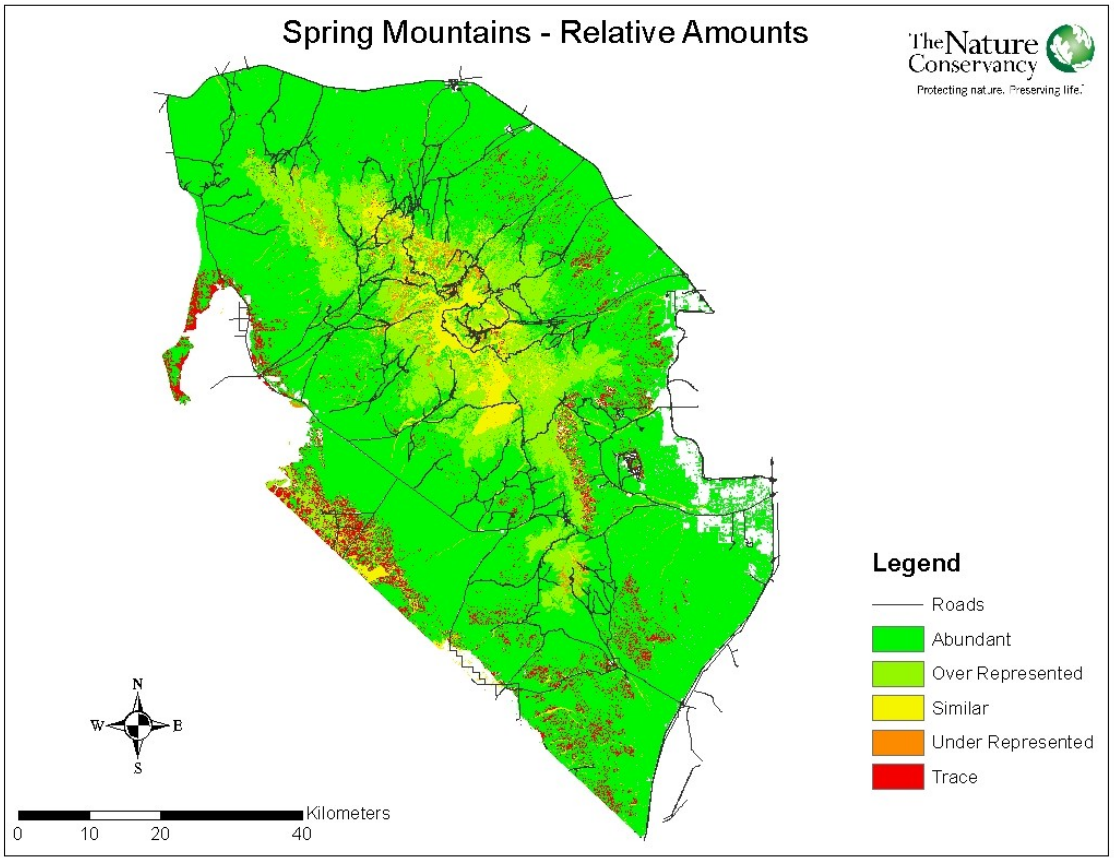

Fig. 5. Relative amount map for the Spring Mountains, Nevada. Each pixel was assigned a label that reflects the status the current vegetation class it belongs to relative to the percentage it should have according to the natural range of variability of the biophysical setting.

Table 5. Summary output data for the Spring Mountains, Nevada. This table is a trimmed and edited version of the original summary output table created by the FRCC Mapping Tool.

Biophysical Setting							
Name	Code	Succession Class*	Natural Range of Variability (%)	Current Vegetation Classes (%)	Acre Difference#	Relative Amount	FRCC
Pinyon-Juniper Woodland	1019	A	5	1.8	-4665.8	under rep	1
Pinyon-Juniper Woodland	1019	B	5	0.1	-7259.8	trace	1
Pinyon-Juniper Woodland	1019	C	25	0.1	-36645.9	trace	1
Pinyon-Juniper Woodland	1019	D	65	98	48571.5	over rep	1
Pinyon-Juniper Woodland	1019	U	0	0	0		
Subalpine Limber-Bristlecone Pine Woodland	1020	A	15	13.9	-86.6	similar	1
Subalpine Limber-Bristlecone Pine Woodland	1020	B	15	15.2	17.2	similar	1
Subalpine Limber-Bristlecone Pine Woodland	1020	C	70	70.8	69.3	similar	1
Subalpine Limber-Bristlecone Pine Woodland	1020	U	0	0	0		
Mesic Montane Mixed Conifers	1052	A	10	39	5136	abundant	1
Mesic Montane Mixed Conifers	1052	B	30	1.1	-5119.3	trace	1
Mesic Montane Mixed Conifers	1052	C	15	14.4	-105.5	similar	1
Mesic Montane Mixed Conifers	1052	D	35	32.6	-417.3	similar	1
Mesic Montane Mixed Conifers	1052	E	10	12.9	506.1	similar	1
Mesic Montane Mixed Conifers	1052	U	0	0	0		
Ponderosa Pine Woodland	1054	A	10	28.4	4361.7	over rep	1
Ponderosa Pine Woodland	1054	B	9	0.8	-1936.5	trace	1
Ponderosa Pine Woodland	1054	C	20	20.4	86.7	similar	1
Ponderosa Pine Woodland	1054	D	60	35.5	-5808.3	under rep	1
Ponderosa Pine Woodland	1054	E	1	14.9	3296.4	abundant	1
Ponderosa Pine Woodland	1054	U	0	0	0		
Seral Aspen	1061	A	25	32.5	38	similar	1
Seral Aspen	1061	B	50	36.4	-68.6	similar	1
Seral Aspen	1061	C	15	4.8	-51.5	trace	1
Seral Aspen	1061	D	9	5.6	-17.4	under rep	1

Seral Aspen	1061	E	1	4.3	16.6	abundant	1
Seral Aspen	1061	U	0	16.4	83	abundant	
Curlleaf Mountain Mahogany Woodland	1062	A	10	0.5	-107.6	trace	1
Curlleaf Mountain Mahogany Woodland	1062	B	15	32	193.2	over rep	1
Curlleaf Mountain Mahogany Woodland	1062	C	10	2.4	-85.9	trace	1
Curlleaf Mountain Mahogany Woodland	1062	D	20	17.8	-25.6	similar	1
Curlleaf Mountain Mahogany Woodland	1062	E	45	47.2	25.5	similar	1
Curlleaf Mountain Mahogany Woodland	1062	U	0	0	0.3	abundant	
Black Sagebrush	1079	A	15	0.2	-613.1	trace	2
Black Sagebrush	1079	B	40	1.4	-1601.9	trace	2
Black Sagebrush	1079	C	20	29.8	407.5	similar	2
Black Sagebrush	1079	D	25	14.4	-440.2	under rep	2
Black Sagebrush	1079	U	0	54.1	2247.7	abundant	
Basin Wildrye	10801	A	20	5.1	-6.2	trace	3
Basin Wildrye	10801	B	60	0	-25		3
Basin Wildrye	10801	C	20	0.1	-8.3	trace	3
Basin Wildrye	10801	U	0	94.8	39.5	abundant	
Mixed Salt Desert Scrub	1081	A	5	0	-460.8	trace	2
Mixed Salt Desert Scrub	1081	B	50	99.7	4615.3	over rep	2
Mixed Salt Desert Scrub	1081	C	45	0	-4180		2
Mixed Salt Desert Scrub	1081	U	0	0.3	25.4	abundant	
Blackbrush	1082	A	25	1.9	-98461.4	trace	3
Blackbrush	1082	B	75	6.5	-291379.2	trace	3
Blackbrush	1082	U	0	91.7	389840.6	abundant	
Creosotebush-White Bursage	1087	A	15	0.6	-74218.1	trace	3
Creosotebush-White Bursage	1087	B	85	4.1	-417653.3	trace	3
Creosotebush-White Bursage	1087	U	0	95.3	491871.5	abundant	
Mogollon Chaparral	1104	A	10	6	-1130.7	under rep	1
Mogollon Chaparral	1104	B	90	94	1130.7	similar	1
Mogollon Chaparral	1104	U	0	0	0		
Montane Sagebrush Steppe	1126	A	20	0.2	-6815.5	trace	3
Montane Sagebrush Steppe	1126	B	50	0	-17226.2		3
Montane Sagebrush Steppe	1126	C	15	3.9	-3832.8	trace	3

Montane Sagebrush Steppe	1126	D	10	0	-3445.2		3
Montane Sagebrush Steppe	1126	E	5	0	-1722.6		3
Montane Sagebrush Steppe	1126	U	0	95.9	33042.4	abundant	
Semi-Desert Grassland	1135	A	30	0	-1152.7	trace	1
Semi-Desert Grassland	1135	B	70	93.6	906.8	similar	1
Semi-Desert Grassland	1135	U	0	6.4	245.8	abundant	1
Alpine Fell-Field	1143	A	5	12.6	26.7	over rep	1
Alpine Fell-Field	1143	B	95	87.4	-26.7	similar	1
Alpine Fell-Field	1143	U	0	0	0		
Subalpine-Montane Mesic Meadow	11450	A	5	0	-5.2		2
Subalpine-Montane Mesic Meadow	11450	B	40	0	-41.8		2
Subalpine-Montane Mesic Meadow	11450	C	55	100	47	over rep	2
Subalpine-Montane Mesic Meadow	11450	U	0	0	0		
Subalpine-Montane Wet Meadow	11451	A	5	2.2	-0.7	under rep	1
Subalpine-Montane Wet Meadow	11451	B	40	51.4	2.8	similar	1
Subalpine-Montane Wet Meadow	11451	C	55	46.4	-2.1	similar	1
Subalpine-Montane Wet Meadow	11451	U	0	0	0		
Montane Riparian	1154	A	25	9.7	-26.2	under rep	2
Montane Riparian	1154	B	55	59.7	8.1	similar	2
Montane Riparian	1154	C	20	1.6	-31.4	trace	2
Montane Riparian	1154	U	0	28.9	49.5	abundant	
Mesquite Dunes and Loamy Bottom	11550	A	30	15	-469.2	under rep	2
Mesquite Dunes and Loamy Bottom	11550	B	20	46.3	820.1	over rep	2
Mesquite Dunes and Loamy Bottom	11550	C	50	6.7	-1350.5	trace	2
Mesquite Dunes and Loamy Bottom	11550	U	0	32	999.7	abundant	2
Warm Desert Riparian Systems-Washes	11551	A	25	32.5	897.7	similar	1
Warm Desert Riparian Systems-Washes	11551	B	75	67.5	-897.7	similar	1
Warm Desert Riparian Systems-Washes	11551	U	0	0	0		

[#] Acre difference is calculated as: (proportion of the vegetation class in the current vegetation × area of biophysical setting) - (proportion of the same class in the natural range of variability× area of biophysical setting).

* Succession class was defined in Table 1.