



**HUMBOLDT-TOYAIBE NATIONAL FOREST
SPRING MOUNTAINS NATIONAL
RECREATION AREA**

**Interagency Climate Monitoring
in Southern Nevada**

**James Hurja, US Forest Service,
Douglas Merkler, Natural Resources Conservation Service
Las Vegas, NV June 21, 2010**

The Spring and Sheep Mountains are two of the most ecologically diverse ecosystems in the Mojave Desert Ecoregion.

There are 24 species, including 15 plant species, that are endemic to the Spring Mountains Ecosystem.

Vegetation and soils range across seven ecological life-zones in the Spring and Sheep Mountains.

- Previous and on-going studies generally have focused on efforts to understand the occurrence and distribution of plant species and soils.
- The land-management agencies lack sufficient information to understand the relationships between vegetation distribution and productivity, local climate, and soils within ecologic and / or management zones.

In 2004 a partnership was developed with the intent to improve the understanding of these factors and enhance efforts to:

- Protect sensitive-status plant species,
- Maintain and improve wildlife habitat
- Reduce soil erosion and sediment transport
- Maintain sustainable wild horse and burro populations
- Assist with fire restoration
- Improve processes that contribute to the evolution of landscape mosaics

Partnerships

This study has provided an opportunity for USFS, BLM, and USFWS to partner and collaborate with local science providers such as NRCS, USGS.

- This study has enhanced efforts produced by an Ecological Site Inventory (ESI) / Terrestrial Ecological Unit Inventory (TEUI) of the Spring Mountains, a joint effort between BLM and FS funded by the Clark County Multispecies Habitat Conservation Program (MSHCP).

Characterizing Soil Climate of the Spring and Sheep Mountains

Nominating Agencies:

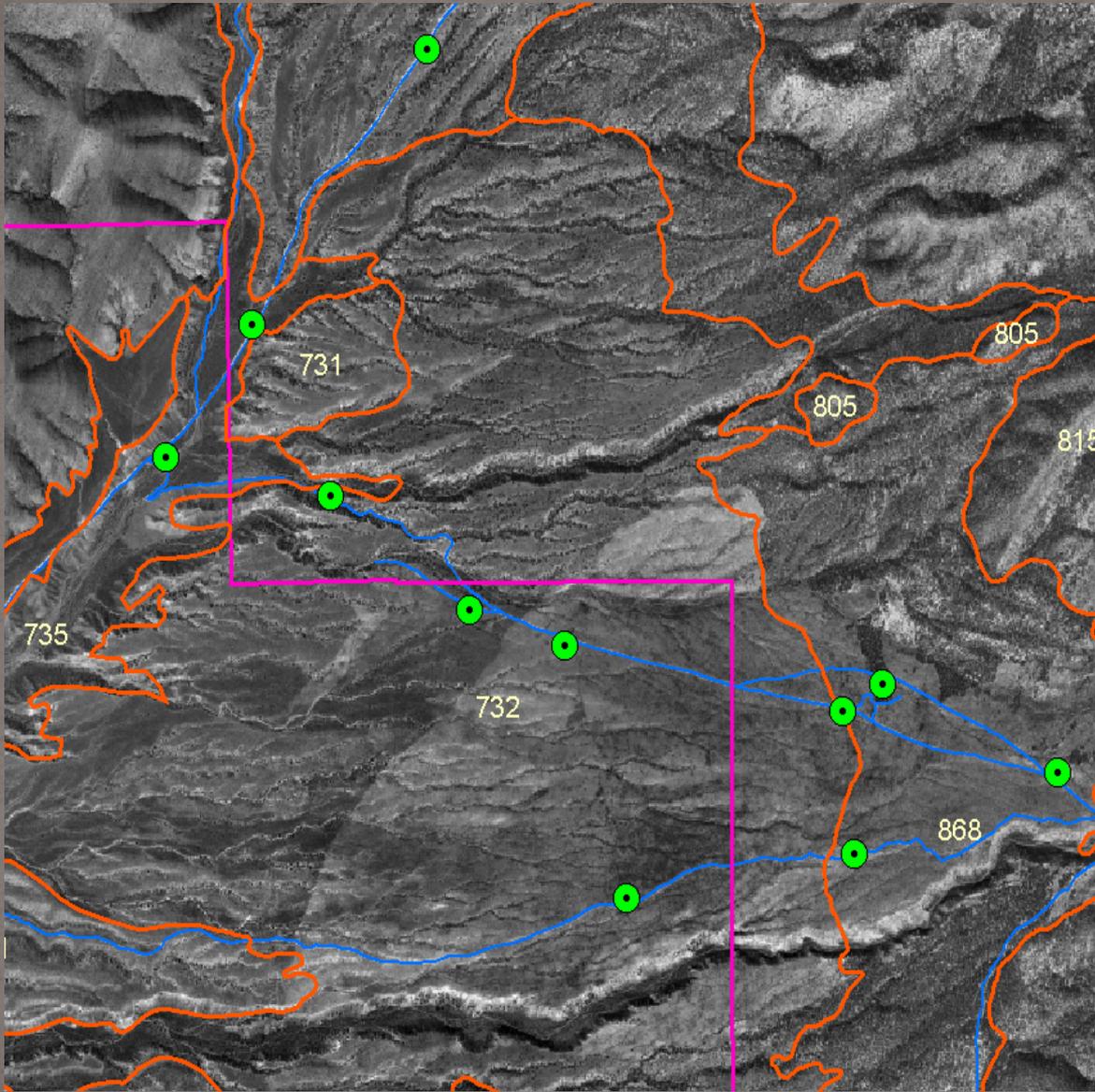
US Forest Service, Bureau of Land Management, Fish and Wildlife Service.



Partner Agencies:

Natural Resources Conservation Service, US Geological Service





One of the key objectives was to correlate mapped soils and vegetation to the local climate



Which includes placing the sites on benchmarked soil series with known geographic distributions... helping to establish edaphic relationships.

Loamy-skeletal, carbonatic, frigid pachic Calciustolls



Installed stations include

- 3 automated SNOTEL stations (NRCS)
- 6 Soil Climate Analysis Network (SCAN) stations (NRCS)
- 4 Evapotranspiration (ET)stations. (USGS)
-
- 6 Micrometeorological (HOBO) climate stations
- 4 NRCS temperature study plots (HOBO)

Soil Characterization



Complete characterization was done on all SCAN and SNOTEL station locations

Creosote / White Bursage



Creosote / Blackbrush



East side – 4026'



West side – 4228'

Blackbrush - Mesic soils



5330'

Pinyon – Juniper – Mesic soils



Westside – 6718'



Eastside – 6683'

Mixed conifer – Frigid soils



Bristlecone – Cryic and Frigid soils



Alpine



**Changes in Fire Regimes and
intensities**
Trough Springs Unburned

**Resulting in shifts in
vegetation**
Trough Springs burned



Trough Springs 2009 Soil Temp

Unburned

50 cm

MAST	9.19
MWST	3.34
MSST	14.14

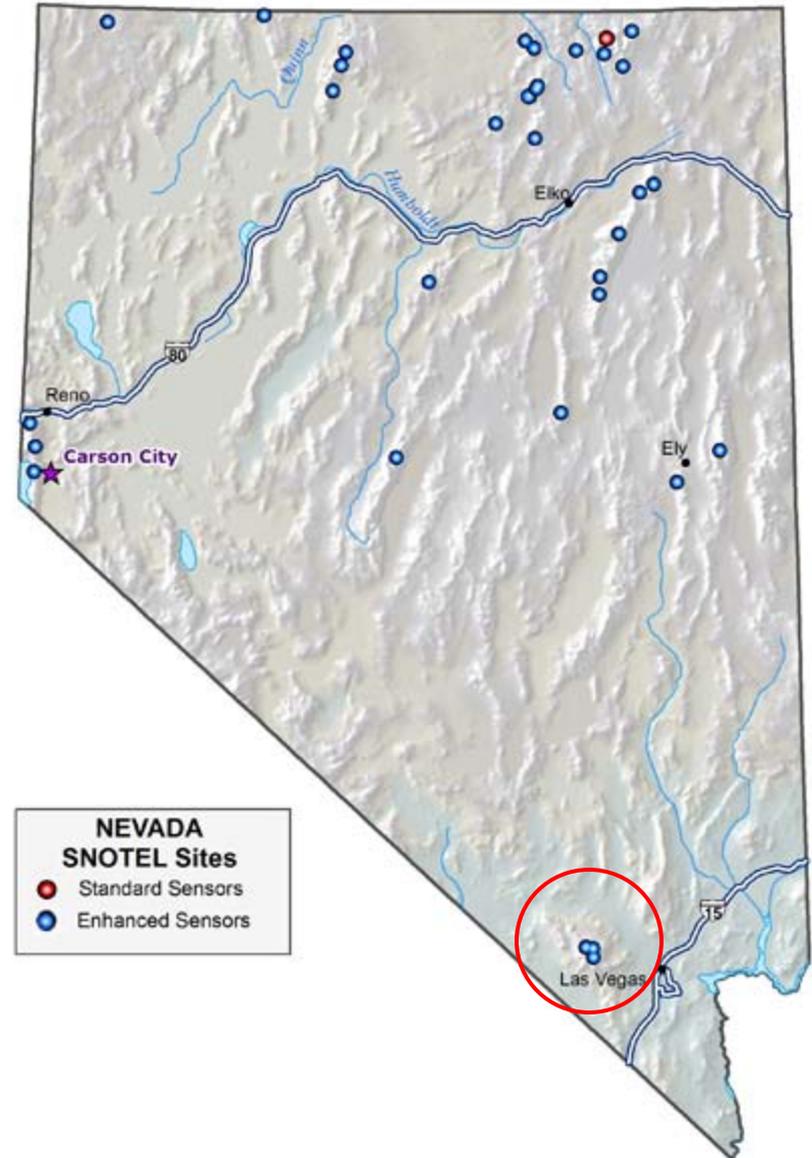
Burned

50 cm

MAST	10.05
MWST	3.75
MSST	15.07

Monitoring







CLIMATE CHANGE

- Drought, floods, and wide temperature fluctuations due to climate change can directly impact natural resource management through damage to forests and rangelands. Indirect effects of climate change include higher soil erosion rates, more invasive species, adverse impacts to sensitive plant and animal species, and changes in soil and vegetative relationships.
- The project in southern Nevada will improve understanding of relationships between vegetation distribution and productivity, local climate, and soils in one of the most biologically diverse ecosystems in the southwestern United States.

