NRCS National Resources Inventory (NRI) Rangeland Resource Assessment

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2014 NRI Rangeland Resource Assessment

- Overview
- Highlights of the Report
- Applications of the Data
Overview
409.1 million ac Rangeland
118.6 million ac Pastureland
56.1 million ac grazed Forest land

Total 583.9 million acres of non-Federal Grazing Land
NRI Grazing Land On-site Survey

• Part of the larger NRI

• On-site data collection (13 protocols)
  – Rangeland since 2003
  – BLM managed lands since 2011
  – Pastureland since 2013
  – 2013 first year with 48 state data collection.
Reports Using NRI Grazing Land On-Site Data


• 2011 RCA Appraisal (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044939.pdf)

• 2010 NRI Rangeland Resource Assessment (First national report)

• 2010 publication in Frontiers in Ecology and the Environment (http://naldc.nal.usda.gov/catalog/45178)
Sections of the 2014 NRI Rangeland Resource Assessment

• Regional Interpretations

• Rangeland Health

• Non-Native Plant Species

• Native Invasive Woody Species

• Bare Ground, Intercanopy Gaps, and Soil Aggregate Stability
Rangeland Data Analysis Team

• Multiagency team that produced the report
  – Patrick Flanagan (NRCS)  Lead/Statistics
  – Roni Lessard (NRCS)
  – Ken Spaeth (NRCS)  Scientists
  – Jeff Herrick (ARS)
  – David Pyke (USGS)
  – Loretta Metz (NRCS)  NRCS Divisions
  – Curtis Talbot (NRCS)
  – Gene Fults (NRCS)
  – Dean Oman (NRCS)  Cartography
  – Karl Musser (Paradigm Systems GIS, Inc.)
Highlights of the Report
Map Legend for the Sections

- **Rangeland Health Percent Acres**
  - Over 30
  - 20 - 30
  - 10 - 20
  - 10 or less
  - None
  - Insufficient reporting or point count (35 or less)

- **No on-site rangeland samples**

- **Federal areas**

- **Water bodies**

- **Major rivers**

- **State boundaries**
Range Health:

18.9% have health issues of moderate, moderate to extreme, or total departure from reference for at least one attribute.
<table>
<thead>
<tr>
<th>Rangeland Health Indicator</th>
<th>Rangeland Health Attribute</th>
<th>SSS</th>
<th>HF</th>
<th>BI</th>
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</thead>
<tbody>
<tr>
<td>1. Rills</td>
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<td>2. Water flow patterns</td>
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<td>3. Pedestals and/or Terracettes</td>
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<td>4. Bare ground</td>
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<td>5. Gullies</td>
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<td>6. Wind scoured, blowouts, deposition</td>
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<td>7. Litter movement</td>
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<td>8. Soil surface resistance to erosion</td>
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<td>9. Soil surface loss or degradation</td>
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<td>10. Plant community comp. and Dist.</td>
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<td>relative to infiltration and runoff</td>
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<td>11. Compaction layer</td>
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<td>12. Functional/structural groups</td>
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<tr>
<td>13. Plant mortality/decadence</td>
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<td>14. Litter amount</td>
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<tr>
<td>15. Annual aboveground production</td>
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<td>16. Invasive plants</td>
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<td>17. Reproductive capability of perennial plants</td>
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</table>
Non-Native Species

‘Present’ on 53.8% on non-Federal rangeland
Invasive annual Bromes are present on **30.1%**.

3% of these lands are covered with at least **50%** canopy of Brome over the soil surface.
Native Invasive Woody Species

Mesquite is present on 4.5% in areas where they were not part of the ESD’s reference condition.

Junipers/Cedars
Bare Ground, Inter-Canopy Gaps, Soil Aggregate Stability
Applications of the Data

Operationalize the principle of ‘Collect once, use many times’
NRI and Wind Erosion

- NRI provides all data necessary to run WEMO wind erosion model

- Predictions possible for areas (maps) and different land cover conditions

Sunday June 2, 2013: leading edge of dust storm arriving from feedlots, exurban development and degraded rangeland south of Las Cruces, NM
NRI and Climate Change Adaptation

- NRI is the only national dataset with field vegetation data linked to field-verified soils

- This allows climate change models to be run under a variety of future climate scenarios
NRI and Rangeland Hydrology and Erosion Model (RHEM)
Average Annual Water Erosion Rates on Western Rangelands
NRI and Conservation Effects Assessment Project (CEAP)

Process-based models (APEX, SWAT) create different scenarios for multiple states within a state-and-transition model and conservation practices to inform policy on:

- Water capture, storage, release
- Forage Production
- Soil Loss
- Wildlife habitat suitability
- Grazing Duration
- Ecosystem Services
NRI and Ecological Site Description development tables

- Tables of NRI rangeland on-site data are from the same protocols as those used for Ecological Site Descriptions (ESD) Development.

- Data are used in conjunction with NASIS Soils Data collected at the sample sites.

- Forage Suitability Groups (FSG) development tables on Pasture.
NRI and Sage-grouse Habitat:
Sagebrush shape; Gaps; Invasive Annual Grasses

- Cheatgrass cover increases
  - as large gaps (≥ 200 cm) between perennial plants increase
  - as lichen and moss cover decreases
  - and as bare ground increases.
- Sagebrush shape columnar or spreading
Much appreciation to the Nation’s Private Landowners for permission to enter their properties!

Questions/Comments