Rangeland and Forage Conditions in the Great Basin

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April 1, 2012

- Snowpack
- Streamflow
- Precipitation

Lake Tahoe, Truckee River, Carson River, Walker River, Northern Humboldt River, Lower Humboldt River, Clover Valley/Franklin R, Snake River, Owyhee River, Eastern Nevada, Lower Colorado River
### U.S. Drought Monitor

#### Nevada

#### Drought Conditions (Percent Area)

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>D0-D4</th>
<th>D1-D4</th>
<th>D2-D4</th>
<th>D3-D4</th>
<th>D4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current</strong></td>
<td>0.13</td>
<td>99.87</td>
<td>93.43</td>
<td>51.31</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td><strong>Last Week</strong></td>
<td>0.42</td>
<td>99.58</td>
<td>93.15</td>
<td>50.95</td>
<td>0.00</td>
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<tr>
<td><strong>(03/27/2012 map)</strong></td>
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<tr>
<td><strong>3 Months Ago</strong></td>
<td>18.18</td>
<td>81.82</td>
<td>32.97</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td><strong>(01/03/2012 map)</strong></td>
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<tr>
<td><strong>Start of Calendar Year</strong></td>
<td>25.74</td>
<td>74.26</td>
<td>4.90</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td><strong>(12/27/2011 map)</strong></td>
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<tr>
<td><strong>Start of Water Year</strong></td>
<td>89.92</td>
<td>10.08</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td><strong>(09/27/2011 map)</strong></td>
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<tr>
<td><strong>One Year Ago</strong></td>
<td>100.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td><strong>(03/29/2011 map)</strong></td>
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</tbody>
</table>

#### Intensity:
- Yellow: D0 Abnormally Dry
- Red: D3 Drought - Extreme
- Orange: D1 Drought - Moderate
- Brown: D4 Drought - Exceptional
- Brown: D2 Drought - Severe

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu

**Released Thursday, April 5, 2012**

Brian Fuchs, National Drought Mitigation Center
Objective Short-Term Drought Indicator Blend Percentile

March 31, 2012

Percentile (D0-to-D4 equivalent)

- 0 to 2 (D4)
- 2 to 5 (D3)
- 5 to 10 (D2)
- 10 to 20 (D1)
- 20 to 30 (D0)
- 30 to 70
- 70 to 80
- 80 to 90
- 90 to 95
- 95 to 98
- 98 to 100

Inputs (as percentiles):
35% Palmer Z-Index

This map approximates impacts that respond to precipitation over a few months, such as agriculture, topsoil moisture, unregulated reservoir water level, and streamflow.
Fig. 1. Scatter diagram for mature crested wheatgrass yield (unfertilized) against September to May, inclusive precipitation. Circled values are years 1958 and 1969.
Community Growth Curve

A line graph showing the percent growth per month for different plant species, labeled as Salt Desert Shrub, Wyoming BS, Mtn Big Sage, Meadow, and Aspen. The growth peaks in different months for each species, with some species showing a higher growth rate in earlier months compared to others.
General Maturity Dates Among Grasses

- Columbia needlegrass
- Letterman's needlegrass
- Basin Wildrye
- Bluebunch Wheatgrass
- Idaho Fescue
- Thurber’s needlegrass
- Indian ricegrass
- Bottlebrush squirreltail
- Sandberg’s bluegrass

Average Maturity Date
- May 15
- June 1
- June 15
- July 1
- July 15
STREAM TYPES

• **PERENNIAL** - a stream that flows continuously

• **INTERMITTENT OR SEASONAL** - a stream that flows only at certain time of the year

• **EPHEMERAL** - a stream that flows only in direct response to precipitation
Drought Management Principles

During a drought:
- Put top priority on recovery after the drought
- Cull those animals with the least reproductive potential
- Curtail replacement animal development
- Sell light offspring earlier than normal
- Budget and then purchase feed
  - Feed (if necessary) in a drylot so plants can grow
    - then be grazed
Drought Management Principles

Leave adequate forage to provide a reserve for the inevitable drought - Store feeds while plentiful and inexpensive

Healthy vigorous perennial grasses with a good root system maintain production longer into a drought and recover more quickly

Grazing plants when stressed and especially grazing in a stressful manner (heavy use or repeated growing season use) impacts recovery
Drought Management Principles

During a drought:
Put top priority on recovery after the drought

Cull those animals with the least reproductive potential

Curtail replacement animal development

Sell light offspring earlier than normal

Budget first and then purchase feed if needed

Feed (if necessary) in a drylot so plants can grow then be grazed
Drought Management Principles

A drought plan identifies flexibility for:
forage use,
livestock numbers,
livestock classes,
marketing strategies

Maintain a percentage of the herd as a readily marketable class of stock
Drought Management Principles

Light rains are more effective if some litter and plant residues remain.

Ensure adequate water for livestock.

Develop a water plan and then a grazing plan.
Drought Management Principles

Graze annuals very early or after perennials dormant

Distribute livestock evenly to use available forage

Concentrate more animals into a single herd to better use less preferred plants
Drought Management Principles

During a drought:

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Nevada Rangeland Monitoring Handbook
Second Edition

Educational Bulletin 06-03
Weather Data – Weather is the most important single factor influencing variation in forage production. When properly recorded, weather data are an essential part of both short-term monitoring and long-term interpretation.

Monitoring records should include notes on the location of significant occurrences and impacts. It can also be informative to read existing long-term studies following an insect or disease episode to document the effects and rate and patterns of recovery.

Use Mapping – Mapping of areas for proportions of the annual production that has been consumed or destroyed by animals is one of the most important tools in grazing management for short-term monitoring. Use mapping helps to establish key areas, identify distribution problems and solutions, develop objectives and grazing plans, locate range improvements, and make adjustments in management plans. The utilization map for an allotment or pasture can help range managers determine whether or not the grazing plan is functioning as designed. The map can identify and indicate the relative extent of areas underused, overused, and properly used. Problem areas can be identified for closer study to determine causes and potential solutions. Photographs and/or Global Positioning System (GPS) points at use areas may be taken to display utilization levels at certain locations.

Making and regularly updating utilization maps is a joint responsibility of rangeland managers and livestock operators. It is also essential for adaptive management. This process helps them become familiar with the allotment. These periodic visits and observations help identify needed adjustments in grazing plans. Adjustments might be in the form of new or relocated water developments, fences or salt grounds, or changing the intensity of grazing by modifying livestock numbers or the season or length of use period. An approach to use mapping is discussed in Appendix H and in Utilization Studies and Residual Measurements (BLM 1999b).
Principles of Obtaining and Interpreting Utilization Data on Southwest Rangelands

Lamar Smith\(^1\), George Ruyle\(^2\), Jim Maynard\(^3\), Steve Barker\(^4\), Walt Meyer\(^5\), Dave Stewart\(^6\), Bill Coulloudon\(^7\), Stephen Williams\(^8\) and Judith Dyess\(^9\)

Introduction

Utilization has been an important “tool” in range management since its beginnings. On the surface the concept appears simple, referring to the percentage of current forage removed by grazing animals or the amount of residual vegetation left after grazing. In reality it is complex in concept and in practice, and there has long been controversy over its proper application. There is a large body of information published over the past 75 or more years on methods of measuring utilization and its proper interpretation in rangeland management.

In spite of all the research and discussion on the topic, there is still concern in the range profession that utilization measurement and interpretation is often done inappropriately. Scharrerchek (1999) concluded that the utilization concept is fundamentally flawed and should be discarded, although he offered no practical alternative to it. Part of the problem may be that procedures established for employing utilization data to manage livestock grazing have been extended to issues for which they were not developed. Another aspect may be that and accepted by the range management profession. This discussion is not intended to justify or support utilization guidelines. Rather, it is meant to clarify how and when utilization can be used in the management of southwestern rangelands for livestock grazing.

Percentage utilization will be emphasized rather than stubble height or residual measurements. While related, stubble height estimates are not necessarily a substitute for utilization and the two concepts are different ecologically (Interagency Technical Reference 1999). Stubble height may be related to two primary processes of concern. One is the effect of grazing on the physiological response of the individual plant. The other is the effect of residual vegetation in protecting the soil from wind or water erosion. Use of stubble heights in riparian areas has recently been addressed in another publication (Univ. Idaho Stubble Height Review Team 2004). Likewise, residual measurements have largely focused on soil protection and to provide the proper vegetation environment during the following growing season.
Stocking rate studies are based on average stocking rate and the utilization over a period of years. Utilization in any given year may be substantially higher or lower under the same stocking level by pasture or allotment. As Holechek et al. (1999) describe in a review of stocking rate studies, “Desert forage plants can sustain about 40% use of annual herbage production. Use in the drought years approached 55-60% while use in the wet years was near 20-25%. Recommendations derived from grazing studies are averages resulting from such variability and are intended to be met over the long term and not on a year to year basis.” Holechek and Galt (2000) go on to say, “…attainment of specific use levels is nearly impossible on a year-to-year basis due to variation in climate. Instead, we believe they should be a target across 5-10-year time periods.”