

# National Resources Inventory Rangeland Resource Assessment



## Regional Interpretation

### Other (California annual grasslands and Florida)

October 2010

#### About the Data

Estimates presented here are based upon rangeland data collected on-site as part of the National Resources Inventory (NRI). Rangeland is defined by the NRI as a *Land cover/use* category on which the climax or potential plant cover is composed principally of native grasses, grass-like plants, forbs, or shrubs suitable for grazing and browsing, and introduced forage species that are managed like rangeland. This includes areas where introduced hardy and persistent grasses, such as crested wheat-grass, are planted and such practices as deferred grazing, burning, chaining, and rotational grazing are used, with little or no chemicals or fertilizer being applied.

**Overview:** The California annual grasslands and Florida are unique for different reasons. The California annual grasslands represent an area where a group of non-native plant species (primarily annual grasses) have replaced the pre-European settlement plant communities, which included perennial grasslands, savannas, and woodlands with a perennial grass-dominated understory. These areas are now dominated by and managed as annual grasslands. There is continuing debate about the extent to which the original plant communities can be restored, and in which parts of the original distribution of these plant communities is there potential for restoration. The challenge of assessing, monitoring, and managing land that has crossed an ecological threshold in California is similar to that encountered in many other parts of the country where native plant communities have been replaced by functionally and structurally different communities dominated by invasive species that may be either native or non-native. California is unique because of the spatial extent of the transformation.

Florida is unique because of the dominance of its rangelands by sub-tropical grasslands, relatively high precipitation, high water tables, flat topography, and sandy soils. Consequently, hydrologic function indicators that are important for reflecting changes in infiltration and runoff in the other regions are much less sensitive in Florida. Modification of near-surface hydrology associated with depth to shallow water tables and length of inundation periods is poorly reflected in this assessment. Similar limitations apply to hydrologic function assessments in Louisiana coastal marshes. Whereas changes in the composition and productivity of plant communities in most rangelands in the Intermountain and

Grasslands, savannas, many wetlands, some deserts, and tundra are considered to be rangeland. Certain communities of low forbs and shrubs, such as mesquite, chaparral, mountain shrub, and pinyon-juniper, are also included as rangeland.

These results are based upon NRI rangeland data collected in the field on rangeland during the period 2003-2006. Current estimates cover non-Federal rangeland in 17 western states (extending from North Dakota south to Texas and west) and to a limited extent in Florida and Louisiana.

Quality assurance and statistical procedures are designed/developed to ensure data are scientifically legitimate. Irrespective of the scale of analysis, margins of error must be considered. Margins of error (at the 95 percent confidence level) are presented for all NRI estimates.

Southwest regions are significantly affected by soil and vegetation factors that affect water infiltration and runoff, the flat, sandy soils of Florida experience little runoff.

Unique characteristics of California annual grasslands and Florida limit the ability to apply and interpret assessments of the three rangeland health attributes, albeit in slightly different ways. In the case of California, continuing debate about the reference conditions to be used for evaluations, and incomplete implementation of ecological sites prevented development of the ecological site-specific reference sheets necessary to carry out the evaluations. In the case of Florida, the qualitative evaluation protocol has not been well tested and may need refinement to meet the needs of a sub-tropical system. In both cases, however, the quantitative indicators provide an appropriate and useful baseline for future monitoring.

**Soil and Site Stability:** Soil and site stability (Figure 1) was virtually unchanged from potential in Florida. The flat landforms and coarse sandy soils found in most of the state make this area highly resistant to degradation, while high levels of plant production facilitate rapid recovery where degradation does occur. Low soil aggregate stability values (Figure 2) were recorded on some plots largely because coarse sandy soils have low potential stability. In California, the quantitative indicators of soil stability all reflected the effects of high annual cover and litter accumulation in the absence of recent fire or extreme drought; there was little bare ground (Figure 3) and soil aggregate stability values were high and few plots had large intercanopy gaps.

### About the Protocols

The findings presented here are derived using data collected for three field protocols:

**Rangeland health** data are used to assess three broad attributes (soil and site stability, hydrologic function, and biotic integrity). Data collectors compare biological and physical characteristics of the sample site and record degrees of departures from reference conditions based on comprehensive materials describing the ecological site.

**Line point intercept** data are utilized in summaries of non-native plant species, non-native invasive herbaceous species, native invasive woody species, and bare ground. Line point intercept data are collected along two intersecting 150-foot transects centered on each sample location. Data collectors record plant species, litter, lichen,

Figure 1. Non-Federal rangeland where soil and site stability shows at least moderate departure from reference conditions

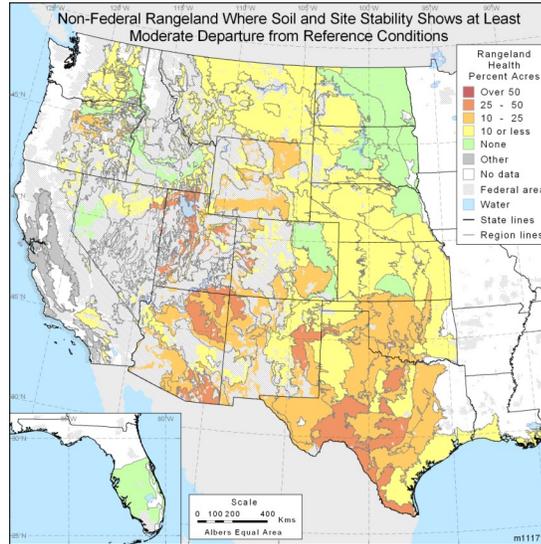
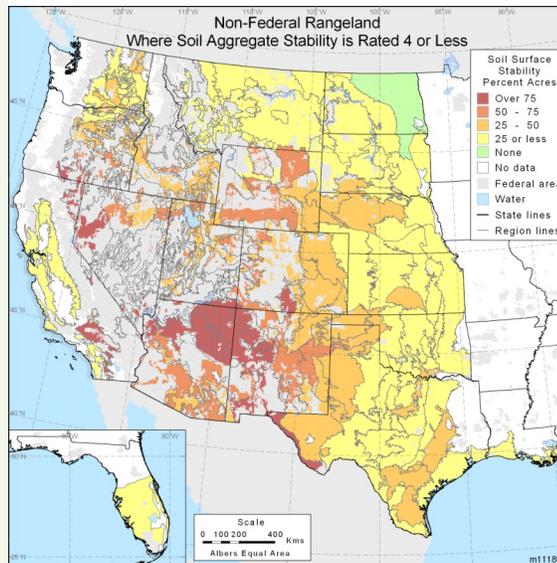


Figure 2. Non-Federal rangeland where soil aggregate stability rating is rated 4 or less indicating unstable soil



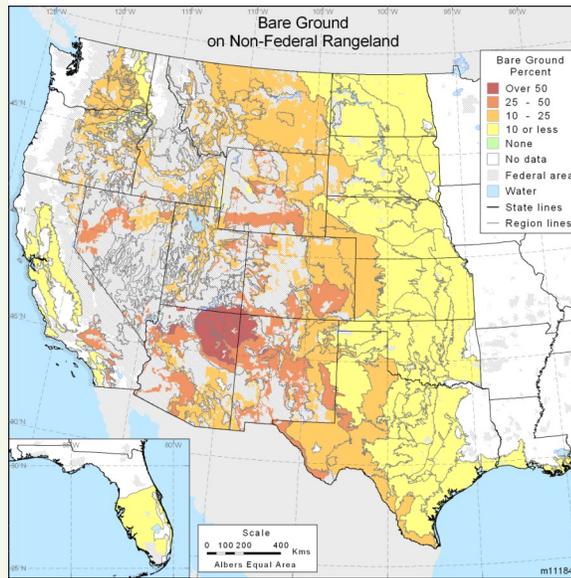
moss, rock fragment, bedrock, and/or bare soil present at each 3-foot interval.

**Soil aggregate stability** is a recognized indicator of soil quality and rangeland health. Data collectors immerse soil surface peds collected at the sample site in water and subject the soil peds to five dipping cycles. Soil stability is rated based on the outcomes of these water exposure techniques. Ratings range from 1 (very unstable) to 6 (very stable).

### About the Maps

The maps are constructed with NRI rangeland data collected in the field on rangeland during the period 2003-2006. The mapping regions are based on Common Resource Area (CRA) boundaries; in some cases CRAs were combined to include more sample sites. Regions without

Figure 3. Bare ground on non-Federal rangeland



**Hydrologic Function:** The qualitative assessment of hydrologic function (Figure 4) in Florida showed no significant departure from potential. This landscape is relatively resistant to the types of hydrologic degradation that are reflected in the indicators included in the evaluation. For the most part, however, these indicators appear to be less sensitive to changes in near-surface hydrology that are critical for the maintenance of these ecosystems. In California, the quantitative indicators of hydrologic function again reflect the positive effects of high annual plant cover on ground cover during most years, but are not sensitive to changes in hydrologic function associated with the changes in the soil profile following conversion from a perennial- to an annual-dominated system.

non-Federal rangeland are described as “No data”. Areas of Federal land are depicted with cross-hatching. Legend categories differ by map theme (e.g., rangeland health, invasive plant species, etc.)

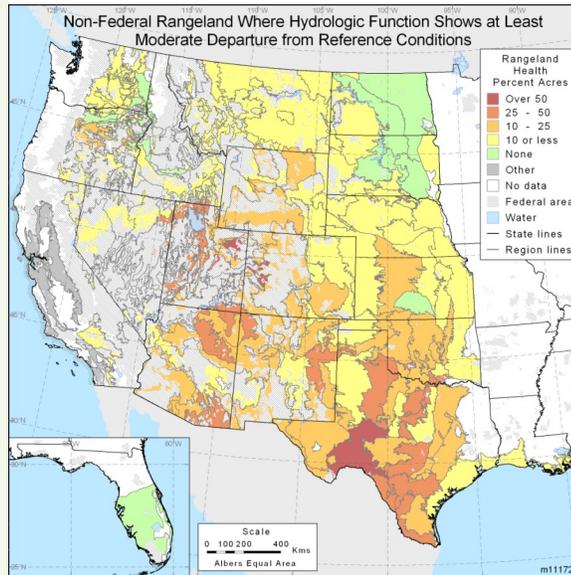
### Rangeland Health Maps

The rangeland health maps present the percent by classes (none, <10%, 10-25%, 25-50%, and >50%) of non-Federal rangeland where rangeland health attributes have at least moderate departures from the reference conditions. An additional category, referred to as “Other”, represents areas for which the ecological site descriptions are under development and there is no reported rangeland health data.

### Non-Native Plant Species Maps

These maps display the percent by classes (None, 25% or less, 25-50%, 50-75%, and over 75%) of non-Federal

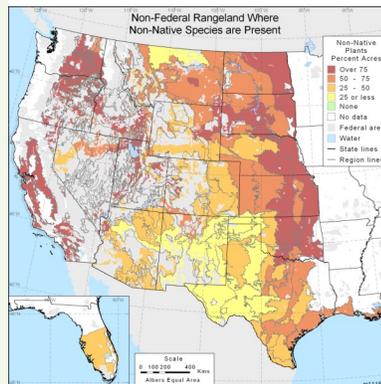
Figure 4. Non-Federal rangeland where hydrologic function shows at least moderate departure from reference conditions



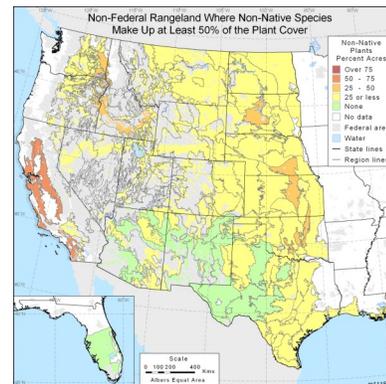
**Biotic integrity:** Non-native species (Figures 5-6) and shifts in the relative proportion of native plants have led to significant changes to plant communities on some areas of Florida’s rangelands, resulting in a reduction in biotic integrity (Figure 7). In California, the quantitative indicators of plant community composition reflect the virtually complete conversion of these rangelands to dominance by exotic species.

Figures 5-6. Non-Federal rangeland where non-native species are present and where they make up at least 50 percent of the plant cover

#### 5. Present



#### 6. At least 50% of plant cover



rangeland where non-native plant species are present or make up at least 50 percent of the plant cover.

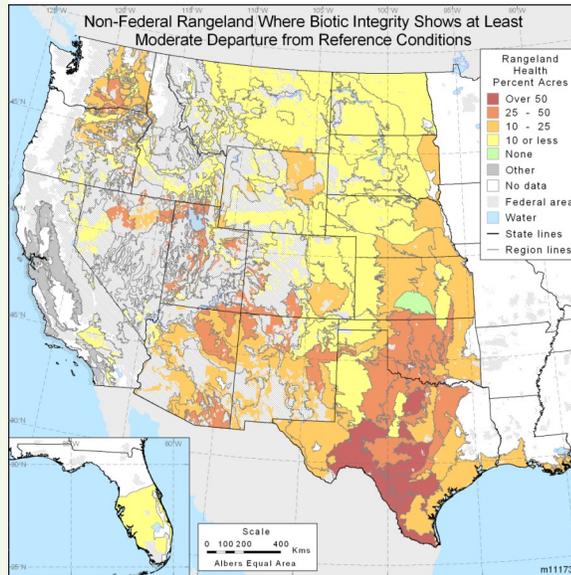
### **Bare Ground Map**

The bare ground and canopy gap map presents the percent by classes (none, 10% or less, 10-25%, 25-50%, over 50%) of non-Federal rangeland for the proportion of bare ground.

### **Soil Aggregate Stability Maps**

The soil aggregate stability maps present the percent by classes (none, 25% or less, 25-50%, 50-75%, over 75%) of non-Federal rangeland where soil aggregate stability ratings are 4 or less, indicating less stable soil.

Figure 7. Non-Federal rangeland where biotic integrity shows at least moderate departure from reference conditions



### **More Information**

For more information about the NRI, visit <http://www.nrcs.usda.gov/technical/NRI/>

Send comments and questions to the NRI Help Desk ([nri@wdc.usda.gov](mailto:nri@wdc.usda.gov)).