Regional Interpretation - Other (California annual grasslands and Florida)

The California annual grasslands and Florida (Figures 1-2) 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 pre-European historic plant communities that included perennial grasslands, savannas, and woodlands with a perennial grass-dominated understory. Restoration of the original vegetation in the drier regions of the annual grassland is difficult as invasive exotic species are now ubiquitous and native grass and forb species occur in trace amounts. The annual grasslands are now dominated by and managed as annual grasslands. There is continuing debate about the extent to which original plant communities can be restored, since reseeding of perennial grasses is difficult due to erratic temperatures, low rainfall, competitiveness of annual grasses, and the availability and cost of native species (Daehler 2003; Moyes et al. 2005). The challenge of assessing, monitoring, and managing land that has crossed an ecological threshold in annual grasslands is similar to that encountered in many other parts of the country where native plant communities have been replaced by functionally and structurally different invasive species that may be either native or non-native. California is unique because of the spatial extent of the transformation.

Rangeland vegetation in Florida is unique because of the dominance of sub-tropical grasslands, long growing season, relatively high precipitation, high water tables, flat topography, and sandy soils. Consequently, hydrologic function indicators that are important for reflecting changes in surface hydrology in the other four regions are less sensitive and informative in Florida. Modification of near-surface hydrology associated with depth to shallow water tables and length of inundation periods, especially on the Kissimmee River where installation of flood protection drainage systems lowered rangeland water tables regionally, is poorly reflected in this protocol. Similar limitations apply to hydrologic function assessments in Louisiana coastal marshes. Whereas changes in the composition and productivity of plant communities in most rangeland in the Intermountain and 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.

Figure 1. Broad Regions Described in these Interpretations.

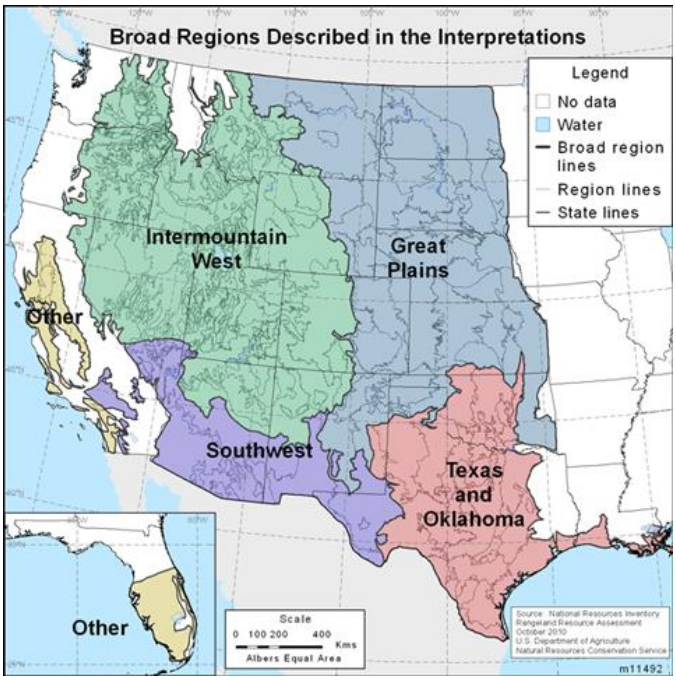
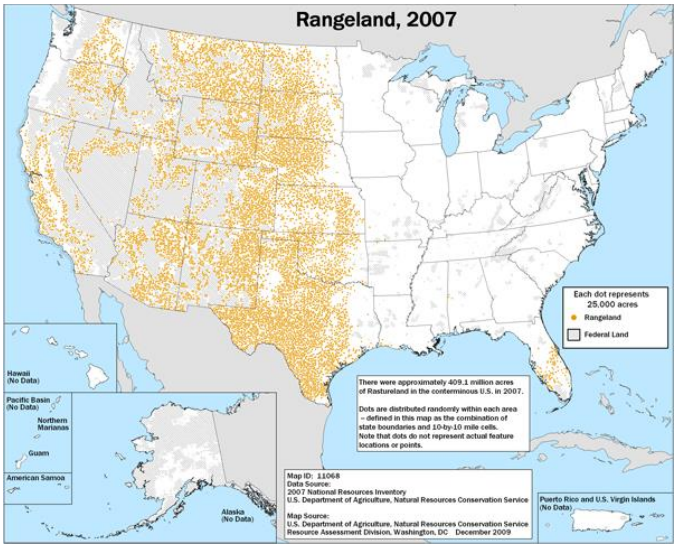


Figure 2. Acres of Non-Federal Rangeland, 2007.



The 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 subtropical system.

In both cases, however, the quantitative indicators provide an appropriate and useful baseline for future monitoring.

Soil and Site Stability

In Florida, soil and site stability (Figure 3) is virtually unchanged from potential. 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 6) were recorded on some plots largely because coarse sandy soils have low potential stability.

In California, the high proportion of non-native species (Figures 7-8) has made it difficult to describe reference conditions used to evaluate the rangeland health assessments. Annual grasslands are dominated by exotic annual grass species such as annual bromes (*Bromus* spp.; Figure 9) and medusahead wildrye (*Taeniatherum caput-medusae* (L.), Figure 10). Much of California rangeland exhibit 20% or less bare ground. However, a portion of the Mojave Basin and Range and southern California Mountains show 20 percent and higher bare ground over on 10 to 25% of the non-Federal rangeland (Figures 11-14). The higher proportion of non-Federal rangeland with large inter-canopy gaps and at least 50% bare ground within those gaps (Figures 15-16) and low soil aggregate stability values (Figure 6) in these areas make them more vulnerable to erosion.

Hydrologic Function

The qualitative assessment of hydrologic function (Figure 4) in Florida showed no significant departure from reference conditions. This landscape is relatively resistant to the types of hydrologic degradation that are reflected in the indicators included in the evaluation.

In California, the quantitative indicators of hydrologic function 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.

Biotic Integrity

In Florida, non-native species (Figures 7-8) and shifts in the relative proportion of native plants have led to significant changes on some areas of rangeland, resulting in a reduction in biotic integrity (Figure 5). In California, the quantitative indicators of plant community composition reflect the virtually complete conversion of these rangelands to dominance by exotic species.

Figures 3-5. Non-Federal Rangeland Where Soil and Site Stability, Hydrologic Function, or Biotic Integrity Show at Least Moderate Departure from Reference Conditions. (Source: Rangeland Health Table 2)

Figure 3. Soil and Site Stability

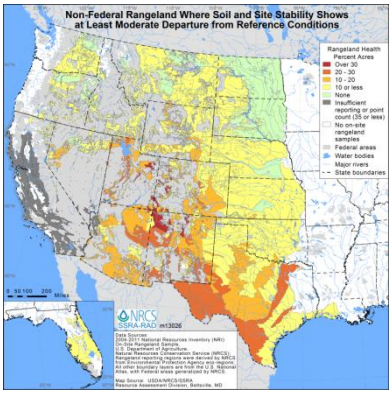


Figure 4. Hydrologic Function

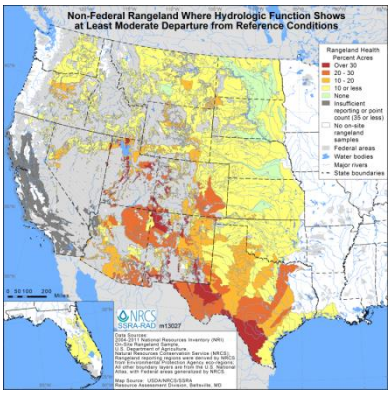


Figure 5. Biotic Integrity

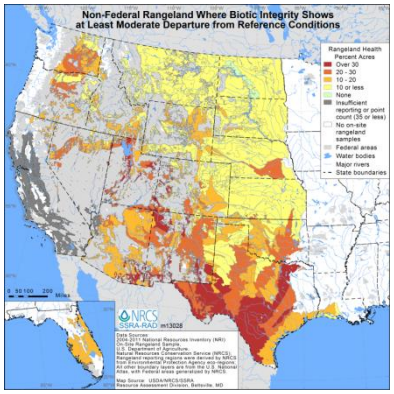
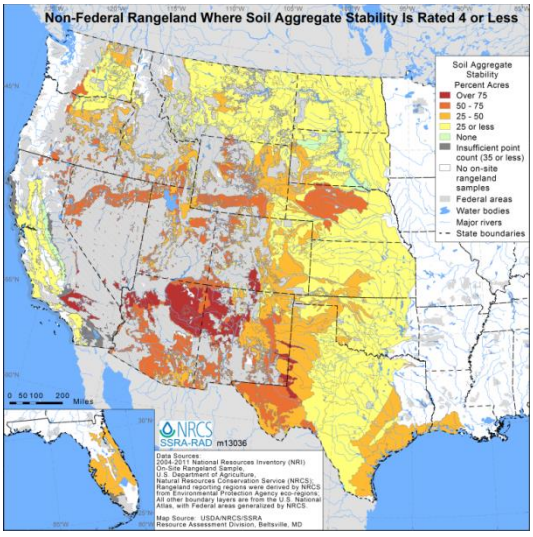


Figure 6. Non-Federal Rangeland Where Soil Aggregate Stability is 4 or Less Indicating Less Stable Soil. (Source: Bare Ground, Inter-Canopy Gaps, and Soil Aggregate Stability Table 4)



Figures 7-8. Non-Federal Rangeland Where Non-native Plant Species Are Present and Where They Cover at Least 50 Percent of the Soil Surface. (Source: Non-Native Plant Species Table 2)

Figure 7. Present

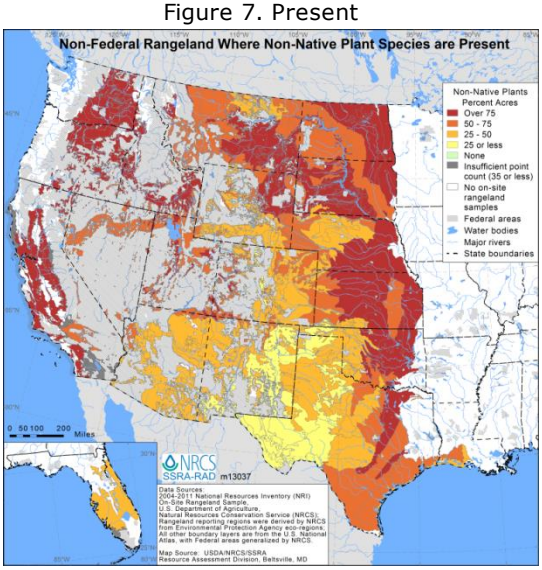
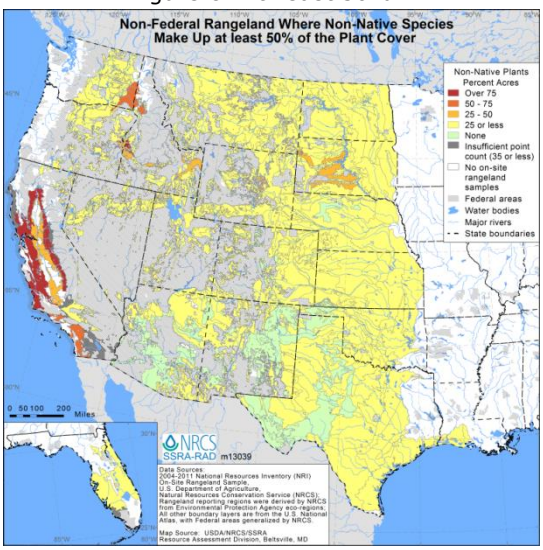


Figure 8. At Least 50%



Figures 9-10. Non-Federal Rangeland Where Annual Bromes or Medusahead Are Present. (Source: Non-Native Plant Species Tables 1, 3 and 7)

Figure 9. Annual Bromes

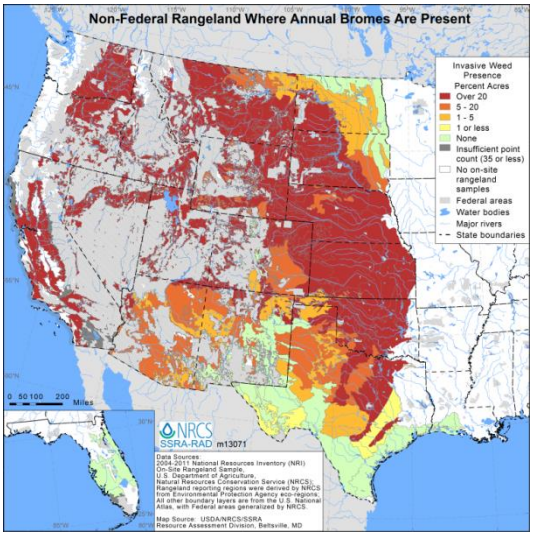
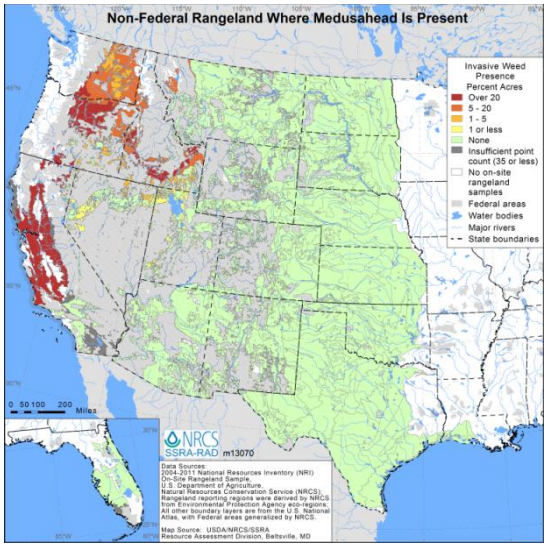


Figure 10. Medusahead



Figures 11-14. Non-Federal Rangeland that is at Least 20, 30, 40, or 50 Percent Bare Ground (Source: Bare Ground, Inter-Canopy Gaps, and Soil Aggregate Stability Table 2)

Figure 11. At Least 20%

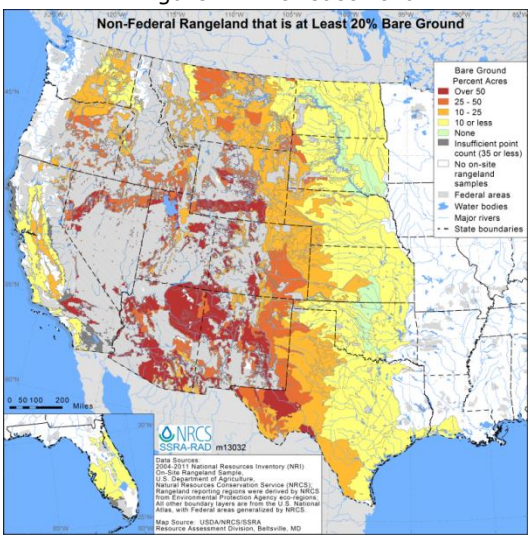


Figure 12. At Least 30%

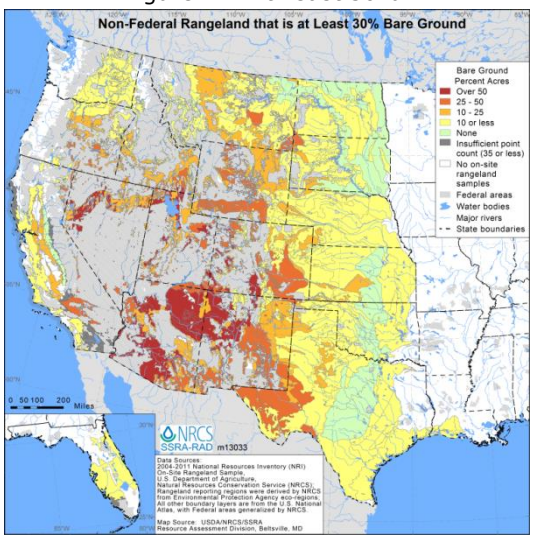


Figure 13. At Least 40%

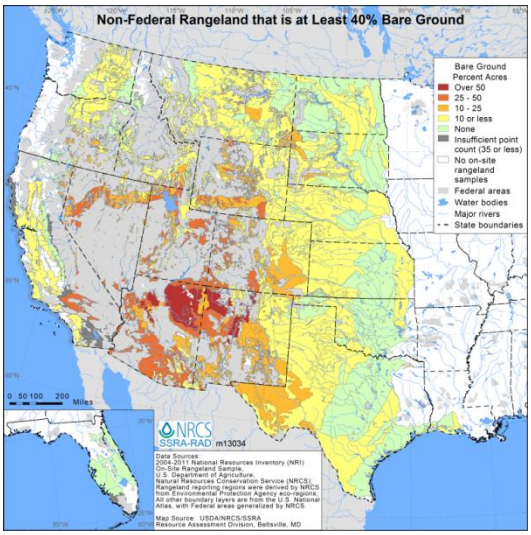
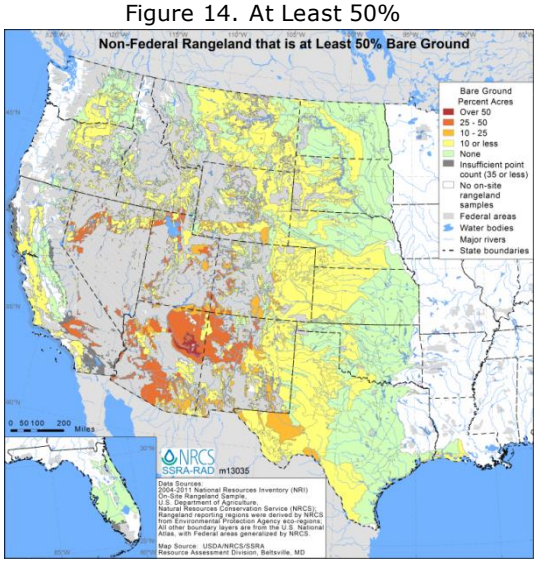


Figure 14. At Least 50%



Figures 15-16. Non-Federal Rangeland Where Canopy Gaps of at Least 1 or 2 Meters Account for at Least 20 Percent of the Land and Inter-Canopy Gaps are at Least 50% Bare Ground (Source: Bare Ground, Inter-Canopy Gaps, and Soil Aggregate Stability Table 3)

Figure 15. 50% Bare Ground in Gaps of at Least 1 Meter

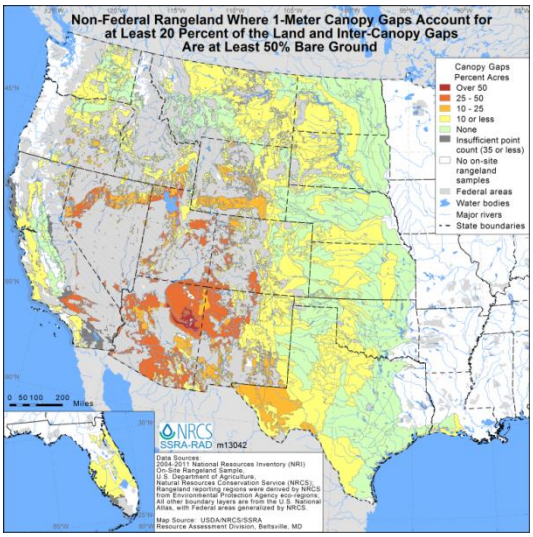
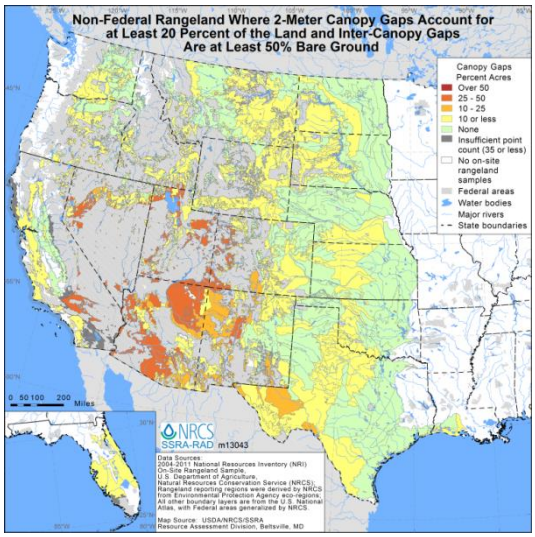


Figure 16. 50% Bare Ground in Gaps of at Least 2 Meters



More Information

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Moyes A.B, Witter M.S, and Gamon J.A. (2005). Restoration of native perennials in a California annual grassland after prescribed spring burning and solarization. Restoration Ecology 13(4), 659-666.

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