

**Rangeland Ecological Site Manual**  
**DRAFT**  
(6/18/2007)

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## SECTION 1.0 GENERAL

Although all lands are included in the spatial scope of ecological sites, this policy is specific to rangeland ecosystems and pertains only to ecological sites on rangelands regardless of their current vegetation or land use.

## SECTION 2.0 PURPOSE

The Bureau of Land Management (BLM), Forest Service (FS), and Natural Resource Conservation Service (NRCS) have a common objective of utilizing science-based technical processes to sustain and enhance natural resources and the environment. These agencies have utilized different methods to stratify rangeland ecosystems into units for planning, analysis and decision making. Since private and public lands under these agencies' jurisdictions are intermingled throughout much of the United States, a standardized system to define and describe rangeland ecological sites is more efficient and defensible.

Implementation of this policy will complement existing agency protocols for the inventory of soil and ecosystems. It will facilitate the stratification of rangeland landscapes according to their ability to respond similarly to ecological stressors. The BLM, FS and, NRCS will work cooperatively with other Federals, State and local agencies, organizations, universities and academia to further develop and implement this Rangeland Ecological Site Manual.

## SECTION 3.0 AUTHORITIES

### 1. Bureau of Land Management (BLM)

#### A. Legal Authorities

- The Taylor Grazing Act (TGA) of 1934 (USDI-BLM 1967).
- The Federal Land Policy and Management Act (FLPMA) of 1976, as amended, which is the Bureau of Land Management "organic act" (USDI—BLM and Office of the Solicitor 2001).
- The Public Rangelands Improvement Act (PRIA) of 1978

#### B. Policies and Manuals

- BLM Handbook 4410-01, National Range Handbook Update, Release 4/81, 7/12/84
- BLM Handbook 4410-01, National Range Handbook Update, Release 4-101, 5/25/90
- NRCS National Range and Pasture Handbook, revised 2003

### 2. Forest Service (FS)

#### A. Legal Authorities

- The Forest and Rangeland Renewable Resources Planning Act of 1974 (P.L. 93-378, 88 Stat. 476, as amended; 16 U.S.C. 1601 (Note), 1600—1614 and the National Forest Management Act of 1976 (P.L. 94-588, 90 Stat. 2949, as amended; 16 U.S.C. 472a, 476, 500, 513-516, 518, 521b, 528 (Note), 576b, 594-2 (Note), 1600 (Note), 1601 (Note), 1600-1602, 1604, 1606, 1608-1614). (*Cited in FSH 1909.14, draft FSM 1940.01, FSM 2060.1, Cited FSM 2201.1, FSM 2550.1, FSM 2601.1*).

- Public Rangelands Improvement Act of 1978 (P.L. 95-514, 92 Stat. 1806; 43 U.S.C. 1752-1753, 1901-1908; 16 U.S.C. 1333(b)). (*Referenced in FSH 1909.14, draft FSM 1940, FSM 2060.1, Cited FSM 2201.1, FSM 2550.1, FSM 2601.1*).

**B. Policies and Manuals**

Forest Service policy, implementation direction, definitions, standards, and protocols are outlined in the Forest Service Manual (FSM), Forest Service Handbooks (FSH), and Technical Guides.

- FSM 2060 Ecosystem Classification, Interpretation, and Application
- FSH 2090.11 Ecological Classification and Inventory Handbook, Forest Service Handbook
- FSH 1909.14 Resource Inventory Handbook

**3. Natural Resources Conservation Service (NRCS)**

**A. Legal Authorities**

- Soil Conservation and Domestic Allotment Act (Public Law 74-46), April 27 1935
- Secretary of Agriculture Memorandum 1396, April 10, 1956
- Rural Development Act of 1972 (Public Law 92-419, Section 302)
- Soil and Water Resources Act of 1977 (Public Law 95-192 Sections 2.3. and 5)

**B. Policies and Manuals:**

- General Manual 450 Parts 401.3 and 401.6
- USDA Policy on Rangeland 9500-5
- NRCS National Range and Pasture Handbook, revised 2003

**SECTION 4.0 OBJECTIVES**

1. To implement a standardized system to define and describe a common unit for inventory, evaluation, and management of rangeland ecosystems.
2. To provide direction for cooperative development and application of rangeland ecological site descriptions.

**SECTION 5.0 POLICY**

FS, NRCS, and BLM will:

1. Cooperatively identify and define ecological sites for use in the inventory, evaluation, and management of the Nation's rangelands.
2. Establish an interagency workgroup to develop and recommend policy and procedures for data management, quality control, quality assurance, review, development, and approval of rangeland ecological site descriptions.
3. Coordinate the continued development of ecological site policy with other agencies, and user groups.
4. The following are minimum requirements to be included in the contents of the ecological site description:

A. **General Information** including ecological site name, ecological site number, and a map identifying geographic extent of the ecological site.

B. **Physiographic Features** including landform, geology, aspect, elevation, slope, water table, flooding, ponding, and runoff class.

C. **Climatic Features** including frost-free period (length and dates), freeze-free period (length and dates), mean annual precipitation, monthly moisture and temperature distribution, and location of approved climate stations.

D. **Ecological Dynamics of the Site** including States, transitions, thresholds, recovery pathways, community phases, community pathways, animal species, wildlife habitat elements, hydrology, and soil properties changes that are expected to occur as a result of disturbances and/or stresses.

- Include information related to landscape scale processes such as runoff, erosion, fire behavior, wildlife use, etc.
- Discussion of temporal scale associated with transitions, community pathways, and thresholds. Where information exists about response to disturbance or management actions, probabilities of occurrence can be included (drought occurrence, fire frequency intervals).

E. **Influencing Water Features** existing on the site or adjacent wetland/riparian ecological sites that influence vegetation and/or management the site. Use Cowardin Wetland Classification, Rosgen Stream Classification terminology.

F. **Representative Soil Features** including those that differentiate from other ecological sites, affect plant adaptation, establishment, growth, and response to disturbance.

- Use standard terminology and definitions in National Soil Survey Handbook.
- Identify properties that affect plant-soil-water relationships and hydrology.

G. **Vegetation**

- Describe the most common, predominant, and/or ecologically significant States and community phases. Include description of transitions, recovery pathways, and community pathways. Include a State and Transition Diagram.
- Use standardized plant names from the Integrated Taxonomic Information System as presented in the NRCS PLANTS database.
- For the reference state and/or diagnostic plant community included a narrative description, detailed listing of plant species (includes scientific and common name, normal annual production in pounds annual dry weight (ADW) per acre, and either canopy, foliar, or basal cover depending on life form), total annual production by growth form (median ADW pounds per acre per year in favorable, normal, and unfavorable years), and growth curve (monthly growth by plant species or communities).
- For all other States/community phases include a narrative description.
- Productivity of Major Tree Species –annual productivity and site index for forested plant communities occurring on rangeland ecological sites, if applicable.

## H. Supporting Information

- Record information about the relationship of the ecological site to other ecological sites and the documentation and references used to develop the ecological site description.
- Identify relationships to other classification systems such as National Vegetation Classification System (NVCS).

## SECTION 6.0 RESPONSIBILITIES

1. The Chiefs of the Forest Service, The Natural Resources Conservation Service and the Director of the Bureau of Land Management will cooperatively provide the leadership to implement the Ecological Site Policy for the nation's rangelands.
2. The NRCS Deputy Chief for Science and Technology, the FS Deputy Chief for Natural Resources and the BLM Assistant Director of Renewable Resources and Planning are responsible for coordinating interagency leadership for policy, development and use of Ecological Site Descriptions. In addition, they establish and maintain an interagency workgroup to provide support and over-site of Ecological Site Description development and use.
3. The NRCS Director of the Ecological Sciences Division, the FS Director of Rangeland Resource and the BLM Division Chief for Rangeland Resources are responsible for ensuring the development and implementation of agency policy and procedures conform and complement this Rangeland Ecological Site Manual.
4. The interagency workgroup develops and recommends policy, procedures, data management for the development and use of Ecological Site Descriptions. In addition, this workgroup provides support and quality control to appropriate state and regional agency leadership coordinating the development and use of Ecological Site Descriptions.
5. The NRCS National Range and Grazing Lands Ecologist, FS Assistant Director for Rangeland Resources and BLM Senior Rangeland Management Specialist are responsible for integrating the Rangeland Ecological Site Manual into agency-specific policy. In addition, guidance and recommendations to the agency leadership will be provided to ensure that Rangeland Ecological Site Manual is appropriately integrated and implemented agency-wide.
6. The NRCS State Conservationists, FS Regional Foresters, and BLM State Directors are responsible for coordinating local development and use of Ecological Site Descriptions. This includes cooperatively prioritizing ecological site development, developing work plans, and assigning appropriate staffs for completion of tasks including the analysis of local needs, and plans of work.
7. Managers and Supervisors are responsible for a) providing their employees and volunteers with the support, direction and training to perform their assigned tasks in compliance with this policy,
8. Employees are responsible for familiarizing themselves with this Manual, related handbooks, technical references and current science to work cooperatively and consistently apply ecological site descriptions.

## Glossary of Terms

**Ecological site** – as defined for rangeland, is a distinctive kind of land with specific soil and physical characteristics that differs from other kinds of land in its ability to produce distinctive kinds and amounts of vegetation, and in its ability to respond similarly to management actions and natural disturbances.

**Rangeland** – land on which the indigenous vegetation is predominantly grasses, grass like plants, forbs, or shrubs and is managed as a natural ecosystem. If plants are introduced, they are managed similarly. Rangelands include natural grasslands, shrublands, savannas, oak and pinyon-juniper woodlands, deserts, tundra, alpine communities, marshes, wet meadows, and riparian zones (Society for Range Management 1999, Habich 2001, Pellant et al. 2005).

**State(s)** – a suite of plant community phases occurring on similar soils that interact with the environment to produce persistent functional and structural attributes associated with a characteristic range of variability maintained through autogenic repair mechanisms.

**Community phase** – Community phases represent unique ecosystem configuration within individual States that are influenced by both natural and anthropogenic drivers.

**Thresholds** – conditions in which ecosystem resilience has been exceeded to alter ecological structure and function beyond the capacity for autogenic repair, resulting in alternative States. Ecological structure and function must be actively restored before ecosystem resilience of previous States can recover or alternative States will persist.

**Community pathways** – Community phase pathways are trajectories of change between community phases that are assumed to be readily reversible over relatively short time periods without management intervention because they are not separated by thresholds.

**Transition** – are trajectories of change between States that are precipitated by natural events and/or management actions which alter ecological structure and function.

**Restoration pathways** – re-establishment of pre-threshold States following active restoration of autogenic repair mechanisms that maintain the resilience of these States.