

LAND-SYSTEMS MAPPING: Ashley National Forest

Numerous systems of land mapping have been devised to help us answer questions about the land we inhabit. Most systems are aimed at mapping a particular resource of interest; e.g. soils, vegetation, wildlife, geology and/or geomorphology. These inventories generally reflect the background of the mapper(s), presented within the context of the mapping system they choose for organizing the world around us into something meaningful.

To adequately interpret Forest Service direction in managing ecological units, including capabilities, limitations, and risks, the Ashley National Forest uses an integrated land systems inventory. This inventory fits into a hierarchical mapping framework (the National Hierarchy) used nation-wide by the Forest Service and many other agencies (see Wertz and Arnold 1972, and USDA ECOMAP 1993). Lands on the Ashley lend themselves readily to such a system, which is defined at a broad scale by geology and geomorphology and at a more detailed scale by soils and vegetation. Although the primary factors used at a broad scale are geology and geomorphology, soil and vegetation descriptors are used to establish ecological types and help define capabilities and limitations of each type. The inventory is also process driven, in that it describes past and present processes (such as fire, freezing and thawing, slope wash etc.) operating on the landscape. This gives the user of the inventory the ability to look at an action and estimate its impacts on the basis of landscape processes as well as physical and biological conditions.

In the land systems inventory, geology and geomorphology are used to define “associations” of land types. Each association is made up of several specific land types, which are described using soils and vegetation as well as slope and other significant features of the landscape. Many interpretations can be made from geology and geomorphology at the association scale. However, by aggregating information from the land types within each association, a far more detailed picture of the association can be formed. This gives the type of information necessary for planning at the forest level.

The Ashley National Forest manages lands in three sections or subsections as defined in the National Hierarchy: the Uinta Mountain Section, the Wyoming basin subsection, and the Tavaputs Plateau subsection. The Uinta Mountains are an east-west trending range with clearly defined breaks in geology, geomorphology, soils and vegetation. Lands within this mountain range lend themselves readily to a hierarchical, integrated mapping system. Although the Wyoming Basin and the Tavaputs Plateau don't fit this approach to inventory quite as readily as the Uintas, an integrated approach is still used, with one geological-geomorphic break for the Wyoming Basin, and two for the Tavaputs plateau. The Tavaputs Plateau subsection differs slightly from the others, in that it has been divided into associations based more on soils and vegetation than geology and geomorphology.

For more information on the Ashley's Land Systems Inventory, contact Darlene Koerner, Forest Soils and Hydrology Program Manager.

Related References:

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Wertz, W.A.; Arnold, J.A. 1972. *Lady Systems Inventory*. Ogden, Ut: USDA Forest Service, Intermountain Region. 12 p.