USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

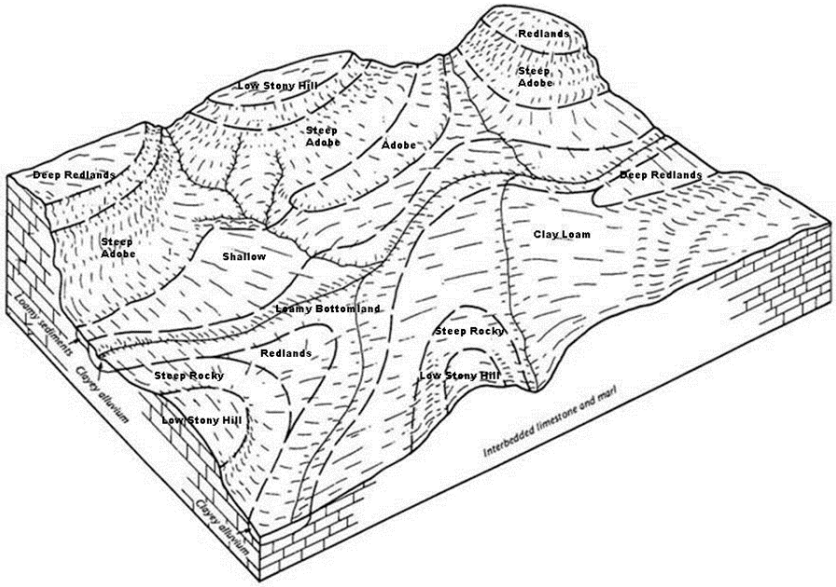
INTRODUCTION TO ECOLOGICAL SITE DESCRIPTIONS

What is an Ecological Site?

An ecological site is a conceptual division of the landscape. It is defined as "a distinctive kind of land based on recurring soil, landform, geological, and climate 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." Several different plant communities can exist on an ecological site depending upon management history.

An ecological site is recognized and described on the basis of the characteristics that differentiate it from other sites in its ability to produce and support a characteristic plant community.

This is an example of how ecological sites can occur on a landscape.



What is an ESD?

An ecological site is the product of all the environmental factors responsible for its development. An ecological site description (ESD) is a document describing the biotic and abiotic factors that influence the plant community. In includes information about landscape positions, climate, hydrology, plant community and soils information. An important component of an ESD is the State and Transition Model (STM) which visually portrays each of the potential plant communities that may occur on an ecological site and narratives to interpret why these plant communities change. The ESD also contains many interpretations for uses such as livestock, hydrology, wildlife, and recreation.

Ecological site descriptions provide information to support land and resource assessments, planning, and monitoring including:

- descriptions of reference plant/soil relationships,
- disturbance processes,
- associated ecosystem dynamics, that are critical to assessing and monitoring ecosystem and watershed function, conditions, and trend at the local, landscape, or watershed level.

Ecological site descriptions provide a consistent framework for describing and communicating information about land capability and suitability for various land uses, such as

- total annual biomass production per year,
- annual biomass production by species, various cover and structure values that can facilitate the understanding and management of wildlife habitat, soil functions and processes, and grazing management.

Ecological site descriptions provide baseline resource information and/or benchmark data, plus alternative state resource information that can facilitate the planning process and the development of land management plans for resource use and monitoring condition.

In the United States, ecological sites are connected to spatial data via soil map units of the National Cooperative Soil Survey. Classification of land areas to ecological sites can be easily visualized via Web Soil Survey of the USDA Natural Resources Conservation Service or within a personal GIS via SSURGO digital soil data. Ecological sites are linked to one or more map unit components of one or more soil map units. A soil map unit may have several map unit components that cannot be mapped separately because they are finely intermingled, for example.

Where do I find ESDs?

ESDs can be obtained several ways. These include:

- Provided at the time a conservation plan is developed by NRCS
- From Web Soil Survey (WSS)
- From the Ecological Site Information System (ESIS)

NRCS planning

At the time of planning, a copy of ESDs for your property can be requested from the NRCS specialists along with an inventory of your property. To contact your local field office you may find field office and state office information at the following link.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/co/contact/

Web Soil Survey

One must first identify the soil. This can come from an existing conservation plan, or by finding the property on WSS. Once the property is identified on WSS and an area of interest is established, an ESD map can be created. The Ecological Site Assessment tab will provide the ESD map along with the name, number, and acreage of the site in the AOI. Along the left side is a listing of each occurring ESD if the ESD has been developed. Click on each of the ESDs to preview them. http://websoilsurvey.nrcs.usda.gov/app/

Ecological Site Information System

As an alternative, once the ESD ID number is discovered, one can go directly to the ESIS database and locate the appropriate ESD for printing. https://esis.sc.egov.usda.gov/Default.aspx

The Natural Resources Conservation Service has specialists that work with soil scientists to document the kinds and amounts of vegetation for each ecological site. This is a work in progress so approved ESDs for all of Colorado are not available. If there is not an approved ESD for the area of interest, Range Sites are available.

For issues regarding the uses, question specific information pertaining to the individual data or status of ESD's please contact the NRCS State Rangeland Management Specialist for that state.

For Colorado please contact:

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References

The National Range and Pasture Handbook provide procedures in support of NRCS policy for the inventory, analysis, treatment, and management of grazing land resources. Revision 1 of the handbook contains revisions to incorporate current concepts and format for developing rangeland ecological site descriptions and forage suitability group descriptions. Information was added regarding the effects of vegetation, grazing, and management on rangeland and pastureland hydrology and erosion.
http://directives.sc.egov.usda.gov/viewDirective.aspx?hid=18937

The Interagency Ecological Site Handbook for Rangelands provides the framework to implement the policy outlined in the Rangeland Interagency Ecological Site Manual. This handbook is specific to rangeland ecosystems and pertains only to ecological sites on rangelands regardless of their current vegetation or land use. Implementation of this policy will complement existing agency (BLM, FS, NRCS) protocols for classifying, describing, mapping, and the inventory of soil and ecosystems.
http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=33943.wbaUSDA

The National Ecological Site Handbook (NESH) provides standards, guidelines, definitions, policies, responsibilities, and procedures for conducting the collaborative process of ecological site description (ESD) development. Responsibilities for ESD development are shared among disciplines, including soils, range, forest, agronomy, wildlife biology, and hydrology. The NESH describes steps needed to collect information on site attributes, site correlation and classification, site dynamics, and site interpretations to ensure the quality and utility of Ecological Sites. NRCS National Ecological Site Handbook, Jan 2014, 1st Ed.
https://esis.sc.egov.usda.gov/Files/NESHcomplete%2007-14.pdf