United States Department of Agriculture

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RANGE TECHNICAL NOTE NO. NM-104

SUBJECT: ECS – Hybrid Sampling Procedure for Developing Ecological Site Descriptions

Purpose: To distribute information to the field.

Effective Date: Effective when received.

Filing Instructions: File in office reference library also maintained on NRCS New Mexico Web site.

Summary. This technical note introduces a hybrid procedure that uses a combination of the dry-weight-rank and comparative yield methods for sampling herbaceous and small woody species and an expanded plot for sampling succulents and large woody species. Data are entered and analyzed in a spreadsheet which calculates plant community species composition and production, production by species, and surface cover. Field sheets, spreadsheets, and a tutorial accompanying this method are posted online at the NRCS New Mexico Web site.

Introduction. Developing ecological site descriptions requires a lot of vegetation sampling. To maximize the return on this investment of time and labor, the dry-weight-rank method (Smith and Despain, 1997) can be used in combination with the comparative yield method (Despain and Smith, 1997) to produce a large amount of reliable data in short order (Gillen and Smith, 1986). While such a technique adequately samples herbaceous species and small shrubs and subshrubs, succulents and large woody species are better sampled using an expanded plot (USDA, NRCS, 2003). This technical note introduces a hybrid procedure that uses a combination of the dry-weight-rank and comparative yield methods for sampling herbaceous and small woody species and an expanded plot for sampling succulents and large woody species. Complementing this procedure are field sheets, spreadsheets, and a tutorial that provide the materials and guidance necessary to collect and analyze data gathered via this hybrid sampling procedure. This procedure is appropriate for "Three-Tier Sampling, Part 3: High-Intensity Characterization and Monitoring" (Bestelmeyer et al., 2009).

Methods. Prior to sampling, the data collector should identify a plant community/soil map unit component of interest and limit transect and plot placement to that plant community/soil map unit component combination. Dry-weight-rank and comparative yield procedures are described in Smith and Despain (1997) and Despain and Smith (1997), respectively. Point surface cover data are recorded for each plot. All succulent species, and woody species deemed too large to be adequately sampled via the dry-weight-rank method, are ignored during dry-weight-rank sampling and are sampled separately in an expanded (e.g., 1/100th acre) plot.

Data are recorded on field sheets or entered directly into the spreadsheet via a Tablet PC. The field sheets and spreadsheets can accommodate both single-ranks and multiple-ranks methods (Smith and Despain, 1997). The tutorial demonstrates how to use the spreadsheet. Once data are entered, the user runs a macro with a single keystroke that performs regression analysis.

The field sheets and spreadsheets have a similar appearance, thus facilitating ease and accuracy of data transfer. Sample field sheets filled in with hypothetical data are provided to illustrate their use in practice. Sample spreadsheets are provided with the same data presented in Smith and Despain (1997). The field sheets, spreadsheets, and tutorial are posted online at the NRCS New Mexico Technical Resources Web site (http://www.nm.nrcs.usda.gov/technical/tech-notes/range.html).

Results. As regression analysis is performed, plant community species composition and production, production by species, and surface cover results are automatically calculated and displayed, and all output (dry-weight rank and expanded plot) is ready for copy-and-paste entry into the Ecological Site Information System. The spreadsheet is renamed and saved for future reference.

Acknowledgements
I thank David Trujillo, Rangeland Management Specialist, NRCS New Mexico, Las Cruces MLRA-Soil Survey Office for his feedback during the development of the field sheets and spreadsheets.

Literature Cited

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Attachments