

References and Additional Resources

- Abu-Awaad, A. M. 1997. Water infiltration and redistribution within soils affected by a surface crust. *Journal of Arid Environments* 37:231-242.
- Agricultural Experiment Station, Oregon State University. 1998. Stubble Height and Utilization Measurements: Uses and Misuses. Agricultural Experiment Station Bulletin 682, Oregon State University, Corvallis, OR.
- Allison, C. D., T. T. Baker, J. C. Boren, B. D. Wright, and A. Fernald. 2001. Pp. 60 *in* Monitoring Rangelands in New Mexico: Range, Riparian, Erosion, Water Quality and Wildlife, Report 53. Range Improvement Task Force, Agricultural Experiment Station, Cooperative Extension Service, New Mexico State University, College of Agriculture and Home Economics. Las Cruces, NM.
- Anderson, E. W. 1974. Indicators of soil movement on range watersheds. *Journal of Range Management* 27:244-247.
- Bedell, T. E., and J. C. Buckhouse. 1994. Monitoring Primer for Rangeland Watersheds. EPA Water Division. EPA 908-R-94-001. Washington, D.C.
- Benedetti-Cecchi, L. 2001. Beyond BACI: optimization of environmental sampling designs through monitoring and simulation. *Ecological Applications* 11:783-799.
- Benkobi, L., M. J. Trlica, and J. L. Smith. 1993. Soil loss as affected by different combinations of surface litter and rock. *Journal of Environmental Quality* 22:657-661.
- Benkobi, L., D. W. Uresk, G. Schenbeck, and R. M. King. 2000. Protocol for monitoring standing crop in grasslands using visual obstruction. *Journal of Range Management* 53:627-633.
- Bestelmeyer, B. T., J. R. Brown, K. M. Havstad, R. Alexander, G. Chavez, and J. E. Herrick. 2003. Development and use of state-and-transition models for rangelands. *Journal of Range Management* 54:114-126.
- Bevenger, G. S. and R. M. King. 1995. A Pebble Count Procedure for Assessing Watershed Cumulative Effects. U.S. Department of Agriculture, Rocky Mountain Forest and Range Experiment Station Research Paper 319. Fort Collins, CO.
- Bewley, R., D. Donoghue, V. Gaffney, M. van Leusen, and A. Wise. 1998. Archiving Aerial Photography and Remote Sensing Data: A Guide to Good Practice. (Available online at <http://ads.ahds.ac.uk/project/goodguides/apandrs>; accessed September 25, 2008).
- Bibby, J. S., and D. Mackney. 1969. Land Use Capability Classification. Technical Monograph 1. Soil Survey.
- Blackburn, W. H. 1975. Factors influencing infiltration and sediment production of semiarid rangelands. *Nevada Water Resources Research* 11:929-937.
- Blackburn, W. H., and F. B. Pierson, Jr. 1994. Sources of variation in interrill erosion on rangelands. Pp. 1-9 *in* W. H. Blackburn, F. B. Pierson, Jr., G. E. Schuman, and R. Zartman (eds.), *Variability in Rangeland Water Erosion Processes*. Soil Science Society of America. Madison, WI.

References and additional resources

- Blake, G. R., and K. H. Hartge. 1986. Bulk density. Pp. 363-375 *in* A. Klute (ed.), *Methods of Soil Analysis: Part I - Physical and Mineralogical Methods*, No. 5, 2nd ed. Soil Science Society of America Book Series. Madison, WI.
- Bonham, C. D. 1989. *Measurements for Terrestrial Vegetation*. Wiley-InterScience, New York, NY.
- Bonham, C. D., S. G. Bousquin, and D. Tazik. 2001. *Protocols and Models for Inventory, Monitoring, and Management of Threatened and Endangered Plants*. (Available online at <http://www.cnr.colostate.edu/frws/research/rc/tesintro.htm>; accessed September 26, 2008).
- Bookhout, T. A. 1994. *Research and Management Techniques for Wildlife and Habitats*, 5th edition. The Wildlife Society, Bethesda, MD.
- Bouma, J., H. W. G. Bootink, P. A. Finke, and A. Stein. 1996. Reliability of soil data and risk assessment of data applications. *In* W. D. Nettleton, A. G. Hornsby, R. B. Brown, and T. L. Coleman (eds.), *Data Reliability and Risk Assessment in Soil Interpretations*. Soil Science Society of America, 47th ed. Madison, WI.
- Bouwer, H. 1986. Intake Rate: Cylinder Infiltrometer. Pp. 825-844 *in* A. Klute (ed.), *Methods of Soil Analysis, Part I - Physical and Mineralogical Methods*, No. 5, 2nd ed. Soil Science Society of America Book Series. Madison, WI.
- Bradford, J. M. 1986. Penetrability. *In* A. Klute (ed.), *Methods of Soil Analysis, Part 1- Physical and Mineralogical Methods*, No. 5, 2nd ed. Soil Science Society of America Book Series. Madison, WI.
- Brady, N. C., and R. R. Weil. 2002. *The Nature and Properties of Soils*, 13th ed. Pearson Education Inc., Upper Saddle River, NJ.
- Briggs, M. K. 1996. *Riparian Ecosystem Recovery in Arid Lands: Strategies and References*. The University of Arizona Press, Tucson, AZ.
- Briske, D. D., S. D. Fuhlendorf, and F. E. Smeins. 2003. Vegetation dynamics on rangelands: a critique of the current paradigms. *Journal of Applied Ecology* 40:601-614.
- Brown, J. R., J. E. Herrick, and D. Price. 1999. Managing agroecosystems sustainably: the importance of ecological thresholds. *Canadian Journal of Forest Research* 29:1112-1119.
- Brown, J. R., and K. M. Havstad. 2004. Monitoring to detect changes on rangelands: physical, social, and economic policy drivers. *African Journal of Range and Forage Science* 21(2):47-53.
- Bull, K., K. W. Stolte, and T. J. Stohlgren. 1998. *Forest Health Monitoring: Vegetation Pilot Field Methods Guide*. U.S. Department of Agriculture, Forest Service. Washington, D.C.
- Campbell, D. J., and R. Hunter. 1986. Drop-cone penetration in situ and on minimally disturbed soil cores. *Journal of Soil Science* 37:153-163.
- Council for Agricultural Science and Technology (CAST). 2004. *Climate change and greenhouse gas mitigation: challenges and opportunities for agriculture*. CAST, Ames, IA.
- Cerda, A. 1999. Parent material and vegetation affect soil erosion in eastern Spain. *Soil Science Society of America Journal* 63:362-368.

References and additional resources

- Cook, C. W., and C. D. Bonham. 1977. Techniques for Vegetation Measurements and Analysis for a Pre- and Post-Mining Inventory. Colorado State University, Range Science Department, Fort Collins, CO.
- Cook, J. W., W. W. Brady, and E. R. Aldon. 1992. Handbook for Converting Parker Loop Frequency Data to Basal Area. U.S. Department of Agriculture, Forest Service General Technical Report. RM-212.
- Coulloudon, B., K. Eshelman, J. Gianola, N. Habich, L. Hughes, C. Johnson, M. Pellant, P. Podborny, A. Rasmussen, B. Robles, P. Shaver, J. Spehar, and J. Willoughby. 1999a. Sampling Vegetation Attributes- Interagency Technical Reference. U.S. Department of Interior, Bureau of Land Management Technical Reference 1734-4.
- Coulloudon, B., K. Eshelman, J. Gianola, N. Habich, L. Hughes, C. Johnson, M. Pellant, P. Podborny, A. Rasmussen, B. Robles, P. Shaver, J. Spehar, and J. Willoughby. 1999b. Utilization Studies and Residual Measurements-Interagency Technical Reference. U.S. Department of Interior, Bureau of Land Management Technical Reference 1734-3.
- Critchley, C. N. R., and S. M. C. Poulton. 1998. A method to optimize precision and scale in grassland monitoring. *Journal of Vegetation Science* 9:337-346.
- de Soyza, A. G., W. G. Whitford, and J. E. Herrick. 1997. Sensitivity testing of indicators of ecosystem health. *Ecosystem Health* 3:44-53.
- de Soyza, A. G., W. G. Whitford, J. E. Herrick, J. W. Van Zee, and K. M. Havstad. 1998. Early warning indicators of desertification: examples of tests in the Chihuahuan Desert. *Journal of Arid Environments* 39:101-112.
- Donahue, R. L., R. W. Miller, and J. C. Shickluna. 1977. *Soils: An Introduction to Soils and Plant Growth*. Prentice-Hall, Inc., Englewood Cliffs, NJ.
- Dunne, T., and L. B. Leopold. 1978. *Water in Environmental Planning*. W. H. Freeman, New York, NY.
- Elzinga, C. L., D. W. Salzer, J. W. Willoughby, and J. P. Gibbs. 2001. *Monitoring Plant and Animal Populations*. Blackwell Science, Inc., Malden, MA.
- Flather, C. H., S. J. Brady, and D. B. Inkley. 1992. Regional habitat appraisals of wildlife communities: a landscape-level evaluation of a resource planning model using avian distribution data. *Landscape Ecology* 7(2):137-147.
- Goodwin, C. N., G. A. Rasmussen, J. P. Dobrowolski, and M. P. O'Neill. 2000. Rangeland watersheds: integrated monitoring and modeling within a GIS. Proceedings of the Watershed Management 2000 Conference, Vancouver, British Columbia. July 9-12, 2000.
- Griffith, B., and B. A. Youtie. 1988. Two devices for estimating foliage height density and deer hiding cover. *Wildlife Society Bulletin* 16:206-210.
- Gutierrez, J., and I. I. Hernandez. 1996. Runoff and interrill erosion as affected by grass cover in a semi-arid rangeland of northern Mexico. *Journal of Arid Environments* 34:287-295.
- Hall, F. C. 2002a. Photo Point Monitoring Handbook: Part A-Field Procedures. Pp.1-48 in U.S. Department of Agriculture, Forest Service General Technical Report PNW-GTR-526. (Available online at <http://www.fs.fed.us/pnw/pubs/gtr526>; accessed September 26, 2008).

References and additional resources

- Hall, F. C. 2002b. Photo Point Monitoring Handbook: Part B - Concepts and Analysis. Pp. 49-134 *in* U.S. Department of Agriculture, Forest Service General Technical Report PNW-GTR-526. (Available online at <http://www.fs.fed.us/pnw/pubs/gtr526>; accessed September 26, 2008).
- Harrell, W. C., and S. D. Fuhlendorf. 2002. Evaluation of habitat structural measures in a shrubland community. *Journal of Range Management* 55:488-493.
- Harrelson, C. C., C. L. Rawlins, and J. P. Potynody. 1994. Stream Channel Reference Sites: An Illustrated Guide to Field Technique. U.S. Department of Agriculture, Rocky Mountain Forest and Range Experiment Station General Technical Report RM-245, Fort Collins, CO.
- Harris, P. S. 2000. Grassland Resource Assessment for Pastoral Systems. Food and Agriculture Organization of the United Nations, Rome, Italy.
- Herrick, J. E. 1999. Soil organisms and rangeland soil hydrologic functions. Pp. 91–100 *in* R. T. Meurisse, W. G. Ypsilantis, and C. A. Seybold (eds.), *Soil Organisms in Pacific Northwest Forest and Rangeland Ecosystems - Population Dynamics, Functions and Applications to Management*. U.S. Department of Agriculture, Pacific Northwest Research Station, General Technical Report PNW-GTR-461. Portland, OR.
- Herrick, J. E. 2005. Reply to “Comments on ‘Simultaneous measurement of soil penetration resistance and water content with a combined penetrometer TDR moisture probe’ and ‘A dynamic cone penetrometer for measuring soil penetration resistance.’” *Soil Science Society of America Journal* 69:926-927.
- Herrick, J. E., and K. M. Havstad. 2001. Integration of soil indicators into multi-attribute rangeland monitoring and assessment systems. Proceedings of the 2nd International Multiple Objective Decision Support System Conference, Brisbane, Australia, August 1999.
- Herrick, J. E., A. M. Melgoza, D. A. Pyke, and M. Pellant. 2003. Evaluación del estado de salud en ecosistemas de pastizales. Memorias del 1er Simposio Internacional de Manejo de Pastizales y Curso-Taller Sobre Salud de Ecosistemas de Pastizales. (Compact Disk).
- Herrick, J. E., and W. Whitford. 1995. Assessing the quality of rangeland soils: challenges and opportunities. *Journal of Soil and Water Conservation* 50:237-242.
- Herrick, J. E., and W. Whitford. 1999. Integrating soil processes into management: from microaggregates to macrocatchments. Pp. 91-95 *in* Proceedings of the XII International Rangeland Congress, Townsville, Australia, July 1999.
- Herrick, J. E., W. Whitford, A. de Soyza, and J. Van Zee. 1996. Soil and vegetation indicators for assessment of rangeland ecological condition. Pp. 157-166 *in* Proceedings of the North American Workshop on Monitoring for Ecological Assessment of Terrestrial and Aquatic Ecosystems, Mexico City, Mexico, September 18-22, 1995. U.S. Department of Agriculture Forest and Range Experiment Station, General Technical Report RM-GTR-284.
- Herrick, J. E., and T. L. Jones. 2002. A dynamic cone penetrometer for measuring soil penetration resistance. *Soil Science Society of America Journal* 66:1320-1324.
- Herrick, J. E., J. R. Brown, A. Tugel, P. L. Shaver, and K. M. Havstad. 2002. Application of soil quality to monitoring and management: paradigms from rangeland ecology. *Agronomy Journal* 94:3-11.

References and additional resources

- Herrick, J. E., A. Rango, and K. M. Havstad. 2003. A cost-effective soil and vegetation monitoring protocol for adaptive management. Pp. 704-706 *in* Proceedings of the IVth International Rangeland Congress, Durban, South Africa, July 26-August 1, 2003.
- Herrick, J. E., W. G. Whitford, A. G. de Soyza, J. W. Van Zee, K. M. Havstad, C. A. Seybold, and M. Walton. 2001. Field soil aggregate stability kit for soil quality and rangeland health evaluations. *CATENA* 44:27-35.
- Holechek, J. L., and R. D. Pieper. 1992. Estimation of stocking rate on New Mexico rangelands. *Journal of Soil and Water Conservation* 47:116-119.
- Howery, L. D., and P. C. Sundt. 1998. Using Repeat Color Photography as a Tool to Monitor Rangelands. Tucson, Arizona: University of Arizona, College of Agriculture; AZ1024. (Available online at <http://ag.arizona.edu/pubs/natresources/az1024.pdf>; accessed September 26, 2008).
- Huenneke, L. F. 1995a. Ecological impacts of plant invasion in rangeland ecosystems. Pp. 10-14 *in* Proceedings of the Alien Plant Invasions: Increasing Deterioration of Rangeland Ecosystem Health. BLM/OR/WA/PT-95/048+1792.
- Huenneke, L. F. 1995b. Effects of biodiversity on water distribution and quality. Pp. 412-417 *in* V. H. Heywood and R. T. Watson (eds.), *Global Biodiversity Assessment*. Cambridge University Press, Cambridge, UK.
- Huenneke, L. F., D. Clason, and E. Muldavin. 2001. Spatial heterogeneity in Chihuahuan Desert vegetation: implications for sampling methods in semiarid ecosystems. *Journal of Arid Environments* 47:257-270.
- Huenneke, L. F., J. P. Anderson, M. Remmenga, and W. H. Schlesinger. 2002. Desertification alters patterns of aboveground net primary production in Chihuahuan ecosystems. *Global Change Biology* 8:247-264.
- Interagency Technical Reference. 1996. Visual Obstruction Method – Robel Pole. Pp. 123-130 *in* Sampling Vegetation Attributes. U.S. Department of Agriculture, Forest Service Cooperative Extension Service, NRCS Grazing Lands Technology Institute, and U.S. Department of Interior, Bureau of Land Management.
- Johnson, C. W., and N. E. Gordon. 1988. Runoff and erosion from rainfall simulator plots on sagebrush rangelands. *Transactions of the ASAE* 31:421-427.
- Karr, J. R., and R. R. Roth. 1971. Vegetation structure and avian diversity in several new world areas. *American Naturalist* 105(945):423-435.
- Kinney, J. W., and W. P. Clary. 1994. A Photographic Utilization Guide for Key Riparian Graminoids. U.S. Department of Agriculture, General Technical Report INT-GTR-308:1-13. Washington, D.C.
- Krebs, C. J. 1998. *Ecological Methodology*, 2nd ed. Benjamin Cummings, San Francisco, CA.
- Kuehl, R. O., M. P. McClaran, and J. Van Zee. 2001. Detecting fragmentation of cover in desert grasslands using line intercept. *Journal of Range Management* 54:61-66.
- Lal, R. (ed.). 2003. *Encyclopedia of Soil Science*. Marcel Dekker, Inc., New York, NY.

References and additional resources

- Larson, W. E., and F. J. Pierce. 1993. The dynamics of soil quality as a measure of sustainable management. Pp. 27-51 in J. W. Doran, D. C. Coleman, D. F. Bezdicek, and B. A. Stewart (eds.), *Defining Soil Quality for a Sustainable Environment*. Soil Science Society of America Special Publication No. 35. Soil Science Society of America, Madison, WI.
- Lessard, V. C., T. D. Drummer, and D. D. Reed. 2002. Precision of density estimates from fixed-radius plots compared to N-tree distance sampling. *Forest Science* 48:1-6.
- Lewandrowski, J., M. Peters, C. Jones, R. House, M. Sperow, M. Eve, and K. Paustian. 2004. Economics of sequestering carbon in the U.S. agricultural sector. USDA Economics Research Service, Technical Bulletin No. 1909. U.S. Department of Agriculture, Washington, D.C.
- Lloyd, F. T., and W. H. McKee, Jr. 1983. Replications and subsamples needed to show treatment responses on forest soils of the coastal plain. *Soil Science Society of America Journal* 47:587-890.
- Ludwig, J. A., D. J. Tongway, D. Freudenberger, J. Noble, and K. Hodgkinson (eds.). 1997. *Landscape Ecology Function and Management: Principles from Australia's Rangelands*. CSIRO Publishing, Melbourne, Australia.
- MacArthur, R. H., and J. W. MacArthur. 1961. On bird species diversity. *Journal of Ecology* 42(3):594-598.
- Magill, A. W. 1989. *Monitoring Environmental Change with Color Slides*. U.S. Department of Agriculture, Pacific Southwest Forest and Range Experiment Station, General Technical Report PSW-117.
- Mays, M. D. 1996. Data reliability and risk assessment in soil interpretations. Pp. 1-12 in W. D. Nettleton, A. G. Hornsby, R. B. Brown, and T. L. Coleman (eds.), *Data Reliability and Risk Assessment in Soil Interpretations*. Soil Science Society of America Special, Publication No. 47. Soil Science Society of America, Madison, WI.
- Martinez-Meza, E., and W. G. Whitford. 1996. Stemflow, throughfall and channelization of stemflow by roots in three Chihuahuan Desert shrubs. *Journal of Arid Environments* 32:271-287.
- Mills, G. S., J. B. Dunning, and J. M. Bates. 1991. The relationship between breeding bird density and vegetation volume. *The Wilson Bulletin* 103:468-479.
- Milton, S. J., and W. R. Dean. 1996. *Karoo Veld Ecology and Management*. R. Ellis (ed.), ARC-Range and Forage Institute, Pretoria, South Africa.
- Minasny, B. and A. B. McBratney. 2005. Comments on "Simultaneous measurement of soil penetration resistance and water content with a combined penetrometer TDR moisture probe" and "A dynamic cone penetrometer for measuring soil penetration resistance." *Soil Science Society of America Journal* 69:925-926.
- Morgan, R. P. C. 1986. *Soil Erosion and Conservation*. D. A. Davidson (ed.), Longman Science & Technology, Wiley, New York, NY.
- Morin, J., and J. Van Winkel. 1996. The effect of raindrop impact and sheet erosion on infiltration rate and crust formation. *Soil Science Society of America Journal* 60:1223-1227.
- Nadrowski, K., and G. Jetschke. 1999. The effect of landscape structure on primary productivity in source-sink systems. Pp. 303-309 in S. W. Breckle, M. Veste, and W. Wucherer (eds.), *Sustainable Land Use in Deserts*. Springer Berlin/Heidelberg/Stuttgart/New York.

References and additional resources

- Nettleton, W. D., A. G. Hornsby, R. B. Brown, and T. L. Coleman (eds.). 1996. Data Reliability and Risk Assessment in Soil Interpretations. Soil Science Society of America Special Publication. Soil Science Society of America, Madison, WI.
- Nudds, T. D. 1977. Quantifying the vegetative structure of wildlife cover. *Wildlife Society Bulletin* 5:113-117.
- Orchard, C., and C. Mehus. 2001. Management by monitoring: land EKG approach helps variety of users assess rangeland health. *Rangelands* 23:28-32.
- Parker, K. W. 1951. A method for measuring trend in range condition on National Forest Ranges. U.S. Department of Agriculture, Forest Service. Washington D.C.
- Pellant, M., P. Shaver, D. Pyke, and J. E. Herrick. 2005. Interpreting Indicators of Rangeland Health, Version 4.0. Interagency Technical Reference. U.S. Department of Interior, Bureau of Land Management, Denver, CO.
- Peters, D. P. C., D. L. Urban, R. H. Gardner, D. D. Breshears, and J. E. Herrick. 2004. Strategies for ecological extrapolation. *Oikos* 106:627-636.
- Peterson, F. F. 1981. Landforms of the Basin and Range Province Defined for Soil Survey. Nevada Agricultural Experiment Station, Technical Bulletin No. 28, Reno, NV.
- Pierson, F. B., Jr., W. H. Blackburn, S. S. Van Vactor, and J. C. Wood. 1994. Incorporating small-scale spatial variability into predictions of hydrologic response on sagebrush rangelands. Pp. 23-24 *in* W. H. Blackburn, F. B. Pierson, Jr., G. E. Schuman, and R. Zartman (eds.). *Variability in Rangeland Water Erosion Processes*. Soil Science Society of America, Madison, WI.
- Prichard, D., P. Clemmer, M. Gorges, G. Meyer, and K. Shumac. 1996. Riparian Area Management: Using aerial photographs to assess proper functioning condition for riparian-wetland areas. U.S. Department of Interior, Bureau of Land Management, Technical Report 1737-12. BLM/RS/ST-96/007+1737, National Business Center, Colorado.
- Prichard, D., H. Barret, J. Cagney, R. Clark, J. Fogg, K. Gebhardt, P. Hansen, B. Mitchell, and D. Tippy. 1998a. Riparian Area Management: Process for Assessing Proper Functioning Condition. U.S. Department of Interior, Bureau of Land Management, Technical Report 1737-9.
- Prichard, D., J. Anderson, C. Correll, J. Fogg, K. Gebhardt, R. Krapf, S. Leonard, B. Mitchell, and J. Staats. 1998b. Riparian Area Management: A User Guide to Assessing Proper Functioning Condition and Supporting Science for Lotic Areas. U.S. Department of Interior, Bureau of Land Management, U.S. Department of Agriculture Forest Service, and Natural Resources Conservation Service Technical Reference 1737-15.
- Pyke, D. A., J. E. Herrick, P. Shaver, and M. Pellant. 2002. Rangeland health attributes and indicators for qualitative assessment. *Journal of Range Management* 55:584-597.
- Quilter, M. C., and V. J. Anderson. 2000. Low-altitude/large-scale aerial photographs: a tool for range and resource managers. *Rangelands* 22:13-17.
- Rango, A., S. Goslee, J. Herrick, M. Chopping, K. Havstad, L. Huenneke, R. Gibbens, R. Beck, and R. McNeely. 2002. Remote sensing documentation of historic rangeland remediation treatments in southern New Mexico. *Journal of Arid Environments* 50:549-572.

References and additional resources

- Rango, A., A. Laliberte, S. Tartowski, K. Havstad, R. Gibbens, J. Brown, and R. Beck. 2003. The progression of shrub encroachment into a desert grassland in southern New Mexico from 1936-2003. *EOS Trans. AGU* 84(46), Fall Meeting Supplemental, Abstract B52A-1021, 2003. American Geophysical Union Fall Meeting, San Francisco, CA.
- Ritchie, J. C., T. J. Schmutge, F. Jacob, and A. Rango. 2003. Pp. 204 *in* Ground/MASTER/ASTER spectral reflectance measurements of northern Chihuahuan Desert vegetation. European Geophysical Society Annual Meeting.
- Robel, R. J. 1966. Behavior and mobility studies on the greater prairie chicken of northeastern Kansas. Pp. 365-368 *in* American Philosophical Society Yearbook.
- Robel, R. J. 1970. Possible role of behavior in regulating greater prairie chicken populations. *Journal of Wildlife Management* 34(2):306-312.
- Robel, R. J., J. N. Briggs, A. D. Dayton, and L. C. Hulbert. 1970. Relationships between visual obstruction measurements and weight of grassland vegetation. *Journal of Range Management* 23:295-297.
- Rosgen, D. 1996. Applied river morphology. Wildland Hydrology Books, Pagosa Springs, CO.
- Schlesinger, W. H., J. F. Reynolds, G. L. Cunningham, L. F. Huenneke, W. M. Jarrell, R. A. Virginia, and W. G. Whitford. 1990. Biological feedbacks in global desertification. *Science* 247:1043-1048.
- Schmutge, T., K. Ogawa, A. N. French, A. Hsu, J. C. Ritchie, and A. Rango. 2003. ASTER observations of surface temperature and emissivity over New Mexico test sites, Pp. 205 *in* *EOS Trans. AGU* 84(46), Fall Meeting Supplemental. Abstract H21H-01. American Geophysical Union Fall Meeting, San Francisco, CA.
- Schoeneberger, P. J. 2003. Landscape Classification. *In* R. Lal (ed.). 2003. *Encyclopedia of Soil Science*. Marcel Dekker, Inc., New York, NY.
- Schoeneberger, P. J., D. A. Wysocki, E. C. Benham, and W. D. Broderson (eds.). 2002. *Field Book for Describing and Sampling Soils, Version 2.0*. Natural Resources Conservation Service, National Soil Survey Center, Lincoln, NE.
- Seybold, C. A., and J. E. Herrick. 2001. Aggregate stability kit for on-site assessments. *CATENA* 44:37-45.
- Seybold, C. A., J. E. Herrick and J. J. Brejda. 1999. Soil resilience: a fundamental component of soil quality. *Soil Science* 164:224-234.
- Sheley, R. L., J. K. Petroff, and M. M. Borman. 1999. Introduction. Pp. 1-3 *in* R. L. Sheley and J. K. Petroff (eds.). *Biology and Management of Noxious Rangeland Weeds*. Oregon State University Press, Corvallis, OR.
- Smith, D. D., and W. H. Wischmeier. 1962. Rainfall erosion. *Advances in Agronomy* 14:109-148.
- Smith, E. L., and P. E. Novelty. 1997. *The Assessment of Resource Capability in Rangelands*. Land and Water Resources Research and Development Corporation, Occasional Paper Series No. 08-97.

References and additional resources

- Society for Range Management (SRM). 1999. A glossary of terms used in range management. Society for Range Management. Denver, CO.
- Society for Range Management Task Group on Unity in Concepts and Terminology. 1995. New concepts for assessment of rangeland condition. *Journal of Range Management* 48:271-282.
- Soil Science Society of America (SSSA). 1997. Glossary of Soil Science Terms. Soil Science Society of America. Madison, WI.
- Stalmans, M. E., E. T. F. Witkowski, and K. Balkwill. 2002. Evaluating the ecological relevance of habitat maps for wild herbivores. *Journal of Range Management* 55:127-134.
- Stohlgren, T. J., G. A. Chong, M. A. Kalkhan, and L. D. Schell. 1997. Multiscale sampling of plant diversity: effects of minimum mapping unit size. *Ecological Applications* 7:1064-74.
- Stohlgren, T. J., M. B. Falkner, and L. D. Schell. 1995. A modified Whittaker nested vegetation sampling method. *Vegetation* 117:113-21.
- Stringham, T. K., W. C. Krueger, and P. L. Shaver. 2001. States, Transitions and Thresholds: Further Refinement for Rangeland Applications. Oregon State University, Agricultural Experiment Station, Corvallis, OR.
- Stringham, T. K., W. G. Krueger, and P. L. Shaver. 2003. State-and-transition modeling: an ecological process approach. *Journal of Range Management* 56:106-113.
- Tazik, D. J., S. D. Warren, V. E. Diersing, R. B. Shaw, R. J. Brozka, C. F. Bagley, and W. R. Whitworth. 1992. U.S. Army Land Condition Trend Analysis (LCTA) Plot Inventory Field Methods. USACERL Technical Report N- 92/03.
- Thurow, T. L., S. D. Warren, and D. H. Carlson. 1995. Tracked vehicle effects on the hydrologic characteristics of central Texas rangeland. *Transactions of the ASAE* 36:1645-1650.
- Thurow, T. L., W. H. Blackburn, and C. A. Taylor, Jr. 1988a. Infiltration and interrill erosion responses to selected livestock grazing strategies, Edwards Plateau, Texas. *Journal of Range Management* 41:296-302.
- Thurow, T. L., W. H. Blackburn, and C. A. Taylor, Jr. 1988b. Some vegetation responses to selected livestock grazing strategies, Edwards Plateau, Texas. *Journal of Range Management* 41:108-114.
- Tongway, D. 1994. Rangeland soil condition assessment manual. CSIRO, Melbourne, Australia.
- Tongway, D., and N. Hindley. 1995. Manual for Assessment of Soil Condition of Tropical Grasses. CSIRO, Canberra, Australia.
- Tongway, D. J., and J. A. Ludwig. 1997. The conservation of water and nutrients within landscapes. Pp. 13-22 in J. Ludwig, D. Tongway, D. Freudenberger, J. Noble, and K. Hodgkinson (eds.), *Landscape Ecology, Function and Management: Principles from Australia's Rangelands*. CSIRO, Melbourne, Australia.
- Tothill, J., and I. Partridge. 1996. Monitoring grazing lands in northern Australia. Tropical Grassland Society of Australia, Occasional Publication 9.

References and additional resources

- Tugel, A., A. Lewandowski, D. Happe-von Arb (eds.). 2000. Soil Biology Primer. Rev. ed. Soil and Water Conservation Society, Ankeny, IA.
- Tugel, A. J., and A. M. Lewandowski (eds.). Last update April 2004. Soil Biology Primer. (Available online at http://soils.usda.gov/sqi/concepts/soil_biology/biology.html; accessed October 7, 2008).
- U.S. Department of Agriculture, Forest Service. 1995. Pp 157-166 *in* North American Workshop on Monitoring for Ecological Assessment of Terrestrial and Aquatic Ecosystems, General Technical Report RM-GTR-284. U.S. Department of Agriculture – Forest Service, Rocky Mountain Forest and Range Experiment Station. Fort Collins, Colorado.
- U.S. Department of Agriculture, Forest Service. 2003. USFS Forest Inventory and Analysis (FIA) National Core Field Guide Volume I: Field Data Collection Procedure for Phase 2 Plots, Version 1.7.
- U.S. Department of Agriculture, Natural Resources Conservation Service. 1997. National Range and Pasture Handbook. U.S. Department of Agriculture, NRCS Grazing Lands Technology Institute. Washington D.C.
- U.S. Department of Agriculture, Natural Resources Conservation Service. 2001. Rangeland soil quality. Soil Quality Information Sheet: Rangeland Sheets 1-10. NRCS Soil Quality Institute, NRCS Grazing Lands Technology Institute, NRCS National Soil Survey Center, ARS Jornada Experimental Range, and U.S. Department of Interior, Bureau of Land Management. (Available online with updates at http://soils.usda.gov/sqi/management/gl_mgmt.html; accessed October 7, 2008).
- U.S. Department of Agriculture, Natural Resources Conservation Service. 2003. National Soil Survey Handbook, title 430-VI. (Available online at <http://soils.usda.gov/technical/handbook>; accessed October 7, 2008).
- U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey Staff. 1999. Keys to Soil Taxonomy, 8th ed. Pocahontas Press, Inc., Blacksburg, VA.
- U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey Division Staff. 1993. Soil Survey Manual, USDA Agricultural Handbook 18. U.S. Government Printing Office, Washington, D.C.
- U.S. Department of Interior, Bureau of Land Management. 1996. Sampling Vegetation Attributes. Interagency Technical Reference, BLM/RS/ST-96/002+1730.
- Warren, S. D. 2001. Synopsis: Influence of Biological Soil Crusts on Arid Land Hydrology and Soil Stability. Chapter 26 *in* J. Belnap and O. L. Lange (eds.), Biological Soil Crusts: Structure, Function and Management. Springer-Verlag, Heidelberg, Germany.
- Warren, S. D., T. L. Thurow, W. H. Blackburn, and N. E. Garza. 1986. The influence of livestock trampling under intensive rotation grazing on soil hydrologic characteristics. *Journal of Range Management* 39:491-495.
- Webb, R. H., and H. G. Wilshire. 1983. Environmental Effects of Off-Road Vehicles: Impacts and Management in Arid Regions. Springer-Verlag, New York, NY.
- Weltz, M. A., M. R. Kidwell, and H. Dale Fox. 1998. Influence of abiotic and biotic factors in measuring and modeling soil erosion on rangelands: State of knowledge. *Journal of Range Management* 51:482-495.

References and additional resources

- Wenger, K. F. 1984. *Forestry Handbook*, 2nd ed. John Wiley & Sons, New York, NY.
- Whitford, W. G. 1988. Decomposition and nutrient cycling in disturbed arid ecosystems. Pp. 136-161 in E. B. Allen (ed.). *The Reconstruction of Disturbed Arid Lands*. American Association for the Advancement of Science, Westview Press, Boulder, CO.
- Whitford, W. G. 1996. The importance of the biodiversity of soil biota in arid ecosystems. *Biodiversity and Conservation* 5:185-195.
- Whitford, W. G., A. G. de Soyza, J. W. Van Zee, J. E. Herrick, and K. M. Havstad. 1998. Vegetation, soil and animal indicators of rangeland health. *Environmental Monitoring and Assessment* 51:179-200.
- Whitford, W. G., J. Anderson, and P. M. Rice. 1997. Stemflow contribution to the "fertile island" effect in creosotebush, *Larrea tridentata*. *Journal of Arid Environments* 35:451-457.
- Wight, H. M. 1939. *Field and laboratory technic in wildlife management*. University of Michigan Press, Ann Arbor, MI.
- Willatt, S. T., and D. M. Pullar. 1983. Changes in soil physical properties under grazed pastures. *Australian Journal of Soil Research* 22:343-348.
- Willson, M. F. 1974. Avian community organization and habitat structure. *Ecology* 55:1017-1029.
- Winward, A. H. 2000. *Monitoring the Vegetation Resources in Riparian Areas*. U.S. Department of Agriculture, Rocky Mountain Research Station, General Technical Report 47.
- Woodley, S., G. Alward, L. Gutierrez, T. Hoekstra, B. Holt, L. Livingston, J. Loo, A. Skibicki, C. Williams, and P. Wright. 2000. North American Test of Criteria and Indicators of Sustainable Forestry. USDA Inventory and Monitoring Institute Report 3. (Available online at http://www.fs.fed.us/institute/cifor/cifor_1.html; accessed October 7, 2008).
- Wysocki, D., and C. W. Zanner. 2003. Landscape Elements. In R. Lal (ed.). *Encyclopedia of Soil Science*. Marcel Dekker, Inc., New York, NY.

Authors

Jeffrey E. Herrick is a research scientist, Kris M. Havstad is the research leader, Justin W. Van Zee is a technician, and Laura M. Burkett is a range technician with the United States Department of Agriculture – Agricultural Research Service (USDA-ARS) Jornada Experimental Range in Las Cruces, New Mexico.

Walter G. Whitford was employed by the US Environmental Protection Agency while working on this book and is now retired and based at the USDA-ARS Jornada Experimental Range.

Contributors

Brandon T. Bestelmeyer is a research scientist with the USDA-ARS Jornada Experimental Range in Las Cruces, New Mexico.

Ericha M. Courtright is a College Assistant Professor with New Mexico State University and the Jornada Experimental Range in Las Cruces, New Mexico.

Alicia Melgoza is an ecologist with Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias (INIFAP) in Chihuahua, Mexico.

Mike Pellant is the Great Basin Restoration Initiative Coordinator with the Bureau of Land Management (BLM) in Boise, Idaho.

David A. Pyke is a research ecologist with the United States Geological Survey (USGS) in Corvallis, Oregon.

Marta D. Remmenga is a statistician and professor at New Mexico State University.

Patrick L. Shaver is a rangeland management specialist with the USDA-Natural Resources Conservation Service (NRCS) West National Technology Support Center in Portland, Oregon.

Amrita G. de Soyza is a senior ecologist at the Nevada Desert Research Center in Reno, Nevada.

Arlene J. Tugel is a soil scientist with the USDA-NRCS Soil Survey Division in Las Cruces, New Mexico.

Robert S. Unnasch is an senior ecologist with The Nature Conservancy (TNC) in Boise, Idaho.