

Mario Biondini

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RESEARCH INTERESTS

Ecosystem level carbon flows and nutrient cycling, grazing ecology, ecosystem modeling, biocomplexity, statistical ecology, spatial pattern analysis, scaling issues in ecology, landscape ecology and plant community ecology. The two main biomes where I have conducted research are the North and South American grasslands and Northern Great Plains wetlands.

EDUCATION

B.S.	Agronomy	Universidad Nacional del Sur (Argentina)	1975
M.S.	Range Ecology-Systems Analysis	Texas Tech University	1980
Ph.D.	Range Ecosystems Science-Statistics	Colorado State University	1984

LANGUAGES: Fluent in English and Spanish.

TECHNICAL EXPERTISE:

1. Programming in C, C⁺⁺, and Fortran. Includes parallel computing programming using MPI (Message-Passing Interface).
2. System analysis and ecosystem modeling.
3. Univariate and multivariate analysis, spatial pattern analysis (including geostatistics, and fractal geometry methods), and statistical ecology (including species abundance relationships, species affinity, ordination, and classification methods).
4. Use of Geographic Information System for the analysis of ecosystem structure and function.

PROFESSIONAL EXPERIENCE

2002-2005	Panel Manager for the USDA-NRICGP Managed Ecosystems Program
2001-2003	Panel Review Member: National Science Foundation—Ecosystems Science Program.
2000-2002	Panel Review Member: USDA National Research Initiative—Ecosystems

	Program
1996-present	Professor, North Dakota State University
1989-1996	Associate Professor, North Dakota State University
1986-1989	Assistant Professor, North Dakota State University
1984-1986	Post-Doctoral Fellow, Colorado State University
1984-1986	Consultant, Winrock International, Morrilton, Arkansas
1984	Consultant, Robert Mitchell and Associates, Greeley, Colorado
1983-1984	Consultant, Goodson and Associates, Lakewood, Colorado
1980-1984	Research Associate, Colorado State University
1978-1980	Research Assistant, Texas Tech University
1977-1978	Research Associate, INTA Balcarce Experiment Station, Argentina
1975-1977	Research Associate, Universidad Nacional del Sur, Argentina

HONORS AND AWARDS

Member of Phi Kappa Phi

North Dakota College of Agriculture Award for **Excellence in Research**-- Early Career (1995).

North Dakota State University Development Foundation **Fred Waldron Award for Outstanding Research** (2003).

North Dakota College of Agriculture, Food Systems, and Natural Resources **Eugene R. Dahl Excellence in Research Award**—Senior Career (2004).

MAJOR GRANTS AWARDED

1. Semi-arid Ecosystem Development as a Function of Resource Processing and Allocation. DOE Grant: DE-AS02-76EV040128. Co-PI, 1984-1987. \$770,000.
2. Carbon and Nitrogen Allocation and Utilization in a Crested Wheatgrass and Native Shortgrass Ecosystem. National Science Foundation Grant: BSR-8405604. Co-PI, 1984-1986. \$250,000.
3. Grazing-Nitrogen Cycle Interactions in Grassland Ecosystems. NSF-EPSCoR Program. Principal Investigator. 1987-1990. \$60,000.
4. The Biogeochemistry of Carbon, Nitrogen and Sulfur Transformations in a Seasonal and a Semipermanent Wetland. Department of Interior: 14-08-0001-G1581. Principal Investigator. 1990-1992. \$50,000.
5. Grassland Patchiness and the Scaling of Soil Nitrogen. USDA-NRICGP-93-0051. Principal Investigator. 1993-1996. \$135,000.

6. Relationships Between Landscape Patterns, Ecological Processes, and Biological Diversity in Native Great Plains Grasslands. The Nature Conservancy/Mellon Foundation Ecosystem Research Program. Principal Investigator. 1994-1998. \$285,000.
7. Advancing Science Excellence in North Dakota- Environmental Program. P.Boudjouk (Director) and M. Biondini (PI). 1994-1996. EPA-EPSCoR Program. \$384,000.
8. Plant Competition and the Scaling of soil Resources. Principal Investigator. National Science Foundation DEB-9627928. 1996-2000. \$185,757.
9. Internet2/UDAID. Co-PI. National Science Foundation-EPSCoR Program. 1998-2000. \$300,000.
10. Plant Diversity, Production, and Stability in Grassland Ecosystems. Principal Investigator. USDA-NRICGP-9900979. 1999-2004. \$279,500.
11. Patch Dynamics Processes and the Restoration of Prairie Landscapes. Co-PI. TNC/Mellon Foundation Ecosystem Research Program. 2000-2004. \$104,616.
12. Effects of Fire on Grazed Prairie Grasslands. Co-PI. Forest Service Agreement 04-PA-11011800-031. 2004-2008. \$95,925.
13. Multifunctional Biomass Production for Ethanol from High Diversity CRP Grasslands. Principal Investigator. USDA-NRICGP-2008-00717. 2008-2011. \$399,720

REFERRED PUBLICATIONS

1. Redente, E.F., T.B. Doerr, C.E. Grygiel, and M.E. Biondini. 1984. Vegetation establishment and succession on disturbed soils in northwestern Colorado. *Recl. Reveg. Res.* 3:153-165.
2. Biondini, M.E., C.D. Bonham, and E.F. Redente. 1984. Relationships between induced successional patterns and soil biological activity of reclaimed areas. *Recl. Reveg. Res.* 3:323-342.
3. Biondini, M.E., C.D. Bonham, and E.F. Redente. 1985. Secondary successional patterns in a sagebrush (*Artemisia tridentata*) community as they relate to soil disturbance and soil biological activity. *Vegetatio* 60:25-36.
4. Biondini, M.E. and E.F. Redente. 1986. Interactive effect of stimulus and stress on plant community diversity in reclaimed lands. *Recl. Reveg. Res.* 4:211-222.
5. Biondini, M.E., R. Pettit and V. Jones. 1986. Nutritive value of forage on sandy soils as affected by tebuthiuron. *J. Range Mgt.* 39:396-399.

6. Biondini, M.E., P.W. Mielke and K.J. Berry. 1988. Data dependent permutation techniques for analysis of ecological data. *Vegetatio* 75:161-168.
7. Biondini, M.E., D.A. Klein, and E.F. Redente. 1988. Carbon and nitrogen losses through root exudation by Agropyron cristatum, A. smithii and Bouteloua gracilis. *Soil Biol. Biochem.* 20:477-482.
8. Klein, D.A., B.A. Frederick, M.E. Biondini and M.J. Trlica. 1988. Rhizosphere microorganisms effects on soluble amino acids, sugars and organic acids in the root zone of Agropyron cristatum, Agropyron smithii and Bouteloua gracilis. *Plant and Soils* 110:19-25.
9. Biondini, M.E., P.W. Mielke and E.F. Redente. 1988. Permutation techniques based on Euclidean analysis: A new and powerful statistical method for ecological research. *Coenoses* 3:155-174.
10. Sala, O.E., M.E. Biondini and W.K. Lauenroth. 1988. Bias in estimates of primary production: an analytical solution. *Ecol. Modeling* 44:43-55.
11. Redente, E.F., M.E. Biondini and J. Moore. 1989. Observations on biomass dynamics of a crested wheatgrass and native shortgrass ecosystem in southern Wyoming. *J. Range Mgt.* 42:113-118.
12. Biondini, M.E., A.A. Steuter and C.E. Grygiel. 1989. Seasonal fire effects on diversity patterns, spatial distribution and community structure of forbs in the northern mixed prairie, U.S.A. *Vegetatio* 85: 21-31.
13. Wohlgemuth, K., J.J. Melacon, H. Hughes, and M.E. Biondini. 1989. Treatment of North Dakota beef cows and calves with Ivermectin: Some economic considerations. *The Bovine Practitioner* 24: 61-66.
14. Trlica, M.J. and M.E. Biondini. 1990. Soil water dynamics, transpiration, and water losses in a crested wheatgrass and native shortgrass ecosystem. *Plant and Soils* 126: 187-201 .
15. Steuter, A.A., C.E. Grygiel and M.E. Biondini. 1990. Restoring mixed prairie process: the fire/bison grazing/pocket gopher disturbance interaction - A synthesis approach to research/management planning. *Natural Areas Journal* 10: 61-68.
16. Wohlgemuth, K., M.E. Biondini, D. Nash, and G.H. Myers. 1990. Relationship between treatment of North Dakota beef cows and calves with fenbendazole and weaning weight of calves. *The Bovine Practitioner* 25: 87-90.
17. Biondini, M.E., P.W. Mielke and E.F. Redente. 1991. Permutation Techniques Based on Euclidean Analysis: A New and Powerful Statistical Method for Ecological Research. Chapter 19 (pp 221-240) In L. Orloci and E. Feoli (eds): Computer Assisted Vegetation

Analysis. Kluwer Academic Publishers, Dordrecht, The Netherlands.

18. Biondini, M.E., W.K. Lauenroth and O.E. Sala. 1991. Correcting estimates of net primary production: Are we overestimating plant production in rangelands?. *J. of Range Mgt.* 44: 194-198.
19. Krabbenhoft, K., D. Kirby and M.E. Biondini. 1993. Topoedaphic unit analysis: A site classification system for reclaimed mined lands. *Catena* 20:289-301
20. Carey, D.A., J.S. Caton and M.E. Biondini. Energy supplements for beef steers. 1993. *J. of Animal Science* 71:2260-2269
21. Cockrell, J.R., M.E. Biondini and D. Kirby. 1993. Vesicular-arbuscular mycorrhizae recolonization of grasses on a reclaimed stripmine in North Dakota. *The Prairie Naturalist* 25:161-172.
22. Biondini, M.E. and C.E. Grygiel. 1994. Landscape distribution of organisms and the scaling of soil resources. *The American Naturalist* 143:582-610.
23. Shariff, A.R., M.E. Biondini and C.E.Grygiel. 1994. Litter decomposition rates and soil nitrogen dynamics as a function of grazing intensity. *J. of Range Mgt.* 47:444-449.
24. Shariff, A.R., M.E. Biondini and C.E.Grygiel. 1994. Net primary productivity and plant nitrogen dynamics as a function of grazing intensity. *The Prairie Naturalist* 26:229-240.
25. Grazul-Bilska, A.T., D.A. Redmer, A. Jablonka-Shariff, M.E. Biondini, and L.P. Reynolds. 1995. Proliferation and progesterone production of ovine luteal cells from several stages of the estrous cycle: effects of fibroblast growth factors, and luteinizing hormones. *Can. J. of Physiol. Pharmacol* 73: 491-500.
26. Biondini, M.E., and L. Manske. 1996. Grazing frequency and ecosystem processes in an Northern mixed prairie, U.S.A. *Ecol. Appl.* 6:239-256.
27. Wylie, B.K., D.D. DeJong, L.L. Tieszen, and M.E. Biondini. 1996. Grassland canopy parameters and their relationship to remotely sensed vegetation indices in the Nebraska sand hills. *Geocarto International* 11:39-52.
28. Biondini, M.E., B.D. Patton, and P.E. Nyren. 1998. Grazing intensity and ecosystem processes in a northern mixed-grass prairie, U.S.A. *Ecological Applications* 8:469-479.
29. Biondini, M.E., A.A. Steuter, and R. Hamilton. 1999. Bison use of fire-managed remnant prairies. *J. of Range Mgt.* 52:454-461.
30. Ringwall K., M.E. Biondini, and C.E. Grygiel. 2000. Effects of nitrogen fertilization in leafy

- spurge root architecture. *J. of Range Mgt.* 53:228-232.
31. Johnson, H. and M.E. Biondini. 2001. Root morphological plasticity and nitrogen uptake of 59 plant species from the Great Plains grasslands, U.S.A. *Basic and Applied Ecology* 2:127-143.
 32. Biondini, M. E. 2001. A three dimensional spatial model for plant competition in a heterogeneous soil environment. *Ecological Modelling* 142:189-225.
 33. Levang-Brilz, N. and M.E. Biondini. 2002. Growth rate, root development and nutrient uptake of 55 plant species from the Great Plains Grasslands, U.S.A. *Plant Ecology* 165:117-144.
 34. Biondini, M. 2003. Answer to Xiaoxian Zhang's comments on "A three dimensional spatial model for plant competition in a heterogeneous soil environment" *Ecological Modelling* 166:187-189.
 35. Mirik, M., J. Norland, R. Crabtree, and M. Biondini. 2005. Hyperspectral one-meter-resolution remote sensing in Yellowstone National Park, Wyoming: I. Forage nutritional values. *Rangeland Ecology and Management* 58:452-458.
 36. Mirik, M., J. Norland, R. Crabtree, and M. Biondini. 2005. Hyperspectral one-meter-resolution remote sensing in Yellowstone National Park, Wyoming: II. Biomass. *Rangeland Ecology and Management* 58:459-465.
 37. Reynolds, L., M.E. Biondini, P.P. Borowicz, K.A. Vonnahme, J. S. Caton, A.T. Grazul-Bilska, and D. Redmer. 2005. Functional significance of developmental changes in placenta microvascular architecture: The sheep as a model. *Endothelium* 12:11-19.
 38. Biondini, M.E. 2007. Plant diversity, production, stability, and susceptibility to invasion in restored northern tall grass prairie (United States). *Restoration Ecology* 15:77-87.
 39. Mirik, M., J. E. Norland, M. E. Biondini, R. L. Crabtree, and Gerald J. Michels Jr. 2007. Relationships between remotely sensed data and biomass components in a big sagebrush (*Artemisia tridentata*) dominated area in Yellowstone National Park. *Turkish Journal of Agriculture and Forestry* 31:135-145.
 40. Biondini M.E. 2008. Allometric scaling laws for water uptake by plant roots. *Journal of Theoretical Biology* 251:35-59.
 41. DeKeyser E.S., M.E. Biondini, and D. Kirby. 2008. Low prairie plant communities of wetlands as a function of disturbance: Physical parameters. *Ecological Indicators* (In Press).

EDITED PUBLICATIONS

1. Biondini, M.E. and Russ Pettit. 1978. Quality of sandy land forages improved with GRASLAN^R. Noxious Brush and Weed Control. Texas Tech University. 9:37-38.
2. Biondini, M. and R. Pettit. 1979. A soil water-flow model for shinnery-oak ecosystem. Noxious Brush and Weed Control. Texas Tech University. 10:44-45.
3. Biondini, M. and R. Pettit. 1979. Quality of sandy grass-land improved with GRASLAN^R. Noxious Brush and Weed Control. Texas Tech University. 10:30-31.
4. Biondini, M. and R. Pettit. 1980. GRASLAN^R increases digestibility of forages on sandy soils. Noxious Brush and Weed Control. Texas Tech University. 11:59-60.
5. Redente, E.F., N.E. Hargis and M. Biondini. 1981. Revegetating disturbed areas to protect the environment. Colorado Mining and Mineral Resources Research Institute, Colorado. pp 110-120.
6. Redente, E.F., T.B. Doerr, C.E. Grygiel, E. Allerdings, J.M. Stark, and M.E. Biondini. 1982. Effect of plant species, soil material, and cultural practices upon plant establishment and succession. pp. 1-25 In E.F. Redente and C.W. Cook, (eds). Revegetation studies on oil shale related disturbances in Colorado. Colorado State University, Fort Collins.
7. Redente, E.F., J.M. Stark, M.E. Biondini, and T. Oliver. 1984. Vegetation structure and succession as it relates to soil disturbance and retorted shale. pp. 1-31. In E.F. Redente and C.W. Cook, (eds). Ecological studies on natural and established ecosystems on energy related disturbances in Colorado. Colorado State University, Fort Collins.
8. Manske, L.L., W.T. Barker and M.E. Biondini. 1988. Effect of grazing management treatment on grassland plant communities and prairie grouse habitat. pp 58-72. In Prairie Chickens on the Sheyenne National Grasslands. USDA-Forest Service General Technical Report RM-159.
9. Steuter, A.A., M.E. Biondini and C.E. Grygiel. 1989. The fire/bison/gopher disturbance hierarchy. Restoration and Mgt. Notes (Wisconsin).
10. Biondini, M.E. 1992. Remote Sensing Uses in Agriculture. In L.Jones (ed.): Advanced Computer Applications in Animal Agriculture, Cornell University. pp 77-83.
11. Clancy, S.A., J.C. Gardner, C.E. Grygiel, M.E. Biondini, and G.K. Johnson. 1993. Farming Practices for a Sustainable Agriculture in North Dakota. North Dakota State University, Carrington Research Center. 93 pp.
12. Biondini, M.E. and J. Arndt. 1993. The Biogeochemistry of Carbon, Nitrogen and Sulfur

Transformation in Seasonal and Semipermanent Wetlands. North Dakota Water Research Institute/USGS. Technical Report ND90-05. 92p.

13. Sedevic, K. and M.E. Biondini. 2002. Sharp-tailed grouse monitoring, population trends, and visual obstruction reading monitoring on western North Dakota grasslands. Forest Service 01-CS-110118-00-070. 20p.

ABSTRACTS

1. Redente, E.F. and M.E. Biondini. 1983. Ecological stability and diversity. Plant Uptake and Soil-Plant Processes Symposium. Sponsored by the Ecological Research Division. U.S.A. Department of Energy. Gaithersburg, Maryland. pp 41 (Abstract--Invited).
2. Biondini, M.E. and E.F. Redente. 1984. Secondary succession patterns as they relate to soil disturbance and soil biological activity. Terrestrial Ecology in Arid and Semi-Arid Regions Symposium Sponsored by the Ecological Research Division U.S.A. Department of Energy. Gaithersburg, Maryland. pp 27 (Abstract--Invited).
3. Trlica, M.J.T., T. Tarassoum and M.E. Biondini. 1986. Transpiration and water use in a crested wheatgrass and native shortgrass ecosystem. IV International Congress of Ecology, Syracuse, New York. pp 333 (Abstract).
4. Barker, W.K., M.E. Biondini, L.L. Manske and T. Nelson. 1988. Grassland habitat types of the Sheyenne delta. pp 73 In Prairie Chickens on the Sheyenne National Grasslands. USDA-Forest Service General Technical Report RM-159. (Abstract--Invited).
5. M.E. Biondini, Steuter, A.A., and C.E. Grygiel. 1989. Fire season influences on alpha, beta and landscape mosaic diversity and abundance of forb communities in the northern mixed prairie. 40th AIBS Annual Meeting, Toronto, Canada. pp 56. (Abstract).
6. Grygiel, C.E. and M.E. Biondini. 1989. Invasion patterns on a simulated reclamation site in northwestern Colorado, U.S.A. 40th AIBS Annual Meeting, Toronto, Canada. pp 50 (Abstract).
7. Kirby, D.R., K.D. Krabbenhoft, M.E. Biondini, D.M. Fox, D.J. Nilson and G.A. Halvorson. 1993. Soil Depth, quality and herbaceous yield relationships on reclaimed grasslands. LRCC Annual Meeting, Bismarck, North Dakota. (Abstract--Invited).
8. Grazula-Bilska, A.T., A. Jablonka, M.E. Biondini and D.A. Redmer. 1992. Effects of fibroblast growth factors (FGF), luteal-conditioned media (LCM) and luteinizing hormone (LH) on proliferation of ovine luteal cells throughout the estrous cycle. Society for the Study of Fertility (Abstract).
9. Summers, G.P., M.E. Biondini, D.R. Kirby, C.E. Grygiel and K.D. Krabbenhoft. 1993.

Nitrogen flow in the decomposition process of a prairie wetland. Society of Wetland Scientists, Edmonton, Alberta, Canada ([Abstract](#))

10. Biondini, M.E., A.R. Shariff and C.E. Grygiel. 1993. Net primary production and N dynamics as a reflection of sustainability under different grazing intensities. 78th Ecological Society of America Annual Meeting, Madison, Wisconsin. pp 68 ([Abstract](#)).
11. Kirby, D.R., K.D. Krabbenhoft and M.E. Biondini. 1994. Ecological dynamics of a created seasonal wetland in North Dakota. International Land Reclamation and Mine Drainage Conference. April 24-29. Pittsburgh, PA. ([Abstract](#)).
12. Biondini, M.E., and Carolyn Grygiel. 1994. Plant Competition and the landscape scaling of soil nitrogen. 9th Annual Landscape Ecology Symposium. Tucson, Arizona. March 23-26. ([Abstract](#)).
13. Biondini, M.E. 1996. Uses of multi-response permutation procedure in the analysis of spatial patterns. 81st Ecological Society of America Annual Meeting, Providence, Rhode Island ([Abstract--Invited](#)).
14. Biondini, M.E., and A.A. Steuter. 1997. Spatial distribution of bison grazing as a function of fire and range sites. Bison Ecology and Mangement in North America, Bozman MT ([Abstract--Invited](#)).
15. Biondini, M.E. 1997. Plant competition and the spatial scaling of soil nitrogen. Ecological Society of America 1997 Annual Meeting. Albuquerque, NM ([Abstract](#)).
16. Biondini, M.E. 1999. Spatial distribution of bison grazing as a function of fire and range site. The Nature Conservancy Landscape-Scale Fire and Grazing Roundtable. Niobrara Valley Preserve, Nebraska. ([Abstract--Invited](#))
17. Biondini, M.E. 1999. Use of Parallel Computing in Ecological Modeling. Internet 2 Regional Conference. Fargo, North Dakota. ([Abstract--Invited](#)).
18. Fitzpatrick, C.P., K. K. Sedivec, and M. E. Biondini. 2003. Effects of wild fire on wooded draw composition in western North Dakota. Society for Range Management Annual Meeting, Casper WY ([Abstract](#)).
19. DeKeyser, J., M.E. Biondini, and D. Kirby. 2006. Modeling vegetative states of prairie pothole wetland plant communities. Society for Range Management Annual Meeting, Vancouver, Canada ([Abstract](#)).
20. DeKeyser, J., M.E. Biondini, and D. Kirby. 2006. Species Composition of a Wetland Plant Community in Relation to Disturbance. North Dakota Academy of Sciences ([Abstract](#)).
21. Biondini M.E., S. Pryor, W. Koo, and K. Ringwall. 2007. CRP to Ethanol. Bio-opportunities:

Securing North Dakota's Future Conference. Fargo, ND (Abstract--Invited).

PROCEEDINGS

1. Biondini, M. and E.F. Redente. 1983. Stability and diversity in disturbed land reclamation. Society for Range Management 36th Annual Meeting, Albuquerque, NM. pp 105 (Proceedings).
2. Redente, E.F. and M.E. Biondini. 1984. Interactive effects of stimulus and stress on plant community diversity. Second International Rangeland Congress. Adelaide, Australia. pp 364 (Proceedings).
3. Redente, E.F. and M.E. Biondini. 1985. Secondary succession patterns as they relate to soil disturbance and soil biological activity. Society for Range Management 38th Annual Meeting, Salt Lake City, UT. pp 30 (Proceedings).
4. Sala, O.E., M.E. Biondini and W.K. Lauenroth. 1987. Errors in estimating primary production: a corrected estimate and its confidence intervals. 40th Annual Meetings, Society for Range Management, Boise, ID. pp 21 (Proceedings).
5. Trlica, M.J.T., T. Tarassoum and M.E. Biondini. 1987. Transpiration and water use in a crested wheatgrass and native shortgrass ecosystem. 40th Annual Meeting, Society for Range Management, Boise, ID. pp 76 (Proceedings).
6. Steuter, A.A., M.E. Biondini and C.E. Grygiel. 1989. Fire season influence on forb diversity in the northern mixed prairie. Society for Range Management 42nd Annual Meeting, Billings, Montana (Proceedings).
7. Sjursen, P.J., L.L. Manske and M.E. Biondini. 1989. Production and decomposition of native prairie vegetation in western North Dakota. North Dakota Academy of Science, 18th Annual Meeting. Grand Forks, North Dakota (Proceedings).
8. Grygiel, C.E. and M.E. Biondini. 1990. Population pattern dynamics of ten invading plant species. Society for Range Management 43rd Annual Meeting, Reno, Nevada (Proceedings).
9. Steuter, A.A., C.E. Grygiel and M.E. Biondini. 1990. Research/Management/Stewardship: A synthesis method for prairie ecosystem. Society for Range Management 43rd Annual Meeting, Reno, Nevada (Proceedings).
10. Kirby, D., K. Krabbenhoft, M.E. Biondini, G. Halvorson and D. Nilson. 1991. Defining Topoedaphic units for reclaimed mined-lands. Society for Range Management 44th Annual Meeting, Washington, D.C. (Proceedings).
11. Krabbenhoft, K., D. Kirby, M.E. Biondini, G. Halvorson and D. Nilson. 1991. Levels of

- plant diversity on mined-land in North Dakota. Society for Range Management 44th Annual Meeting, Washington, D.C. (Proceedings).
12. Krabbenhoft, K., D. Kirby, M.E. Biondini and D. Nilson. 1991. Plant diversity patterns on North Dakota Mined Lands. American Society of Surface Mining National Meeting. Durango, Colorado. (Proceedings).
 13. Kirby, D., K. Krabbenhoft, M.E. Biondini and G. Halvorson. 1991. Relation of soil depth to cover, yield and diversity of reclaimed grasslands. LRCC Annual Meeting, Bismarck, North Dakota. (Proceedings--Invited).
 14. Biondini, M.E. 1992. Remote Sensing Uses in Agriculture. In: Advanced Computer Applications in Animal Agriculture, Cornell University. pp 77-83. (Proceedings--Invited).
 15. Summers, G., K. Krabbenhoft, M.E. Biondini, D. Kirby and C.E. Grygiel. 1993. Nitrogen Cycling in Northern Prairie Wetlands. Society for Range Management 46th Annual Meeting, Albuquerque, New Mexico (Proceedings).
 16. Kirby, D.R., K.D. Krabbenhoft, M.E. Biondini, D.M. Fox, D.J. Nilson and G.A. Halvorson. 1993. Soil Depth, quality and herbaceous yield relationships on reclaimed grasslands. American Society for Surface Mining and Reclamation, Washington (Proceedings).
 17. Krabbenhoft, K., D. Kirby and M.E. Biondini. 1994. Plant diversity on reclaimed grasslands. Society for Range Management 47th Annual Meeting, Colorado Springs, Colorado (Proceedings).
 18. Nyren, P.E., B.D. Patton, and M.E. Biondini. 1995. The use of ground level and aerial remotely sensed data to determine aboveground biomass on a mixed grass prairie in south central North Dakota. Fifth International Rangeland Congress. Salt Lake City, Utah (Proceedings).
 19. Wylie, B.K., D.D. DeJong, L.L. Tieszen, and M.E. Biondini. 1996. Grassland canopy parameters and their relationship to remotely sensed vegetation indices in the Nebraska sand hills. Society for Range Management 49th Annual Meeting, Wichita, Kansas. (Proceedings).
 20. Clancy, S.A., M.E. Biondini, and J.C. Gardner. 1997. Grasslands as comparative for farming practices influence on carbon and nitrogen dynamics. 18th International Grassland Congress, Winnipeg, Canada. (Proceedings).
 21. Biondini, M.E., and A.A. Steuter. 1998. Spatial distribution of bison grazing as a function of fire and range sites. In: L.R. Irby and J.E. Knight (eds.). Bison Ecology and Management in North America. Montana State University, Bozman MT (Proceedings--Invited).
 22. Mirik, M., J. Norland and M. Biondini. 2001. Prediction of Above- ground Biomass and

Foliar Chemistry Using Hyperspectral Imagery in Yellowstone National Park. Workshop. NASA's Earth Science Enterprise: Commercial Remote Sensing Program. Stennis Space Center, MS. (Proceedings--Invited).

23. Wesley E. Newton, J.B. Hestbeck, M.E. Biondini. 2005. Modeling forested landscapes and biodiversity: does it really have to be a trade-off between fine scale data measured on small areas versus coarse scale data measured over large areas?. 5th North American Forest Ecology Workshop, Ottawa, Canada. (Proceedings).

PRESENTATIONS -- INTERNATIONAL

1. Cauhepe, M., J. Lemcoff, S. Alzuri, L. Hildaga y M. Biondini. 1978. Preferencias de distintas especies forrajeras de la Depresion del salado y su relacion con digestibilidad y area basal. Simposio Florentina Ameghino. Argentina. (Invited Presentation).
2. Redente, E.F. and M.E. Biondini. 1984. Interactive effects of stimulus and stress on plant community diversity. Second International Rangeland Congress. Adelaide, Australia.
3. Trilica, M.J.T., T. Tarassoum and M.E. Biondini. 1986. Transpiration and water use in a crested wheatgrass and native shortgrass ecosystems. IV International Congress of Ecology, Syracuse, New York.
4. M.E. Biondini, Steuter, A.A., and C.E. Grygiel. 1989. Fire season influences on alfalfa, beta and landscape mosaic diversity and abundance of forb communities in the northern mixed prairie. 40th AIBS Annual Meeting, Toronto, Canada.
5. Grygiel, C.E. and M.E. Biondini. 1989. Invasion patterns on a simulated reclamation site in northwestern Colorado, U.S.A. 40th AIBS Annual Meeting, Toronto, Canada.
6. Summers, G.P., M.E. Biondini, D.R. Kirby, C.E. Grygiel and K.D. Krabbenhoft. 1993. Nitrogen flow in the decomposition process of a prairie wetland. Society of Wetland Scientists, Edmonton, Alberta, Canada.
7. Kirby, D.R., K.D. Krabbenhoft and M.E. Biondini. 1994. Ecological dynamics of a created seasonal wetland in North Dakota. International Land Reclamation and Mine Drainage Conference. April 24-29. Pittsburgh, PA.
8. Nyren, P.E., B.D. Patton, and M.E. Biondini. 1995. The use of ground level and aerial remotely sensed data to determine aboveground biomass on mixed grass prairie in south central North Dakota. Fifth International Rangeland Congress. Salt Lake City, Utah.
9. Clancy, S.A., M.E. Biondini, and J.C. Gardner. 1997. Grasslands as comparative for farming practices influence on carbon and nitrogen dynamics. 18th International Grassland Congress, Winnipeg, Canada.

10. Biondini, M.E., and A.A. Steuter. 1997. Spatial distribution of bison grazing as a function of fire and range sites. *Bison Ecology and Management in North America*, Bozman MT. (Invited Presentation).
11. Wesley E. Newton, J.B. Hestbeck, M.E. Biondini. 2005. Modeling forested landscapes and biodiversity: does it really have to be a trade-off between fine scale data measured on small areas versus coarse scale data measured over large areas?. 5th North American Forest Ecology Workshop, Ottawa, Canada.
12. DeKeyser, J., M.E. Biondini, and D. Kirby. 2006. Modeling vegetative states of prairie pothole wetland plant communities. Society for Range Management Annual Meeting, Vancouver, Canada.

PRESENTATIONS -- NATIONAL

1. Biondini, M.E. and E.F. Redente. 1983. Stability and diversity in disturbed land reclamation. Society for Range Management 36th Annual Meeting, Albuquerque, NM.
2. Redente, E.F. and M.E. Biondini. 1983. Ecological stability and diversity. Plant uptake and soil-plant processes symposium. Sponsored by the Ecological Research Division. U.S.A. Department of Energy. Gaithersburg, Maryland. (Invited Presentation).
3. Biondini, M.E. and E.F. Redente. 1984. Secondary succession patterns as they relate to soil disturbance and soil biological activity. *Terrestrial Ecology in Arid and Semi-Arid Regions*. Symposium Sponsored by the Ecological Research Division U.S.A. Department of Energy. Gaithersburg, Maryland. (Invited Presentation, Keynote Address).
4. Redente, E.F. and M.E. Biondini. 1985. Secondary succession patterns as they relate to soil disturbance and soil biological activity. Society for Range Management 38th Annual Meeting, Salt Lake City, Utah.
5. Sala, O.E., M.E. Biondini and W.K. Lauenroth. 1987. Errors in estimating primary production: a corrected estimate and its confidence intervals. 40th Annual Meetings, Society for Range Management, Boise, ID.
6. Trlica, M.J.T., T. Tarassoum and M.E. Biondini. 1987. Transpiration and water use in a crested wheatgrass and native shortgrass ecosystem. 40th Annual Meeting, Society for Range Management, Boise, ID.
7. Barker, B., M. Biondini, L. Manske, and T. Nelson. 1987. Grassland habitat types of the Sheyenne Delta. 17th Prairie Grouse Technical Conference. Univ. of Minn.-Crookston. (Invited Presentation).

8. Manske, L., B. Barker, and M. Biondini. 1987. Effects of grazing management treatment on grassland plant communities and prairie grouse habitat. 17th Prairie Grouse Technical Conference. Univ. of Minn.-Crookston. (Invited Presentation).
9. Steuter, A.A., C.E. Grygiel and M.E. Biondini. 1989. Fire season influences on alfalfa, beta and landscape mosaic diversity and abundance of forb communities on the northern mixed prairie. Society for Range Management 42nd Annual Meeting, Billings, Montana.
10. Grygiel, C.E. and M.E. Biondini. 1990. Population pattern dynamics of ten invading plant species. Society for Range Management 43rd Annual Meeting, Reno, Nevada.
11. Steuter, A.A., C.E. Grygiel and M.E. Biondini. 1990. Research/Management/Stewardship: A synthesis method for prairie ecosystem. Society for Range Management 43rd Annual Meeting, Reno, Nevada.
12. Kirby, D., K. Krabbenhoft, M.E. Biondini, G. Halvorson and D. Nilson. 1991. Defining Topoedaphic units for reclaimed mined-lands. Society for Range Management 44th Annual Meeting, Washington, D.C.
13. Krabbenhoft, K., D. Kirby, M.E. Biondini, G. Halvorson and D. Nilson. 1991. Levels of plant diversity on mined-land in North Dakota. Society for Range Management 44th Annual Meeting, Washington, D.C.
14. Krabbenhoft, K., D. Kirby, M.E. Biondini and D. Nilson. 1991. Plant diversity patterns on North Dakota Mined Lands. American Society of Surface Mining National Meeting. Durango, Colorado.
15. Biondini, M.E. 1992. Remote Sensing Uses in Agriculture. First Advanced Computer Applications in Animal Agriculture Meeting, Dallas, 1992. (Invited Presentation).
16. Summers, G., K. Krabbenhoft, M.E. Biondini, D. Kirby and C.E. Grygiel. 1993. Nitrogen Cycling in Northern Prairie Wetlands. Society for Range Management 46th Annual Meeting, Albuquerque, New Mexico.
17. Kirby, D.R., K.D. Krabbenhoft, M.E. Biondini, D.M. Fox, D.J. Nilson and G.A. Halvorson. 1993. Soil Depth, quality and herbaceous yield relationships on reclaimed grasslands. American Society for Surface Mining and Reclamation, Washington.
18. Biondini, M.E., A.R. Shariff and C.E. Grygiel. 1993. Net primary production and N dynamics as a reflection of sustainability under different grazing intensities. 78th Ecological Society of America Annual Meeting, Madison, Wisconsin.
19. Krabbenhoft, K., D. Kirby and M.E. Biondini. 1994. Plant diversity on reclaimed grasslands. Society for Range Management 47th Annual Meeting, Colorado Springs, Colorado.

20. Biondini, M.E., and Carolyn Grygiel. 1994. Plant Competition and the landscape scaling of soil nitrogen. 9th Annual Landscape Ecology Symposium. Tucson, Arizona. March 23-26.
21. Wylie, B.K., D.D. DeJong, L.L. Tieszen, and M.E. Biondini. 1996. Grassland canopy parameters and their relationship to remotely sensed vegetation indices in the Nebraska sand hills. Society for Range Management 49th Annual Meeting, Wichita, Kansas.
22. Biondini, M.E. 1996. Uses of multi-response permutation procedure in the analysis of spatial patterns. 81st Ecological Society of America Annual Meeting, Providence, Rhode Island (Invited Presentation).
23. Biondini, M.E. 1997. Plant competition and the spatial scaling of soil nitrogen. Ecological Society of America 1997 Annual Meeting. Albuquerque, NM.
24. Biondini, M.E. 1999. Spatial distribution of bison grazing as a function of fire and range site. Landscape-Scale Fire and Grazing Roundtable. Niobrara Valley Preserve, Nebraska. (Invited Presentation).
25. Mirik, M., J. Norland and M. Biondini. 2001. Prediction of Above- ground Biomass and Foliar Chemistry Using Hyperspectral Imagery in Yellowstone National Park. Workshop. NASA's Earth Science Enterprise: Commercial Remote Sensing Program. Stennis Space Center, MS. (Invited Presentation).
26. Fitzpatrick. C.P., K. K. Sedivec, and M. E. Biondini. 2003. Effects of wild fire on wooded draw composition in western North Dakota. Society for Range Management Annual Meeting, Casper WY (Presentation).
27. Biondini, M.E. 2005. Plant growth and the scaling of soil resources. Center for Advanced Studies. University of New Mexico. (Invited Presentation).
28. Biondini, M.E. 2005. Shape and structure from physics to nature: Plant diversity, root architecture and the scaling of soil resources. Center for Advanced Studies. University of New Mexico. (Invited Presentation).

PRESENTATIONS -- STATE AND REGIONAL

1. Sjursen, P.J., L.L. Manske and M.E. Biondini. 1989. Production and decomposition of native prairie vegetation in western North Dakota. North Dakota Academy of Science, 18th Annual Meeting. Grand Forks, North Dakota.
2. Kirby, D., K. Krabbenhoft, M.E. Biondini and G. Halvorson. 1991. Relation of soil depth to cover, yield and diversity of reclaimed grasslands. LRCC Annual Meeting, Bismarck, North Dakota. (Invited Presentation)

3. Kirby, D.R., K.D. Krabbenhoft, M.E. Biondini, D.M. Fox, D.J. Nilson and G.A. Halvorson. 1993. Soil Depth, quality and herbaceous yield relationships on reclaimed grasslands. LRCC Annual Meeting, Bismarck, North Dakota.
4. Biondini, M.E. 1993. Crop diversity and soil ecology. 12th Annual Meeting, Northern Plains Sustainable Agriculture Society. Jamestown, ND. (Invited Presentation)
5. Biondini, M.E. 1994. Biomass production and nitrogen cycling in northern prairie wetlands. Fish and Wildlife Service-USA.-Annual Research Coordination Meeting: Cottonwood Lake Study Area. Jamestown, ND. (Invited Presentation).
6. K.D. Krabbenhoft, Kirby, D.R., M.E. Biondini, and D.J. Nilson. 1995. Plant diversity of reclaimed lands. LRCC Annual Meeting, Bismarck, North Dakota. (Invited Presentation)
7. Biondini, M.E. 1999. Use of Parallel Computing in Ecological Modeling. Internet 2 Regional Conference. (Invited Presentation).
8. DeKeyser, J., M.E. Biondini, and D. Kirby. 2006. Species Composition of a Wetland Plant Community in Relation to Disturbance. North Dakota Academy of Sciences.
9. Biondini M.E., S. Pryor, W. Koo, and K. Ringwall. 2007. CRP to Ethanol. Bio-opportunities: Securing North Dakota's Future Conference. Fargo, ND (Invited Presentation).

COURSES CURRENTLY TAUGHT

ARS 326 Modeling of Agroecosystems.

(<http://www.ndsu.nodak.edu/instruct/biondini/ars326/ars326.htm>)

Introduction and applications of systems analysis and simulation modeling to agriculture, biology, and natural resources management. The course provides students with a good background and "hands on" experience on the uses of systems analysis and simulation modeling for problem solving in agriculture, industry, science, and management. 2 lectures, 1 two-hour lab.

ARS 452/652 Geographic Information Systems in Range Evaluation.

(<http://www.ndsu.nodak.edu/instruct/biondini/ars452/ars452.htm>)

Analysis of methods for estimating range composition, range condition, range productivity, and wildlife populations. The course emphasizes the use of Geographic Information Systems (GIS) and computer models. 2 lectures and 1 two hours lab (computer or field lab).

ARS 765 Analysis of Ecosystems.

(<http://www.ndsu.nodak.edu/instruct/biondini/ars765/arsc765.htm>). Introduction to advance statistical techniques to evaluate plant communities, plant-animal interactions, and plant-soil relationships. Emphasis on multivariate analysis. 2 lectures, 1 two-hour

lab.

STATE AND NATIONAL COMMITTEES

1. Tri-College Center for Environmental Studies (ND and MN)
2. University Senate (Senator from the College of Agriculture).
3. North Dakota EPSCoR Steering Committee.
4. Natural Resources Management Steering Committee.
5. Chairman of the Department of Animal and Range Sciences Graduate Studies Committee and Computer Resources Committee.
6. Scientific Advisor to the US-Canada Garrison Diversion - Biota Transfer Project
7. Co-Chairman of Governor Sinner's Task Force on Global Change (1991).
8. Technical Committee for the North Dakota Water Resources Research Institute.
9. ASEND-EPSCoR Biotic Resources Research Cluster (NDSU Campus).
10. USDA-NCT-171 Technical Committee on Systems Analysis in Animal Agriculture Research.
11. North Dakota Agricultural Experiment Station Project Review Committee (1993 and 1998).
12. ASEND-EPSCoR EPA Program (PI).
13. College of Agriculture Research Awards Committee.
14. University Graduate Council.
15. University Review Team for the Department of Plant Sciences.
16. University Review Team for the Department of Plant Pathology.
17. College of Agriculture GIS Committee.
18. Representative from the College of Agriculture to the University Computer Policy committee.
19. NDSU Software Committee.

20. NDSU Information Technology Long Term Planning Committee.
21. College of Agriculture Mission committee.
22. Chairman of the NDSU Networking Committee.
23. Chairman of the Department of Animal and Range Sciences Promotion, Tenure, and Evaluation Committee.
24. College of Agriculture Promotion, Tenure, and Evaluation Committee.
25. NDSU Research Infrastructure Advisory Group
26. Chairman of the NDSU committee in High Performance Computing
27. Search committee for Chair of the Department of Animal and Range Sciences (3 times)
28. Search Committee for Director of Information Technology Services at NDSU.
29. Search Committee Chair for a Software Engineering position at the NDSU Center for High Performance Computing.
30. CHPC Advisory Council.

REVIEWER FOR

1. Journals
 - Alces
 - American Journal of Botany.
 - American Midland Naturalist.
 - Austral Ecology
 - Diversity and Distributions
 - Ecological Applications.
 - Ecology.
 - Ecosystems
 - Environmental Management Review
 - Functional Ecology
 - Global Change Biology
 - Great Plains Naturalist.
 - Journal of Animal Science
 - Journal of Applied Ecology
 - Journal of Arid Environments

Journal of Ecology
Journal of Range Management/Rangeland Ecology and Management.
Journal of Theoretical Biology
Journal of Vegetation Science.
Oecologia.
Paleo
Plant Ecology
PLOS Computational Biology
Prairie Naturalist.
Restoration Ecology
Soil Science Society of America Journal
The American Naturalist
Vegetatio.
Weed Research
Weed Technology.
Wetlands

2. Grants

Panel Review Member: USDA National Research Initiative—Managed Ecosystems Program
Panel Review Member: National Science Foundation—Ecosystems Science Program.
USDA Small Business program.
USDA National Research Initiative program.
NSF International Programs in Ecology.
NSF New Faculty Enhancement Grants
USDA Rangeland Resources Program.
USDA-Forest Service Global Climate Change Program.
NSF-Ecosystems Research Program.
NSF-Environmental Geochemistry and Biogeochemistry Program
NSF-Ecology Program.
NSF-Biocomplexity Program.
Natural Environmental Research Council (UK).
Challenge Grants in Biodiversity Program (Canada)