CURRICULUM VITAE

DOUGLAS ALAN FRANK

Professor
Department of Biology
Syracuse University
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EDUCATION:

Ph.D. in plant ecology, Syracuse University, 1990.
M.S. in plant ecology, University of Washington, 1983.
B.S. in biology, University of Illinois, 1977.

ACADEMIC APPOINTMENTS:

Professor, Syracuse University, 2008-present.
Associate Professor, Syracuse University, 2003 - 2008.
Assistant Professor, Syracuse University, 1997 - 2003.
Research Assistant Professor, Syracuse University, 1993 - 97.
Postdoctoral Research Associate, Idaho State University, 1991 - 93.

OTHER EMPLOYMENT:

Park ranger, Mount Rainier National Park, 1977-80.

GRANTS:

Department of Interior, PI, 2011-2016, $140,400
National Science Foundation, PI, 2003-2010. $1,000,000
National Science Foundation, 2004 -2005. ROA supplemental with William Hamilton of Washington and Lee University, $25,000
Inter-American Institute for Global Change Research, I was one of 11 co-PIs (O.Sala PI), 1999-2004, $23,444 (my share) of $999,790 (total).
National Science Foundation, PI, P.M. Groffman Co-PI, 1998-2003, $950,000.
National Science Foundation, PI, 1994-98. $300,000.
Syracuse University Fellow, 1987-89. $36,000.
National Park Service. 1987-1990. $74,000 (for dissertation research, S.J. McNaughton PI).

RECOGNITION AND AWARDS:

Faculty member of Faculty of 1000 (Ecosystem Ecology Section)
My Yellowstone research program was recently featured in a 2005 SCOPE publication, "Under ground: How Creatures of Mud and Dirt Shape Our World"
Faculty 1000 recommendation of Hamilton and Frank 2002 & Frank 2008.
Chuckran P, Frank DA (2013) *IOP Science Select Article and featured on the Environmental Research Website* http://environmentalresearchweb.org/cws/article/news/55410

Frank DA, Pontes AW, McFarlane KJ (2012) *Featured in environmentalresearchweb*
Alexander Gourevitch award for meritorious graduate work at Syracuse University, 1990.

PROFESSIONAL SOCIETIES:
Ecological Society of America

PUBLICATIONS:

Published
Jo I, Fridley JD, Frank DA (2014) Linking above- and belowground resource use strategies for native and invasive species of temperate deciduous forests. Biological Invasions DOI 10.1007/s10530-014-0814-y

Wang L, Liu C, Gomes Alves D, Frank DA, Wang D (2014) Plant diversity is associated with the amount of spatial structure of soil heterogeneity in meadow steppe of China.. Landscape Ecology On Line

Chuckran P, Frank DA (2013) Herbivores regulate the sensitivity of soil organic carbon decomposition to warming. Environmental Research Letters 044013. *IOP Science Select Article and featured on the Environmental Research Website*
http://environmentalresearchweb.org/cws/article/news/55410

Frank DA, Wallen, RL, White PJ (2013) Assessing the Effects of Climate Change and Wolf Restoration on Grassland Processes. In PJ White, RA Garrot, GE Plumb (Eds.) *Yellowstone's Wildlife in Transition*. Harvard University Press.

Frank DA, Pontes AW, McFarlane KJ. (2012) Controls on soil organic carbon stocks and turnover among North American ecosystems. Ecosystems 15:604-615. *Featured in environmentalresearchweb*

Frank, D.A., DePriest, T., McLauchlan, K., and Risch, A.C. 2011. Topographic and ungulate regulation of soil C turnover in a temperate grassland ecosystem. Global Change Biology 17:495-504.

Frank, D.A., A. Pontes, A., E.M. Maine, J.C. Caruana, S. Raina, R. Raina, and J. Fridley. 2010. Grassland root communities: Species distributions and how they are linked to aboveground abundance. Ecology 91:3201-3209.

Ewing, H., Groffman, P.M., and Frank, D.A. 2010. Grazers and soil moisture determine the fate of added $^{15}N_4^+$ in Yellowstone grasslands. Plant and Soil 328:337-351.

Murray, T.R., Frank, D.A., and Gerhing, C.A. 2010. Ungulate and topographic control of arbuscular fungal spore community composition in a temperate grassland. Ecology 91: 815-827.

Risch, A.C. and Frank, D.A. 2010 Diurnal and seasonal patterns in ecosystem carbon dioxide fluxes in a temperate grassland. Rangeland Ecology and Management 63:62 -71.

Frank, D.A. and Groffman, P.M. 2009. Plant rhizospheric N processes: what we don't know and why we should care. Ecology 90: 1512-1519.

Thorne, M. and Frank, D.A. 2009. Influences of grazing and soil moisture on belowground C allocation to fine root biomass and root respiration in C_3 and C_4 grasses. Plant Ecology, Online First.

Frank, D.A. 2008. Evidence for top predator control of a grazing ecosystem. Oikos 117: 1718-1724. *Recommended by Faculty of 1000 Biology*.

Hamilton, E.A. III, Frank , D.A., Hinchey, P.M., and Murray, M.R. 2008. Grazer-induced increases in root exudation trigger positive feedbacks in a temperate grassland. Soil Biology and Biochemistry, 40: 2865-2873.

Stewart, A. and Frank, D.A. 2008 Root production and herbivory in an upland grassland community in Yellowstone National Park. Oecologia 157:453-458.

Frank, D.A. 2008. Ungulate and topographic control of nitrogen : phosphorus stoichiometry in a temperate grassland: soils, plants, and mineralization. Oikos 117: 591-601.

Risch, A.C., and Frank, D.A.2007. Effects of increased soil water availability on ecosystem carbon dioxide fluxes in spatio-temporally heterogeneous temperate grassland. Biogeochemistry 86: 91-103.

Risch, A.C., Jurgensen, M.F., and Frank, D.A. 2007. Abiotic control of decomposition rates in a grazed, spatiotemporally heterogeneous temperate grassland. Plant and Soil, 298: 191-201.

Frank, D.A. 2007. Drought effects on above and below ground production of a grazed temperate grassland ecosystem. Oecologia 152: 131-139.

Frank, D.A. 2006. Large herbivores in heterogeneous grassland ecosystems. Danell, K., Bergström, R., Duncan, P., and Pastor, J. (Editors). Large Mammalian Herbivores, Ecosystem Dynamics, and Conservation. Cambridge University Press.

Risch, A. and D.A. Frank. 2005. Carbon dioxide fluxes in a spatially and temporally heterogeneous temperate grassland. Oecologia, 147: 291-302.

Frank, D.A. 2005. The interactive effects of grazing ungulates and aboveground production on grassland diversity. Oecologia 143: 629-634.

Frank, D.A., R.D. Evans, and B.F. Tracy. 2004. The role of ammonia volatilization in controlling the natural ^{15}N abundance of a grazing ecosystem. Biogeochemistry, 68: 169-178.

Frank, D.A., C.A. Gehring, L. Machut, and M. Phillips. 2003. Soil community composition and the regulation of a grazed temperate grassland. Oecologia 442: 603-609.

Anderson, M.T., and D.A. Frank. 2003. Defoliation effects on reproductive biomass: Importance of scale and timing. Journal of Range Management 56:501-516.

Augustine, D.J, McNaughton, S.J. and Frank, D.A. 2003. Feedbacks between soil nutrients and large herbivores in a managed savanna ecosystem. Ecological Applications 13: 1325-1337.

Frank, D.A., M.M. Kuns, D.R. Guido. 2002. Consumer control of grassland plant production. *Ecology* 83: 602-606.

Verchot, L. P. M. Groffman, and D. A. Frank. 2002. Landscape versus ungulate control of gross mineralization and gross nitrification in semi-arid grasslands of Yellowstone National Park. Soil Biology and Biochemistry 34:1691-1699.

Hamilton, E.W. and D. A. Frank. 2001. Can plants stimulate soil microbes and their own nutrient supply? Evidence from a grazing tolerant grass. *Ecology* 82: 2397-2402. *Recommended by Faculty of 1000 Biology*.

Augustine, D.J. and D.A. Frank. 2001. Effects of migratory grazers on spatial heteogeneity of soil nitrogen properties in a grassland ecosystem. *Ecology* 82: 3149-3162.

Frank, D.A., P.M. Groffman, R.D. Evans, and B.F. Tracy. 2000. Ungulate stimulation of nitrogen cycling and retention in Yellowstone Park grasslands. *Oecologia* 123: 116-121.

Frank, D.A. 1998. Ungulate regulation of ecosystem processes in Yellowstone National Park: direct and feedback effects. *Wildlife Society Bulletin* 26: 410-418.

Frank, D.A. and P.M. Groffman. 1998. Denitrification in a semi-arid grazing ecosystem. *Oecologia* 117: 564-569.

Tracy, B.F. and D.A. Frank. 1998. Effects of ungulates and topography on soil microbial biomass and activity in Yellowstone National Park. *Oecologia* 114: 556-562.

Frank, D.A. and P. M. Groffman. 1998. Ungulate versus landscape control of soil C and N processes in grasslands of Yellowstone National Park. *Ecology* 79: 2229-2241.

Frank, D. A., S. J. McNaughton, and B. Tracy. 1998. The ecology of the earth's grazing ecosystems. *Bioscience* 48: 513-521.

Frank, D. A. and R. D. Evans 1997. Effects of native grazers on grassland N cycling in Yellowstone National Park *Ecology* 78: 2238-2248.

Frank, D. A. and Y. Zhang 1997. Ammonia volatilization from a seasonally and spatially variable grazed grassland: Yellowstone National Park. *Biogeochemistry* 36: 189-203.

McNaughton, S. J., D. Milchunas, and D. A. Frank. 1996. How can net primary productivity be measured in grazing ecosystems? *Ecology* 77: 974-977.

Frank, D. A. and R. S. Inouye. 1994. Temporal variation in actual evapotranspiration of terrestrial ecosystems: patterns and ecological implications. *Journal of Biogeography* 21: 401-411.

Frank, D. A., Inouye, R. S., Huntly, N., G. W. Minshall, and J. E. Anderson. 1994. The biogeochemistry of a north-temperate grassland with native ungulates: nitrogen dynamics in Yellowstone National Park. *Biogeochemistry* 26:163-188.

Frank, D. A. and S. J. McNaughton. 1993. Evidence for the promotion of aboveground grassland production by native large herbivores in Yellowstone National Park. *Oecologia* 96:157-161.

Frank, D. A. and S. J. McNaughton. 1992. The ecology of plants, large mammalian herbivores and drought in Yellowstone National Park. *Ecology* 73:2043-2058.

Frank, D.A. and S.J. McNaughton. 1991. Stability increases with diversity in plant communities: empirical evidence from the Yellowstone drought. *Oikos* 62:360-362.

McNaughton, S.J., M. Oesterheld, D.A. Frank, and K.J. Williams. 1991. Relationships between primary and secondary production in terrestrial ecosystems. In: J.J. Cole, S. Findlay, and G.M. Lovett (eds.) *Comparative analyses of ecosystems: patterns, mechanisms and theories*. Springer-Verlag, New York.

Frank, D.A. and S.J. McNaughton. 1990. Aboveground biomass estimation with the canopy intercept method: a plant growth form caveat. *Oikos* 57:57-60.

McNaughton, S.J., M. Oesterheld, D.A. Frank, and K.J. Williams. 1989. Ecosystem-level patterns of primary productivity and herbivory in terrestrial habitats. *Nature* 341:142-144.

Wiens, D., C.L. Calvin, C.A. Wilson, D.A. Frank and S.R. Seavey. 1987. Reproductive success, spontaneous embryo abortion, and genetic load in flowering plants. *Oecologia* 71:501-509.

Frank, D.A. and R. del Moral 1986. Thirty-five years of secondary succession in a *Festuca viridula - Lupinus latifolius* dominated meadow at Sunrise, Mount Rainier National Park,

Washington. *Canadian Journal Botany* 64:1232-1236.

INVITED SEMINARS –
Colgate University, 11/14
Northeast Normal University, Changchun, China 6/14
Ecosystem Science Center, Woods Hole 3/14
University of Albany, 3/12
International Grassland Symposium, Kansas State University, Invited, 9/11
Asa Gray Seminar, Utica College, 3/11
University of Arkansas, 2/09
Swiss Federal Institute for Forest, Snow and Landscape Research, Birmensdorf Switzerland, 7/09
Cornell University, 10/07
Swiss Federal Institute for Forest, Snow and Landscape Research, Birmensdorf Switzerland, 5/07
Utica College, Asa Gray lecture, 2/06
Idaho State University 10/05
University of Kentucky, delivered two talks during my visit, 2/05
Hamilton College 2/05
SUNY-ESF 1/05
Northern Arizona University, 10/04
Le Moyne College, 2/03
Kansas State University, 11/03
Dartmouth College, 3/02
Plant - herbivore workshop, Uppsala, Sweden, 10/01
SUNY-ESF, 3/01
Cornell University, 3/01
University of Sherbrooke, 1/00
Hamilton College, 11/00
MacArthur Research Center, Fl., 2/99
SUNY, Geneseo, 2/99
University of Memphis, 12/96
University of Arkansas, Fayetteville, 11/96
Syracuse University, 2/96
Kansas State University, 2/95
Hamilton College, 10/94
University of Wyoming, 3/93
Montana State University, 2/92

CONFERENCE PAPERS
Ecological Society of America (ESA), two talks, 8/09
Ecological Society of America (ESA), four talks, one poster, 8/07
ESA, 8/05

Soil Science Society of America (SSSA) Annual Meeting, 10/05
ESA, 8/04
SSSA, 10/04
International Conference on Mycorrhizae, 10/03
ESA, 8/02
ESA 8/01
ESA, invited symposium talk, 8/00
Wildlife Society Symposium, invited symposium talk, 10/97
ESA 8/95

SERVICE TO THE SCIENTIFIC COMMUNITY:
Associate editor for *Ecosystems*

Reviewer for: *American Journal of Botany*
American Naturalist
Ecological Applications
Ecology Letters
Ecology
Ecography
Ecosystems
Journal of Biogeography
Journal of Ecology
Journal of Range Management
Journal of Vegetation Science
Nature
Northwest Science
Oecologia
Oikos
Plant Ecology
PNAS
Revista Ecologia Austral
Vegetatio
Chair of NSF, Konza Site Review Committee, '05
NSF, Ecology advisory panel, 1997 - 2000.
NSF, Ecosystem Science advisory board, 2010.
NSF, ad hoc reviewer for Ecology, Ecosystems, and Long-term Studies, '94-present.
Biodiversity Grants Programs (Canadian Agency), ad hoc reviewer, 01
USDA, ad hoc reviewer for Ecosystems and Soil Biology programs, 1997, '98.
USDA, ad hoc reviewer for Managed Ecosystems Research Program, >02
USDA, ad hoc reviewer for Watershed Processes and Water Resources, >02
United States - Israel Binational Science Foundation, ad hoc reviewer, >00
NSF, site review panelist for Niwot Ridge LTER site visit, '95.

ADVISEES

Graduate students: Christian Oest (M.S., 2001), In Su Jo (PhD), Becky Johnson (M.S., 2004), Stacey Massulik (M.S., 2004), Tanya Murray (Ph.D., 2010), Alyssa Pontes (MS), Michele Thorne (Ph.D., 2010), Adam Willis (Ph.D.)

Post docs: Drs. Y. Zhang, B. F. Tracy, W. Hamilton, A. Risch, S. Rosenthal, E. Hellquist

COMMITTEE MEMBER FOR:

David Augustine, Ph.D., 1997
Devi Mateti, MS, 1998
William Hamilton, 1999
Ross Fitzhugh Ph.D., 2001
Jayshree Ratnam, 2002
David Ussiri, Ph.D., 2003
Kerry Griffis-Kyle, PhD, 2004
Michael Anderson PhD, 2004
Yon Dong, Ph.D, 2005.
Melanie Antonik, MS, 2006
Sumanta Bagchi, PhD
Nathan Brown, M.S.
Zhongan Chen, M.S.
Lynn Christenson, PhD
Ayesha Prada, PhD
Bin Zhu, Ph.D.
Stephanie Eby, Ph.D.

COURSES TAUGHT

Undergraduate-
General Ecology
Field Ecology
Capstone seminar in Environmental Science

Graduate-
Mechanisms of Biodiversity (with M. Ritchie)
Plant Ecology
Concepts in modern biology (coordinated with Brian Calvi)
Graduate Research Seminars (with Anthony Garza)

ADVISORS

M.S.: Roger del Moral, University of Washington
Ph.D.: Samuel J. McNaughton, William R. Keenan Jr. Professor of Science, Syracuse University

Post-doc: Jay Anderson (deceased), Nancy Huntly, Richard Inouye, Idaho State University