

CURRICULUM VITAE

DOUGLAS ALAN FRANK

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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, 2016-2018, \$78,600
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:

Syracuse University Sustainability Faculty Fellow, 2015
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:

Jo I, Fridley JD, Frank DA (2017) Invasive plants accelerate nitrogen cycling: evidence from experimental woody monocultures. *Journal of Ecology* 105: 1105-1110.

Liu C, Wang L, Song X, Chang Q, Frank DA, Wang D, Li J, Lin H, Du F (2017) Towards a mechanistic understanding of the effect that different species of large herbivores have on grassland soil N availability. *Journal of Ecology* DOI:10.1111/1365-2745.12809.

Frank DA, Wallen RL, White PJ (2016) Ungulate control of grassland production: grazing intensity and ungulate species composition in Yellowstone Park. *Ecosphere*: 7: s01603

Frank DA, Pontes AW, Maine EM, Fridley JD (2015) Fine-scale belowground species associations in temperate grassland. *Molecular Ecology* 24: 3206-3216.

Jo I, Fridley JD, Frank DA (2015) More of the same? In situ leaf and root decomposition rates do not vary between 80 native and non-native deciduous forest species. *New Phytologist* 209: 115-122. *Jo et al. 2015 was the subject of a Commentary published by New Phytologist (2016, 209: 5-7).*

Jo I, Fridley JD, Frank DA (2015) Linking above- and belowground resource use strategies for native and invasive species of temperate deciduous forests. *Biological Invasions* 17: 1545-1554

Wang L, Liu C, Gomes Alves D, Frank DA, Wang D (2015) Plant diversity is associated with the amount of spatial structure of soil heterogeneity in meadow steppe of China.. *Landscape Ecology* 30: 1713-1721.

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 DA, DePriest T, McLauchlan K, Risch AC (2011) Topographic and ungulate regulation of soil C turnover in a temperate grassland ecosystem. *Global Change Biology* 17:495-504.
- Frank DA, Pontes A, Maine EM, Caruana JC, Raina S, Raina R, Fridley J (2010) Grassland root communities: Species distributions and how they are linked to aboveground abundance. *Ecology* 91:3201-3209.
- Ewing H, Groffman PM, Frank DA (2010) Grazers and soil moisture determine the fate of added $^{15}\text{N}_4^+$ in Yellowstone grasslands. *Plant and Soil* 328:337-351.
- Murray TR, Frank DA, Gerhing CA (2010) Ungulate and topographic control of arbuscular fungal spore community composition in a temperate grassland. *Ecology* 91: 815-827.
- Risch AC, Frank DA (2010) Diurnal and seasonal patterns in ecosystem carbon dioxide fluxes in a temperate grassland. *Rangeland Ecology and Management* 63:62 -71.
- Frank DA, Groffman PM (2009) Plant rhizospheric N processes: what we don't know and why we should care. *Ecology* 90: 1512-1519.
- Thorne M, Frank DA (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*, 200: 205-215.
- Frank DA (2008) Evidence for top predator control of a grazing ecosystem. *Oikos* 117: 1718-1724. *Recommended by Faculty of 1000 Biology.*
- Hamilton EA III, Frank DA, Hinchey PM, Murray MR (2008) Grazer-induced increases in root exudation trigger positive feedbacks in a temperate grassland. *Soil Biology and Biochemistry* 40: 2865-2873.
- Stewart A, Frank DA (2008) Root production and herbivory in an upland grassland community in Yellowstone National Park. *Oecologia* 157:453-458.
- Frank DA (2008) Ungulate and topographic control of nitrogen : phosphorus stoichiometry in a temperate grassland: soils, plants, and mineralization. *Oikos* 117: 591-601.
- Risch AC, Frank DA (2007) Effects of increased soil water availability on ecosystem carbon dioxide fluxes in spatio-temporally heterogeneous temperate grassland. *Biogeochemistry* 86: 91-103.

Risch AC, Jurgensen MF, Frank DA (2007) Abiotic control of decomposition rates in a grazed, spatiotemporally heterogeneous temperate grassland. *Plant and Soil* 298: 191-201.

Frank DA (2007) Drought effects on above and below ground production of a grazed temperate grassland ecosystem. *Oecologia* 152: 131-139.

Frank DA (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, Frank DA (2005) Carbon dioxide fluxes in a spatially and temporally heterogeneous temperate grassland. *Oecologia*, 147: 291-302.

Frank DA (2005) The interactive effects of grazing ungulates and aboveground production on grassland diversity. *Oecologia* 143: 629-634.

Frank DA, Evans RD, Tracy BF. 2004. The role of ammonia volatilization in controlling the natural ^{15}N abundance of a grazing ecosystem. *Biogeochemistry*, 68: 169-178.

Frank DA, Gehring CA, Machut L, Phillips M (2003) Soil community composition and the regulation of a grazed temperate grassland. *Oecologia* 142: 603-609.

Anderson MT, Frank DA (2003) Defoliation effects on reproductive biomass: Importance of scale and timing. *Journal of Range Management* 56:501-516.

Augustine DJ, McNaughton SJ, Frank DA (2003) Feedbacks between soil nutrients and large herbivores in a managed savanna ecosystem. *Ecological Applications* 13: 1325-1337.

Frank DA, Kuns MM, Guido DR (2002) Consumer control of grassland plant production. *Ecology* 83: 602-606.

Verchot L, Groffman PM, Frank DA (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 EW, Frank DA (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 DJ, Frank DA (2001) Effects of migratory grazers on spatial heterogeneity of soil nitrogen properties in a grassland ecosystem. *Ecology* 82: 3149-3162.

Frank DA, Groffman PM, Evans RD, Tracy BF (2000) Ungulate stimulation of nitrogen cycling and retention in Yellowstone Park grasslands. *Oecologia* 123: 116-121.

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

Frank DA, Groffman PM (1998) Denitrification in a semi-arid grazing ecosystem. *Oecologia* 117: 564-569.

Tracy BF, Frank DA (1998) Effects of ungulates and topography on soil microbial biomass and activity in Yellowstone National Park. *Oecologia* 114: 556-562.

Frank DA, Groffman PM (1998) Ungulate versus landscape control of soil C and N processes in grasslands of Yellowstone National Park. *Ecology* 79: 2229-2241.

Frank D A, McNaughton SJ, Tracy BF (1998) The ecology of the earth's grazing ecosystems. *Bioscience* 48: 513-521.

Frank DA, Evans RD (1997) Effects of native grazers on grassland N cycling in Yellowstone National Park. *Ecology* 78: 2238-2248.

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

McNaughton SJ, Milchunas D, Frank DA (1996) How can net primary productivity be measured in grazing ecosystems? *Ecology* 77: 974-977.

Frank DA, Inouye RS (1994) Temporal variation in actual evapotranspiration of terrestrial ecosystems: patterns and ecological implications. *Journal of Biogeography* 21: 401-411.

Frank DA, Inouye, RS, Huntly N, Minshall GW, Anderson JE (1994) The biogeochemistry of a north-temperate grassland with native ungulates: nitrogen dynamics in Yellowstone National Park. *Biogeochemistry* 26:163-188.

Frank DA, McNaughton SJ (1993) Evidence for the promotion of aboveground grassland production by native large herbivores in Yellowstone National Park. *Oecologia* 96:157-161.

Frank DA, McNaughton SJ (1992) The ecology of plants, large mammalian herbivores and drought in Yellowstone National Park. *Ecology* 73:2043-2058.

Frank DA, McNaughton SJ (1991) Stability increases with diversity in plant communities: empirical evidence from the Yellowstone drought. *Oikos* 62:360-362.

McNaughton S.J., Oesterheld M, Frank DA, Williams KJ (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 DA, McNaughton SJ (1990) Aboveground biomass estimation with the canopy intercept method: a plant growth form caveat. *Oikos* 57:57-60.

McNaughton SJ, Oesterheld M, Frank DA, Williams KJ (1989) Ecosystem-level patterns of primary productivity and herbivory in terrestrial habitats. *Nature* 341:142-144.

Wiens D, Calvin CL, Wilson CA, Frank DA, Seavey SR (1987) Reproductive success, spontaneous embryo abortion, and genetic load in flowering plants. *Oecologia* 71:501-509.

Frank DA, del Moral R (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.