Curriculum Vitae
winter 2018

Daniel H. Mann
Associate Professor
Department of Geosciences
University of Alaska Fairbanks
and
Senior Research Scientist
Institute of Arctic Biology
University of Alaska Fairbanks

DEGREES EARNED

1976: B.A. Anthropology (University of Washington)
1978: M.S. Forest Entomology (College of Forest Resources, University of Washington)
1983: Ph.D. Forest Soils (College of Forest Resources, University of Washington)

THESIS AND DISSERTATION

M.S.: Ecology of Snowfield-foraging Arthropods on Mount Rainier (advisors: R.I. Gara and J.S. Edwards)
Ph.D.: The Quaternary History of the Lituya Glacial Refugium, Alaska (advisor: F.C. Ugolini)

PREVIOUS POSITIONS

1983-85: Postdoctoral Research Associate, University of Washington.
1985-88: Director, Field Naturalist Program, Botany Department, University of Vermont.
1988-90: Research Associate, Quaternary Research Center, University of Washington.
1989-91: Geological Consultant, Woodward-Clyde Environmental Consultants.
1990-91: Research Associate, Alaska Quaternary Center, University of Alaska.
1992: Visiting Professor, University of Alaska.
1993-2008: Research Associate, Institute of Arctic Biology, University of Alaska
1992-2011: faculty hire (temporary positions) with Bureau of Land Management's Arctic Field Office

TEACHING EXPERIENCE

1976-82 Teaching Assistant, University of Washington, Departments of Forest Resources and Zoology. I was laboratory instructor for two entomology courses and ten introductory biology courses while a graduate student.
1985-1988 Lecturer, University of Vermont, Botany Department. In addition to directing the Field Naturalist Program and serving as major adviser to twelve MSc students, I taught courses in Landscape Analysis and in Geomorphology. For an idea of what the Field Naturalist program is, see http://www.uvm.edu/~fntrlst/
1992 Visiting Professor, University of Alaska. I taught a course on Landscape Analysis that resulted in publication of a journal article (Mann et al., 1995) with the students as coauthors.

1994 Lecturer, University of Alaska, Geology Department. I taught Geomorphology as a one-semester, sabbatical replacement.

2008 *to present:* Associate Professor, University of Alaska, Geography Program. So far, I have developed four new courses: "Biogeography" (initially called "Patterns and Processes in the Arctic and Subarctic"), "Geography of Natural Hazards", "Climate Change Processes" (team-taught with Dr. Uma Bhatt), and "Ice-Age Alaska". All four are 400-level classes with 600-level sections.

ADMINISTRATION AND LEADERSHIP EXPERIENCE

1983 - *present* I have directed numerous field and laboratory projects. Many of the field projects involved 4-6 people working in remote locations. Since arriving at the University of Alaska in 1991, I have advised 10+ UAF graduate students. My current graduate students are listed below.

1985 - 1988 The School for Field Naturalists was founded in 1984 by Dr. Hubert Vogelmann, a well-known Vermont conservationist, with funding from the Andrew W. Mellon Foundation. I was hired as program director to develop a course curriculum and advise the graduate students enrolled in the program working on MSc. degrees in Botany. My other duties included overseeing the program's budget and fund raising.

CURRENT RESEARCH PROJECTS (not including student projects)

1) Environmental Change on Alaska's North Slope; *collaborators*: Pamela Groves (UAF), Michael Kunz (Bureau of Land Management), and Richard Reanier (Reanier and Associates); *funding source:* Bureau of Land Management; *project stage*: write-up and continued field work.

2) Glacial and Sea-Level History in Icy Strait, Southeast Alaska; *collaborator:* Greg Streveler, Icy Strait Environment Consultants; *funding source:* US National Park Service; *project stage:* continued field work.

3) Glacial Retreat and the Cultural Landscape of Ice Floe Sealing at Yakutat Bay, Alaska; collaborator: Aron Crowell (Smithsonian Institute); *funding source:* National Science Foundation; *project stage:* continued field work.

4) Land Bridges, Ice-Free Corridors, and Biome Shifts:
Impacts on the Evolution and Extinction of Horses in Ice-Age Beringia; collaborators:
Pamela Groves (UAF) and Beth Shapiro (UC Santa Cruz);
funding source: National Science Foundation; project stage: just awarded.

SYNERGISTIC ACTIVITIES

1) In 2011, I co-convened a special session for the 2011 American Geophysical Union's annual meeting entitled "Ecosystem Regime Shifts: Drivers and Responses."

2) Over the last 20 years, I have reviewed dozens of manuscripts for scientific journals. For instance, over the last 12 months I have reviewed manuscripts for the journals *Quaternary Research* and *Ecology*.

3) Since 1989, I have collaborated with Dr. Gail Irvine of the US Geological Survey in studies of the lingering effects of oil from the *Exxon Valdez* spill. Although we have several publications in refereed journals, much of our work is represented only by reports to the *Exxon Valdez* Advisory Council and by informal contributions to oil-spill workshops.

4) In 2009, I took part in a six-week trip to rural Nepal interacting with school children and village elders on the topic of climate change (specifically glacier retreat and seasonal shifts in precipitation) in relation to farming and herding practices at high altitudes. With Dr. Henry Huntington, I wrote a report to the World Wildlife Fund (Nepal) entitled "Human Responses to Changing Climate in Alaska and Nepal: Comparisons between High Latitudes and High Altitudes."

COLLABORATORS OVER THE PAST 5 YEARS

Crowell, A., Smithsonian Institute
Finney, B.P., Idaho State University
Groves, P., University of Alaska
Heiser, P.A., University of Alaska
Huntington, H., Pew Charitable Trust
Kunz, M.L., Bureau of Land Management
Lloyd, A., Middlebury College
Meltzer, D.M., Southern Methodist University
Reanier, R.E., Reanier and Associates, Inc.
Streveler, G.S., Icy Strait Environmental Services
Howell, W., US National Park Service
Jesperson, M., US National Park Service
Swanson, D.K., US National Park Service
Shapiro, B., University of California
Bigelow, N., University of Alaska
Rabus, B., Simon Fraser University

FORMER GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

Lawrence Plug, now at Dalhousie University
Kaarin Tae, now at Dalhousie University
Paul Duffy, now with Neptune and Associates, Inc. and University of Alaska
Tom Kurkowski, now at University of Alaska
Carson Baughman, now at US Geological Survey
Jane Wolken, now at the Scenario Network for Arctic Planning at UAF
Emily Sousa, now with the Minnesota Department of Ecology
Celia Jackson, now with the American Red Cross
Ben Gaglioti, now a postdoctoral fellow at Lamont Doherty Earth Observatory
Louise Farquharson, now a postdoctoral fellow at the Geophysical Institute at UAF

Job Noordeloos, now a high school science teacher in the Netherlands

INVITED LECTURES

2001 "Persistence Selection: The Shared Driver of All Self-Organized Systems?" Scripps Institute, seminar series on self-organization.

2002 "Glacial Geology and the Timing of Human Migration into the New World." American Quaternary Association's national meeting, Anchorage.

2004 "The Biology of Invasions and its Implications for Human Entry into the New World." Quaternary Research Center Seminar Series, University of Washington.

2014 "Relative Sea Level Change in the Gulf of Alaska." Geological Society of America Annual Meeting, Vancouver, British Columbia, October 2014.

MEETING ABSTRACTS FROM LAST FIVE YEARS *(not updated yet!)*

2011. The Demise of the Circumboreal Mammoth Steppe as an Ecological Regime Shift: Drivers and Consequences. **Mann, D.H.; Groves, P.; Grosse, G.; Gaglioti, B.; Kunz, M.L.** American Geophysical Union Annual Meeting, San Francisco.

2011. Threshold responses of aspen and spruce growth to temperature may presage a regime shift in the boreal forest. **Lloyd, A.;Duffy,P.; Mann,D.; Blumstein,R.; Pendall,E.;and Rupp, S.** American Geophysical Union Annual Meeting, San Francisco.

2011: **Remote Sensing, Modeling, and In-Situ Measurements to Study the Spring and Summer Thermal Regime of the Kuparuk River, Northern Alaska.** Floyd, A.; Liljedahl, A.; Gens, R.; Prakash, A.; Mann, D. American Geophysical Union Annual Meeting, San Francisco.

2012: Response of spruce growth to climate drivers in the boreal forest. **Duffy, P.; Lloyd, A.; Mann, D.; Pendall, E.; and Rupp, S.** Ecological Society of America Annual Meeting.

2012: Radiocarbon Age Offsets in Arctic Lake Sediments Describe the Vulnerability of Permafrost Carbon to Past Climate Warming. **Gaglioti, B.V.; Mann, D.H.; Pohlman, J.W.; Kunz, M.L.; Jones, B.M.; Jones, M.C.; and Wooller, M.J.** American Geophysical Union Annual Meeting, San Francisco.

2012: Environmental Controls over Peat Accumulation in Arctic Alaska. Baughman, C.; Mann, D.; Heiser, P.; and Kunz, M.L. American Geophysical Union Annual Meeting, San Francisco.

2013: Carbon Inputs to Arctic Streams and Lakes during Climate Warming: Lessons from Prehistory. **Mann, D.H.; Gaglioti, B.V.; Pohlman, J.W.; Rasic, J.T.; Jones, B.M.; Wooller, M.J.** American Geophysical Union Annual Meeting, San Francisco.

2013: Long-term impacts of boreal wildfire on carbon cycling dynamics in Interior Alaska. **Gaglioti, B.V.; Mann, D.H.; Finney, B.P.; Pohlman, J.W.; Jones, B.M.; Jones, M.C.; and Wooller, M.J.** American Geophysical Union Annual Meeting, San Francisco.

2013: Nonlinearities, scale-dependence, and individualism of boreal forest trees to climate forcing. Wolken, J.M.; Mann, D.H.; Grant, T.A. III.; Lloyd, A.H.; Rupp, S.T.; and Hollingsworth, T.N. American Geophysical Union Annual Meeting, San Francisco.

2013: Soil Surface Organic Layers in Alaska's Arctic Foothills: Development, Distribution and Microclimatic Feedbacks. **Baughman, C.A.; Mann, D.H.; Verbyla, D.; Valentine, D.; Kunz, M.L.; and Heiser, P.A.** American Geophysical Union Annual Meeting, San Francisco.

2014: Slightly weathered oil from the *Exxon Valdez* spill persists on rocky Gulf of Alaska shores after 23 years. **Irvine, G.V., Mann, D.H., Carls, M., Reddy, C., Nelson, R.K., and Aeppli, C.** Alaska Marine Science Symposium, January 20-24, 2014, Anchorage, Alaska

2014: Salmon, blueberries, bears, and volcanic glass: sixty days at the Batza Tena obsidian source. **Kunz, M.; Mann, D.; Cook, J.; Reanier, R.; Adkins, C.; and Layer, P.** 41st Annual Meeting of the Alaska Anthropological Association, March 5-8, 2014, Fairbanks.

2015: Using varved lake sediments to detect human impacts on boreal wildfire in Interior, Alaska. **Gaglioti, B.V., Finney, B.P., Jones, B.M., Pohlman, J.W., ,Wooller, M.J., and Mann, D.H.** International Union for Quaternary Research, XIX Congress, Nagoya, Japan, July 2015.

2016: Alaska's North Slope after 45,000 years ago. **Mann, D.H., Groves, P., Gaglioti, B.V., Farquharson, L.M.** Geological Association of Canada, Annual Meeting, 1-3 June 2016, Whitehorse, Yukon.

2016: Peat Insulation Moderates the Sensitivity of Permafrost Carbon to Climate Warming in Arctic Alaska. **Gaglioti, B.V., Mann, D.H., Farquharson, L.M., Jones, B.M., Wooller, M.J., Baughman, C.A., Groves, P., Kunz, M.L., Pohlman, J., Wiles, G.C., and Reanier R.E.** American Geophysical Union Annual Meeting, December 2016, San Francisco, CA.

2016: Remotely sensing a cold region dune field using airborne LiDAR and high resolution aerial photography. **Baughman, B.A., Jones, B.M., Babcock, E.L., Bodony, K.L., Mann, D.H., Larsen, C.F., Smith, J.** 14th International Circumpolar Remote Sensing Symposium, September 12-16, 2016, Homer, Alaska AND American Geophysical Union Annual Meeting, December 2016, San Francisco, CA.

2016: Arctic barrier islands in global context: key geomorphological processes and vulnerability to climate change. **Farquharson, L.M., Mann, D.H., Swanson, D.K.** American Geophysical Union Annual Meeting, December 2016, San Francisco, CA.

REFEREED PUBLICATIONS *(* papers with student coauthors)*

Ugolini, F.C. and Mann, D.H. (1979). Biopedological origin of peatlands in southeast Alaska. *Nature* 281,366-368.

Mann, D.H., Edwards, J.S., and Gara, R.I. (1980). Diel activity patterns in snowfield-foraging invertebrates on Mount Rainier, Washington. *Arctic and Alpine Research* 12, 359-368.

Edwards, J.S. and Mann, D.H. (1981). The structure of the cercal sensory system and ventral nerve cord of Grylloblatta, a comparative study. *Cell and Tissue Research* 217, 177-188.

Wright, H.E., Mann, D.H., and Glaser, P.H. (1984). Piston corers for peat and lake sediments. *Ecology* 65, 657-659.

Mann, D.H. and Ugolini, F.C. (1985). Holocene glacial history in the Lituya District, southeast Alaska. *Canadian Journal of Earth Sciences* 22, 913-928.

Mann, D.H. (1986). Reliability of a fjord glacier's fluctuations for paleoclimatic reconstructions. *Quaternary Research* 25, 10-24.

Mann, D.H., Sletten, R.S., and Ugolini, F.C. (1986). Soil development at Kongsfjord, Spitsbergen. *Polar Research* 4, 1-16.

Mann, D.H. (1986). Wisconsin and Holocene glaciation of southeast Alaska. In: T.D. Hamilton, K.M. Reed, and R.M. Thorson (Eds.), "Glaciation in Alaska." Alaska Geological Society, Anchorage, 265 pp.

Hequette, A. and Mann, D.H. (1987). Des figrations immergees, preuve d'une transgression marine ayant succede a l'emersion postglaciaire au Spitsbergen nord-occidental (Svalbard). *Comptes Rendus de L'Academie Des Sciences*, Serie II, 303, 1237-1240.

Forman, S.L., Mann, D.H., and Miller, G.H. (1987). Late Weichselian and Holocene relative sea-level history of Broggerhalvoya, Spitsbergen. *Quaternary Research* 27, 41-50.

*Engstrom, F.B. and Mann, D.H. (1991). Fire ecology of red pine in northern Vermont, U.S.A. *Canadian Journal of Forest Research 21, 882-889.*

Riehle, J.R., Mann, D.H., Peteet, D.M., Engstrom, D.R., Brew, D.A., and Meyer, C.E. (1992). The Mount Edgecumbe tephra deposits, a marker horizon in southeastern Alaska near the Pleistocene-Holocene boundary. *Quaternary Research* 37, 183-202.

Mann, D.H. and Peteet, D.M. (1994). Extent and timing of the last glacial maximum in southwest Alaska. *Quaternary Research* 42, 136-148.

*Mann, D.H., Engstrom, F.B., and Bubier, J. (1994). Fire history in the Batelle Research Forest, Vermont. *Quaternary Research* 42, 206-215.

Peteet, D.M. and Mann, D.H. (1994). Late-glacial vegetation change on Kodiak Island, Alaska. *Ecoscience* 1, 255-267.

Mann, D.H. and Hamilton, T.D. (1995). Late Pleistocene and Holocene Paleoenvironments of the North Pacific Coast. *Quaternary Science Reviews* 14, 449-471.

Mann, D.H., Fastie, C.L., Rowland, E.L., and Bigelow, N.H. (1995).* Spruce succession, disturbance, and geomorphology on the Tanana River floodplain, Alaska. *Ecoscience* 2, 184-199.

Mann, D.H. and Crowell, A.L. (1996). A large earthquake occurring 700 to 800 years ago in Aialik Bay, southern coastal Alaska. *Canadian Journal of Earth Sciences* 33, 117-126.

Mann, D.H., Sletten, R.S., and Reanier, R.E. (1996). Quaternary glaciations of the Rongbuk Valley, Tibet. *Journal of Quaternary Science* 11, 267-280.

Crowell, A.L. and Mann, D.H. (1996). Human populations, sea level change, and the archaeological record of the Northern Gulf of Alaska coastline. *Arctic Anthropology* 33, 16-37.

Irvine, G.V., Mann, D.H., and Short, J.W. (1999). Multi-year persistence of oil mousse on high energy beaches distant from the Exxon Valdez spill. *Marine Pollution Bulletin* 38, 572-584.

Mann, D.H., Crowell, A.L., Hamilton, T.D., and Finney, B.P. (1999). Holocene geologic and climatic history around the Gulf of Alaska. *Arctic Anthropology* 35, 112-131.

*Mann, D.H. and Plug, L.J. (1999). Vegetation and soil development at an upland taiga site, Alaska. *Ecoscience* 6, 272-285.

*Höfle, C., Edwards, M.E., Hopkins, D.M., and Mann, D.H. (2000). The full-glacial environment of the northern Seward Peninsula, Alaska, reconstructed from the 21,500-year-old Kitluk paleosol. *Quaternary Research* 53, 143-153.

Mann, D.H., Heiser, P.A., and Finney, B.P. (2002). Holocene history of the Great Kobuk Sand Dunes, Northwestern Alaska. *Quaternary Science Reviews* 21, 709-731

Mann, D.H., Peteet, D.M., Reanier, R.E., and Kunz, M.L. (2002). Responses of an arctic landscape to Lateglacial and early Holocene climatic changes: the importance of moisture. *Quaternary Science Reviews* 21, 997-1021

Mann, D.H., Reanier, R.E., Peteet, D.M., and Kunz, M.L. (2002). Environmental Change and Arctic Paleoindians. *Arctic Anthropology* 38, 119-138.

Mann, D.H., Edwards, J., Reanier, R., Chase, J. (2003). Impacts of early Polynesian settlement on the soils and vegetation of Rapa Nui (Easter Island). In: J. Loret and J. Tanacredi (Eds.), "Easter Island: Scientific Exploration into the World's Environmental Problems in Microcosm." Kluwer Academic/Plenum Press, New York.

Mann, D.H. (2003). On patterned ground. *Science* 299, 354-355 (*Perspectives* section)

*Meltzer, D.J., Mann, D.H., and LaBelle, J.M. (2004). A Bison antiquus from Archuleta Creek,Folsom, New Mexico. *Current Research in the Pleistocene* 21, 107-109.

*Duffy, P.A., Walsh, J.E., Graham, J.M., Mann, D.H., Rupp, T. S. (2005). Impacts of large-scale atmospheric-ocean variability on Alaskan fire season severity. *Ecological Applications* 15, 1317–1330.

Irvine, G.V., Mann, D.H., Short, J.W. (2006). Persistence of ten-year old *Exxon Valdez* oil on Gulf of Alaska beaches: The importance of boulder armoring. *Marine Pollution Bulletin* 52, 1011-1022.

Short, J.W., Irvine, G.V., Mann, D.H., Maselko, J.M., Pella, J.J., Lindeberg, M.R., Payne, J.R., Driskell, W.B., and Rice, S.D. (2007). Slightly weathered *Exxon Valdez* oil persists in Gulf of Alaska beach sediments after 16 years. *Environmental Science and Technology* 41, 1245-1250. doi: 10.1021/es0620033

Mann, D.H. and Meltzer, D.J. (2007). Millennial-scale dynamics of valley fills over the past 12,000 ^{14}C yr in northeastern New Mexico, USA. *Geological Society of America Bulletin* 119, 1433–1448; doi: 10.1130/B26034.1

Mann, D.H. and Streveler, G.P. (2008). Relative sea level history, isostasy, and glacial history in Icy Strait, Southeast Alaska. *Quaternary Research* 69, 201–216.

Mann, D.H., Reanier, R.E., Beck, W., and Edwards, J. (2008). Drought, vegetation change, and human history on Rapa Nui (Isla de Pascua, Easter Island). *Quaternary Research* 69, 16–28

*Kurkowski, T.A., Mann, D.H., Rupp, T.S., and Verbyla, D.L. (2008). Relative Importance of Different Secondary Successional Pathways in the Alaskan Boreal Forest. *Canadian Journal of Forest Research 38*, 1911-1923.

Mann, D.H., Groves, P., Reanier, R.E. and Kunz, M.L. (2010). Floodplains, cottonwood trees, hillslopes and peat: What happened the last time climate warmed suddenly in arctic Alaska? *Quaternary Science* Reviews 29, 3812-3830.

*Mann, D.H., Rupp, T.S., Olson, M.O., and Duffy, P.A. (2012). Is Alaska's Boreal Forest Now Crossing a Major Ecological Threshold? *Arctic, Alpine, and Antarctic Research 44*, 319-331.

*Mann, D.H, Groves, P., Kunz, M.L., Reanier, R.E., and Gaglioti, B.V. (2013). Megafauna in Arctic Alaska: Extinction, Invasion, Survival. *Quaternary Science Reviews* 70, 91-108.

Lloyd, A.H., Duffy, P.A., and Mann, D.H. (2013). Nonlinear responses of white spruce growth to climate variability in Interior Alaska. Canadian Journal of Forest Research 43, 331-343.

*Jones, B. M., A. L. Breen, B. V. Gaglioti, D. H. Mann, A. V. Rocha, G. Grosse, C. D. Arp, M. L. Kunz, and D. A. Walker (2013). Identification of unrecognized tundra fire events on the north slope of Alaska. *Journal of Geophysical Research Biogeosciences* 118, doi:10.1002/jgrg.20113.

*Gaglioti, B.V., Mann, D.H., Jones, B.M., Pohlman, J.C., Wooller, M. J., and Kunz, M.L. (2014). Radiocarbon age-offsets in an arctic lake reveal the long-term response of permafrost carbon to climate change. *Journal of Geophysical Research - Biogeosciences* 119, 1630-1651.

Zazula, G.D., MacPhee, R.D.E., Metcalfe, J.Z., Reyes, A.V., Brock, F., Drukenmiller, P.F., Groves, P., Harington, C.R., Hodgins, G.W.L., Longstaffe, F.J., **Mann, D.H.**, McDonald, H.G., Nalawade-Chavan, S., and Southon, J. (2014). Mastodon extirpation in arctic and subarctic North America predates human colonization and terminal Pleistocene climate change. *Proceedings of the National Academy of Sciences* 111, 18460-18465, doi: 10.1073/pnas.1416072111.

*Baughman, C. A., Mann, D. H., Verbyla, D. L., & Kunz, M. L. (2015). Soil-surface organic layers in Arctic Alaska: Spatial distribution, rates of formation, microclimatic effects. *Journal of Geophysical Research: Biogeosciences*. doi: 10.1002/2015JG002983

*Mann, D.H., Groves, P., Reanier, R.E., Gaglioti, B.V., Kunz, M.L., and Shapiro, B. (2015). Life and extinction of megafauna in ice-age Alaska. *Proceedings of the National Academy of Sciences*. doi:10.1073/pnas.1516573112.
(download article from: http://www.pnas.org/content/112/46/14301.abstract

*Gaglioti, B.V., Mann, D.H., Jones, B.M., Wooller, M.J., and Finney, B.P. (2016). High-resolution records detect human-caused changes to the boreal forest wildfire regime in Interior Alaska. The Holocene. *The Holocene* 26, 1064-1074.

*Farquharson, L., Mann, D.H., Grosse, G., Jones, B.M., Romanovsky, V.E. (2016). Spatial distribution of thermokarst terrain in Arctic Alaska. *Geomorphology*
DOI:10.1016/j.geomorph.2016.08.007

*Gaglioti, B.V., Mann, D.H., Wooller, M.J., Jones, B.M., Wiles, G.C., Groves, P., Kunz, M.L., Baughman, C., and Reanier, R.E. (2017). Younger-Dryas cooling and sea-ice feedbacks were prominent features of the Pleistocene-Holocene transition in Arctic Alaska. Quaternary Science Reviews 10.1016/j.quascirev.2017.05.012

*Gaglioti, B.V., Mann, D.H., Groves, P., Kunz, M.L., Farquharson, L.M.,
Reanier, R.E., Jones, B.M., Wooller, M.J. (2018). Aeolian stratigraphy describes ice-age paleoenvironments in unglaciated Arctic Alaska. *Quaternary Science Reviews* 182, 175-190