

Curriculum Vitae: Matthew John Wooller, Professor Director Alaska Stable Isotope Facility, University of Alaska Fairbanks

Water and Environmental Research Center, Institute of Northern Engineering, Duckering Building, University of Alaska Fairbanks, Fairbanks, Alaska, 99775.

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Researchgate: www.researchgate.net/profile/Matthew_Wooller

Overarching mission statement: Developing and applying innovative stable isotope techniques to a wide array of research questions, including forensic and environmental applications.

EDUCATION

PhD 1999: Geosciences, Department of Geography, University of Wales Swansea, UK.

MSc. 1994: Ecology, Department of Ecology University of Wales Bangor, UK.

BSc. 1992: Biology and Ecology, Biology Department, Worcester University, UK.

Diploma of Further Education, 1990 Design, Northbrook College, UK.

EMPLOYMENT HISTORY

2002 – present: Director Alaska Stable Isotope Facility; Water and Environmental Research Center, Institute of Northern Engineering, University of Alaska Fairbanks, Alaska, USA.

2019 – present. Director of 'the Well' – a center dedicated to the wellbeing of students, staff and faculty at UAF.
<https://sites.google.com/alaska.edu/thewell/home>

2013 – present: Professor; jointly appointed by the Department of Marine Biology, College of Fisheries and Ocean Sciences and the Water and Environmental Research Center, University of Alaska Fairbanks, Alaska, USA.

2017 – 2019: Department of Marine Biology Chair, appointed by the College of Fisheries and Ocean Sciences.

2007 – 2013: Associate professor; jointly appointed by the Department of Marine Biology, College of Fisheries and Ocean Sciences and the Water and Environmental Research Center, University of Alaska Fairbanks, Alaska, USA.

2011 – 2014: Director Alaska Quaternary Center; College of Natural Science and Mathematics, University of Alaska Fairbanks, Alaska.

2002 – 2007: Assistant professor; jointly appointed by the College of Fisheries and Ocean Sciences and the Water and Environmental Research Center, University of Alaska Fairbanks, Alaska, USA.

2000 – 2002: Postdoctoral Research Associate; Geophysical Laboratory, Carnegie Institution of Washington, USA.

1996 – 1999: Teaching Assistant; Department of Geography, University of Wales Swansea, UK.

FUNDED GRANTS AND AWARDS

- 2023 Recommended:** Federal Appropriations Instrumentation and Infrastructure Request: Establishing the Alaska Radiocarbon Center at the University of Alaska Fairbanks. PI et al. 4 years.
- 2023** National Science Foundation: Submarine Basins, Steppes, and Sea Ice: Paleoclimate and Paleoecology of the Late Pleistocene and Holocene Bering Sea Shelf. Co-PI et al. 3 years.
- 2023** National Science Foundation: Legacy of the Broken Mammoth site: exploring subsistence economies, technological organization, and site structure in eastern Beringia. Co-PI et al. 3 years.
- 2023** Faculty Initiative Award: Adopt a Mammoth Project. PI et al. 1 years.
- 2023** National Science Foundation: Mammoth Arctic Pathways (MAPs). PI et al. 3 years.
- 2023** Alaska Department of Fish and Game: A survey of the isotopic composition of Beluga and their diet in the Cook Inlet region. PI et al. 2 years.
- 2022** INBRE Carry forward to fund expansion of compound specific stable isotope instrumentation at the Alaska Stable Isotope Facility. PI 1 year.
- 2022** UAF BLAST. Veggie meter proposal. 1 year.
- 2022** Alaska Department of Fish and Game: Controlled feeding study of Beluga at Mystic Aquarium for stable isotope validation. Co-PI et al. 2 years.
- 2021** UAF Center ICE Maker Spaces Award, \$10K to enhance the Well at UAF to promote student, staff and faculty wellbeing. PI 1 year.
- 2021** National Science Foundation. Submarine Basins, Steppe, and Sea Ice: Paleoclimate and Paleoecology of the Late Pleistocene and Holocene Bering Sea Shelf. Role: Co-PI et al. 3 years.
- 2021** Murdock Full-proposal. Acquisition of a proteomics instrument at the University of Alaska Fairbanks – A multi-user, inter-disciplinary facility to benefit teaching, Federal, State, and National research needs in the Arctic. PI et al. 2 years.
- 2021** Murdock Pre-proposal. Acquisition of a proteomics instrument at the University of Alaska Fairbanks – A multi-user, inter-disciplinary facility to benefit teaching, Federal, State, and National research needs in the Arctic. PI et al. 2 years.
- 2020** Royal Society Travel Grant. Co-PI 1 year.
- 2020** Alaska Department of Fish and Game: Strontium Isotopes of Northern Pike Otoliths. Role: PI 1 year.
- 2020** National Parks Service CESU, Strontium isotopes of rodents and caribou in Alaska (Federal). Role: PI, 5 years.
- 2020** National Institute of Health-INBRE supplemental, Application of dietary biomarker analyses to dried blood spots from university students to assess diet in the context of wellbeing. Role: PI 1 year.
- 2020** NOAA Section 6 (Federal). Investigating the diet, habitat use, and the impacts of anthropogenic noise on the foraging behavior of Cook Inlet Beluga Whales (*Delphinapterus leucas*). Role: Co-PI et al. 5 years.

2019 National Institute of Water Resources: Constructing a strontium isotope map (isoscape) for watersheds in interior Alaska with broad applications for hydrologic and wildlife research. Role: PI et al. 1 year.

2019 Natural Environmental Research Council UK: Past Methane in Northern Lakes Role: Named Collaborator: 3 years.

2019 Alaska Sea Grant: Assessing copper toxicity of salmon species in the Bristol bay region. Role: Co-PI. 3 years.

2019 North Pacific Research Board: "A novel isotopic approach to identify pathways of methylmercury biomagnification through marine food-webs of the Aleutian Islands, Alaska". Role: Co-PI. 3 years.

2019 Faculty Investment Fund (UAF): "Tracking the movement patterns of mammoths in the Arctic". Role: PI. et al. 1 year.

2019 National Institute of Health/INBRE: "Developing biomarker analyses of human and fish blood spots". Role: PI. et al. 2 years.

2019 National Science Foundation: NNA Track 2: "Atautchikkun Ijitchisukluta: Coming together to learn: Co-producing knowledge across the Northwest Passage". Role: Co-PI. 1 year.

2019 Fish and Wildlife Service: "Tracking reproduction, movement, and diet in caribou and moose in Alaska". Co-PI. 2 years.

2018 Usibelli award for outstanding research.

2018 PNAS award for co-authorship of an outstanding research paper of the year.

2018 Murdock Charitable Trust (Charitable): Full Proposal: "Acquisition of a gas chromatograph isotope ratio mass spectrometer: A multi-user facility to benefit teaching, health and research needs in Alaska". Role: PI et al. 1 year.

2016 North Pacific Research Board: "Diet and reproductive rates in variable populations of two otariids in Alaska". Co-PI. 3 years.

2016 US Geological Survey and Alaska Department of Fish and Game. "Establishing long-term records of habitat use by Beluga whales in the Cook-inlet". Co-PI. 3 years.

2016 National Institutes of Health. "Molecular Stable Isotope Profiles of Dietary Exposure". Co-PI. 4 years.

2016 Bureau of Ocean Energy Management: "Identifying sources of organic matter to benthic organisms in the Beaufort and Chukchi outer continental shelves". PI et al. 3 years.

2016 National Ocean and Atmosphere Administration: "Tracing pathways of mercury exposure to Alaska pinnipeds in the Aleutian Islands and Bering Sea". Co-PI. 2 years.

2016 National Science Foundation and UAF: "MRI-Acquisition of a shared multi-collector inductively Coupled Mass Spectrometer (MC-ICP-MS) to Benefit Teaching and Federal, State, and National Research Needs in the Arctic". PI et al., Total budget. 2 years.

2015 National Institute of Water Resources/USGS: "Initiating a network of long-term records of lake-level fluctuations in interior Alaska in relation to climate change". PI 2 years.

2015 Pre-proposal University of Alaska/BOEM, Coastal Marine Institute: “Identifying sources of organic matter to benthic organisms in the Beaufort and Chukchi outer continental shelves”. PI et al.

2015 UAF Pre-proposal for National Science Foundation: “MRI: Acquisition of a shared Multi-Collector Inductively Coupled Mass Spectrometer (MC-ICPMS) to Benefit Teaching, Federal, State and National Research Needs”. Full proposal. Role: PI et al.

2014 International Continental Scientific Drilling Program project full proposal for drilling costs. DeepCHALLA: two glacial-interglacial cycles (ca. 250,000 years) of climate and ecosystem dynamics on the East African equator. Named Collaborator.

2014 Northern Land Use Research (AEA): “Holocene landscape and paleoenvironments of the middle and upper Susitna River”. Co-PI et al. 2 years.

2012 National Science Foundation: “Paleoclimate, Paleoenvironment and Other Potential Drivers of Extinction of *Mammuthus primigenius*, St. Paul Island, Pribilof Islands, Alaska”. Co-PI 3 years.

2012 National Science Foundation: “Exploring intrasite variability at Upward Sun River (Xaasaa Na’), a terminal Pleistocene site in central Alaska: foraging behaviors and paleoenvironmental contexts”, Co-PI, 3 years.

2011 Academy of Finland (International), “Quantifying climate variability since Late-glacial in Southern Svalbard (QUAL)”, Role: Named collaborator 4 years.

2011: SEAGRANT: “Developing high-resolution strontium isotope maps of Alaskan Rivers to track pacific salmon migrations: The Nushagak River as a case study to evaluate spatial and seasonal variability”. PI, et al. 3 years.

2011 University of Bern: “Carbon cycling in Lake Teshekpuk: past and present”, Role: Named collaborator 1 year.

2011 International Continental Scientific Drilling Program, workshop proposal (International), “Glacial-interglacial (150,000-year) climate history near the East African equator, from the sediment record of Lake Challa near Mt. Kilimanjaro”. Named collaborator.

2010 National Institute of Water Resources: “Characterization of major watersheds draining into Bristol Bay, Alaska using strontium isotopes: a new method for tracking water resources in Alaska”. PI, 1 year.

2009 National Institute of Water Resources: “Developing high-resolution strontium isotope maps of Alaskan Rivers to track pacific salmon migrations: The Nushagak River as a case study to evaluate spatial and seasonal variability”. PI, et al. 1 year.

2009 North Pacific Research Board: “Studying diet in threatened eiders using stable carbon isotopes of specific fatty acids: Validation of a new technique with controlled feeding experiments”. Co-PI. 2 years.

2008 National Science Foundation: “Acquisition of a Stable Isotope Ratio Mass Spectrometer for analyzing specific organic compounds to promote a vigorous isotopic research and teaching program”. PI, et al. 2 years.

2008 Advanced Instrumentation Laboratory (UAF): “Development of grass cuticle analysis”. Co-PI. 1 year.

2008 National Science Foundation: “Understanding the role of environmental change on the long-term population dynamics of one surviving and two extinct arctic mammal”. Co-PI. UAF budget: 3 years.

2008 National Science Foundation: “Nonlinearities in the Arctic climate system during the Holocene”, Role: Co-PI 3 years.

2008 National Science Foundation: “Tracking the contribution of arctic ice algae derived fatty acids to benthic and pelagic marine food webs”. PI et al. 3 years.

2008 Department of Energy: “Source characterization and temporal variation of methane seepage from thermokarst lakes on the Alaska North Slope in response to Arctic climate change”, PI et al. 3 years.

2007 Department of Defense: “A novel application of stable isotope techniques to ‘fingerprint’ the origin of Marijuana in Alaska: Request for analytical funds to support the development of a unique University of Alaska based project and collaboration”. PI 2 years.

2007 CIFAR: “Late Quaternary Climate Dynamics Inferred using the Stable Oxygen Isotope Composition of Aquatic Insects (Chironomidae: Diptera) from Idavain Lake, Southwest Alaska”. PI et al. 1 year.

2007 National Institute of Water Resources: “Increasing coverage of Alaska within the global network of isotopes in precipitation”. PI 1 year.

2007 Past Global Changes (International): “Application for travel funds to support researchers from developing countries to attend a conference on mangrove paleoecology at the International Quaternary (INQUA) meeting in New Zealand”. PI 1 year.

2006 UA Presidents special fund (University of Alaska): “A novel application of stable isotope techniques to ‘fingerprint’ the origin of Marijuana in Alaska: Request for analytical funds to support the development of a unique University of Alaska based project and collaboration”. PI et al. 1 year

2005 National Science Foundation: “Mangrove paleoecological responses to Holocene environmental changes: A multiproxy approach”. PI et al. 3 year.

2004 USA Patent: “Autosampler loading apparatus. Patent number 03719376.0-2209-US0307482”, Role: PI, Proprietor Carnegie Institution of Washington. European Patent Office.

2003 American Fisheries student-ship proposal: “The Historical Ecology of Steller Sea Lions”. PI 1 year.

2003 Coastal Marine Institute: “Using stable isotope analyses to identify spring and fall molting areas of Western North American King Eiders (*Somateria spectabilis*)”. Named Collaborator: 2 years.

2003 National Science Foundation: “Quantitative estimates of Holocene warmth and climate variability derived from Icelandic Lake sediments”. Co-PI 3 year.

2003 Oceanic Institute: “Shrimp and Stable Isotopes: tracking diets”. PI et al., 1 year.

2002 Past Global Changes (International): “Workshop grant to support Paleo-Grassland Research 2002”, Role: PI et al., 1 year.

2000 Past Global Changes (International): “Workshop grant to support Paleo-Grassland Research 2000”. Co-PI et al. 1 year.

2001 Mellon Foundation research grant (Charitable): Anthropogenic nitrogen impact and cycling at the terrestrial-estuarine interface. Co-PI et al. 1 year.

1999 INQUA young researchers grant (International): "Grant to support attendance at the INQUA conference, Durban, South Africa". PI, 1 year.

1999 University of Wales, Department of Geography, Postgraduate Committee Grant, "Grant to support attendance at the INQUA conference, Durban, South Africa". PI, 1 year.

1997 Quaternary Research Association conference support grant, "grant to support Quaternary Research Association 2nd Postgraduate Symposium, Gregynog, Wales, UK". PI 1 year.

PEER REVIEWED PUBLICATIONS

*= Mentored student author, # = Mentored post-doc author.

PENDING: (in review and in preparation - in preparation = full manuscript generated and in final stages of co-author review).

A. Lamb et al., **M.J. Wooller** (In Preparation). Stable isotope analysis of lacustrine chitinous invertebrate remains: analytical advances, challenges and current understanding. *Quaternary Science Reviews*.

A. Sutherland* et al., **M.J. Wooller** (In Preparation). Dispersal, health and diet ecology of people in the Arctic. *Science*.

A. Monteath# et al., **M.J. Wooller** (In Preparation). Late Quaternary environmental change in eastern Beringia; new advances and unresolved questions.

A. Kelly*, et al., **M.J. Wooller** (In Preparation) Reduced niche variance after genetic bottleneck in *Bison priscus*. *PNAS*

A. Kelly*, et al., **M.J. Wooller** (In Preparation) Pleistocene Horse population dynamics. *Quaternary Research*.

J. Miller et al., (In Preparation) Carnivores preferred horse over bison in Pleistocene Yukon. *Quaternary Science Reviews*.

K. Mulliken*, et al. **M.J. Wooller**, (In Preparation). Holocene hunter-gatherer land use and tephra fall in the Middle Susitna River Valley, central Alaska. *Alaska Journal of Anthropology*.

K. Iken, Schollmeier T*, Eicken H, Belt S, Hardy S, **M.J. Wooller**, (In Preparation). Dissolved inorganic carbon in sea ice brine as a carbon source for sea ice algae in the Arctic. TBD.

M. Mahony# et al. **M.J. Wooller** (In Preparation): A 50,000-year record of meteoric water isotopes ($\delta^2\text{H}/\delta^{18}\text{O}$) and paleoenvironmental change from relict permafrost in far eastern Beringia, Yukon. *Cryosphere*.

PUBLISHED

143 A. Rowe* et al. **M.J. Wooller**, (In Press) A female woolly mammoth's lifetime movements end in an ancient Alaskan hunter-gatherer camp. *Science Advances*.

142 Dunker et al. **M.J. Wooller**, (2023). Northern Pike Management Plan for Alaska. ADFG.

141 M. Trifarri*, et al., **M.J. Wooller** (2023) Pathways of methylmercury through marine food webs of the Aleutian Islands identified using compound specific stable isotope analyses of amino acids. *Science of the total environment*. On-Line First.

140 Joshua D. Reuther, Charles E. Holmes, Gerad M. Smith, François Lanoë, Barbara Crass, Audrey Rowe* and **M.J. Wooller**, (2022) The Swan Point Site: The Chronology of a Multi-component Archaeological Site in Eastern Beringia. *Radiocarbon*. On-Line First.

139 Cyr* et al., **M.J. Wooller**, (2023). *Ecotoxicology of mercury concentrations in arctic lamprey (Lethenteron camtschaticum)*. *Environmental Research*. On-line first.

138 Drew Porter*, et al., **M.J. Wooller** (2023). Acute toxicity of copper to three species of Pacific salmon fry in water with low hardness and low dissolved organic carbon. *Environmental Toxicology and Chemistry*. On-line first.

137 Cassie M. Mitchell; Laura E. Oxtoby; Pamela A. Shaw; Suzanne M. Budge; **M.J. Wooller**; Tomás Cabeza de Baca; Jonathan Krakoff; Susanne Votruba; Diane M O'Brien (2023) MS Number: JN-2022-0692 Carbon isotope ratios of plasma and RBC fatty acids identify meat consumers in a 12-week inpatient feeding study of 32 men. *Journal of Nutrition*. On-line first.

136 J. R. Kielhofer, **M.J. Wooller** et al., (2023). BrGDGT-based temperature reconstruction in loess from central Alaska: Opportunities, challenges, and limitations in an arid, high-latitude environment. *QSR*

135 J. Johnson*, et al., **M.J. Wooller** (2022) Amino acid nitrogen isotope ratios respond to fish and meat intake in a 12-week inpatient feeding study of 32 adult men. *Journal of Nutrition*. On-Line First.

134 A-Zinkann*, K. Iken, **M.J. Wooller**, M.B. Leigh, (2022). Depth distribution of organic carbon sources in Arctic Chukchi Sea sediments. *Journal: Deep-Sea Research Part II*. <https://doi.org/10.1016/j.dsr2.2022.105076>

133 Kate Britton , Brooke E. Crowley , Clément P. Bataille , Joshua H. Miller and **M.J. Wooller**, (2022) Editorial: A Golden Age for Strontium Isotope Research? *Current Advances in Paleoecological and Archaeological Research Front. Ecol. Evol.* doi: 10.3389/fevo.2021.820295

132 K. Britton, **M.J. Wooller** et al. (2022) Review: Silver Linings at the Dawn of a 'Golden Age'. *Frontiers*. <https://doi.org/10.3389/fevo.2021.748938>

131 **M.J. Wooller**, Clement Bataille, Patrick Druckenmille, Gregory M. Erickson, Pamela Groves, Norma Haubenstein, Timothy Howe, Johanna Irrgeher, Daniel Mann, Katherine Moon, Ben A. Potter, Thomas Prohaska, Jeffrey Rasic, Joshua Reuther, Beth Shapiro, Karen J. Spaleta, Amy D. Willis (2021) Lifetime Mobility of an Arctic Woolly Mammoth. *Science*. On-Line First.

130 A-Christine Zinkann, **M.J. Wooller**, Mary Beth Leigh, Seth Danielson; Georgina Gibson; Katrin Iken, (2021) Does feeding type matter? Contribution of organic matter sources to benthic invertebrates on the Arctic Chukchi Sea shelf Food web paper. *Food webs*. <https://doi.org/10.1016/j.fooweb.2021.e00205>

129 A. King# et al., **M.J. Wooller**, (2021). Late Quaternary hydrologic changes in the northwestern Brooks Range, Alaska. *Journal of Quaternary Science*. <https://doi.org/10.1002/jqs.3368>

128 Vershinina, Alisa; Heintzman, Peter; Froese, Duane; Zazula, Grant; Cassatt-Johnstone, Molly; Dalén, Love; Der Sarkissian, Clio; Dunn, Shelby; Ermini, Luca; Gamba, Cristina; Groves, Pamela; Kapp, Joshua; Mann, Daniel; Seguin-Orlando, Andaine; Southon, John; Stiller, Mathias; **M.J. Wooller**; Baryshnikov, Gennady; Gimranov, Dmitry; Scott, Eric; Hall, Elizabeth; Hewitson, Susan; Kirillova, Irina; Kosintsev, Pavel; Shidlovsky, Fedor; Tong, Hao-Wen;

Tiunov, Mikhail; Vartanyan, Sergey; Orlando, Ludovic; Corbett-Detig, Russ; Macphee, Ross; Shapiro, Beth (2021) Ancient horse genomes reveal the timing and extent of dispersals across the Bering Land Bridge. *Molecular Ecology*. On-Line First.

127 R. He# et al., **M.J. Wooller**, (2021). Metabolic flexibility of aerobic methanotrophic active under hypoxic-anoxic conditions in Arctic lake sediments" (reference number: ISMEJ-20-01694AR). *ISMEJ*. On-Line First.

126 A. Kelly*, Joshua H. Miller, **M.J. Wooller**, C. Tom Seaton, Patrick Druckenmiller, Larisa DeSantis, (2021) Dietary paleoecology of bison and horses on the mammoth steppe of eastern Beringia based on dental microwear and mesowear analyses. *Palaeogeography, Palaeoclimatology, Palaeoecology*. On-line first.

125 M. Keogh, et al., **M.J. Wooller**, (2021). Whiskers as a novel tissue for tracking reproductive and stress-related hormones in North Pacific otariid pinnipeds. *Conservation Physiology*. On-Line First.

124 J. Funck*, C. Bataille, M. Cameron*, J. Rassic, **M.J. Wooller**, (2021). A bio-available strontium isoscape for eastern Beringia: a tool for tracking landscape use of Pleistocene megafauna. *Journal of Quaternary Research*. <https://doi.org/10.1002/jqs.3262>

123 B. Baarst# et al, **M.J. Wooller**, (2021). Validation of dried blood spot sampling for determining trophic positions of Arctic char using nitrogen stable isotope analyses of amino acids. *RCM*. On-Line First.

122 J. Johnson*, et al., **M.J. Wooller**, (2021). The carbon isotope ratios of nonessential amino acids identify sugar-sweetened beverage (SSB) consumers in a 12-wk inpatient feeding study of 32 men with varying SSB and meat exposures *AJCN*. <https://doi.org/10.1093/ajcn/nqaa374>

121 J. Meachen, et al., **M.J. Wooller**, (2020) A mummified Pleistocene gray wolf pup (*Canis lupus*) from Yukon Territory, Canada, *Current Biology*. On-Line First.

120 J. Funck*, P. D. Heintzman, G.G.R. Murray, B. Shapiro, H. McKinney, J. Huchet, N. Bigelow, P. Druckenmiller, **M.J. Wooller**, (2020). The life and times of a mummified steppe Bison (*Bison priscus*) from Arctic Alaska told through his isotopic and molecular chemistry. *Quaternary Science Reviews*. 249 <https://doi.org/10.1016/j.quascirev.2020.106578>

119 Hoffman et al., et al, **M.J. Wooller**, (2020). Ancient Beringian paleodiets revealed through multiproxy stable isotope analyses. *Science Advances*. DOI: 10.1126/sciadv.abc1968

118 M. C. Jones, K.J. Keller, M. Berkelhammer, K. Yoshimura, **M.J. Wooller**, (2020). High sensitivity of Bering Sea winter sea ice to winter insolation and carbon dioxide over the last 5500 years. *Science Advances*. DOI: 10.1126/sciadv.aaz9588

117 C. Bataille, et al., **M.J. Wooller**, (2020) Advances in Global Bioavailable Strontium Isoscapes. *Paleo3*. <https://doi.org/10.1016/j.palaeo.2020.109849>

116 J. Funck*, C. Bataille, T. Seaton, J. Rassic, **M.J. Wooller**, (2020). Stable isotopic signatures in modern wood bison (*Bison bison athabasca*) hairs as telltale biomarkers of nutritional stress. *Canadian Journal of Ecology*. doi.org/10.1139/cjz-2019-0185

115 B. Baarst#, **M.J. Wooller** et al. (2020). Dried blood spot sampling of landlocked Arctic char for estimating mercury exposure and stable carbon isotope fingerprinting of essential amino acids. *Environmental Toxicology and Chemistry*.

- 114 C. Adol, et al, **M.J. Wooller**, (2020). Identifying drivers of forest resilience in long-term records from the Neotropics. *Biological Letters*. <https://doi.org/10.1098/rsbl.2020.0005>
- 113 A.Cyr*, et al., **M.J. Wooller**, (2019). Survey of mercury concentrations in subsistence fish from Kotzebue Sound, Alaska: A Community-based effort to understand drivers and public health significance. *Environmental Science and Technology*. On-Line first.
- 112 J. Miriam, et al., **M.J. Wooller**, (2019). An assessment of plant species differences on cellulose oxygen isotopes from two Kenai Peninsula, Alaska peatlands: implications for hydroclimatic reconstructions. *Frontiers*. doi: 10.3389/feart.2019.00025
- 111 N. Bigelow, K. Mulliken*, J. D. Reuther, É. Saulnier-Talbot#, K. L. Wallace, **M.J. Wooller**, (2019). Late-Glacial paleoecology of the Upper Susitna Valley, Alaska: Environmental context for human dispersal in the region. *Frontiers*. DOI: 10.3389/feart.2019.00043
- 110 A. G. Rowe*, K. Iken, A. Blanchard, D. M. O'Brien, R. Døving Osvik, M. Uradnikova, K. Dunton, **M.J. Wooller**, (2019). Estimates of primary production sources to Arctic bivalves using amino acid stable carbon isotope fingerprinting. *Stable Isotopes in Environmental and Health Studies*. doi.org/10.1080/10256016.2019.1620742
- 109 A. Cyr*, J. A López, L. Rea, **M.J. Wooller**, T. Loomis, S. Mcdermott, T. O'Hara, (2019). Mercury concentrations in fishes from the Aleutian Islands: spatial and biological determinants. *Environmental Science and Technology*. doi.org/10.1002/etc.1990
- 108 Moreno Mayar, et al. **M.J. Wooller**, (2018). Early Human Dispersals in the Americas. *Science*. DOI: 10.1126/Science.aav2621.
- 107 Miller et al., **M.J. Wooller**, (2018). Wolfe Creek Wolfe Creek Crater: A continuous sediment fill in the Australian Arid Zone records changes in monsoon strength through the Late Quaternary. *QSR*. 197: 1-18.
106. M. van Hardenbroek et al., **M.J. Wooller**, (2018). Flotsam samples can help explain the d13C and d15N values of invertebrate resting stages in lake sediment records. *QSR*. 189: 187-196.
- 105 M. van Hardenbroek et al., **M.J. Wooller**, (2018). The stable isotope composition of organic and inorganic fossils in lake sediment records: Current understanding, challenges, and future directions. *QSR*. doi.org/10.1016/j.quascirev.2018.08.003.
- 104 M. Nelson*. et al., **M.J. Wooller**, (2018). Fifty years of Cook Inlet beluga whale feeding ecology from isotopes in bone and teeth. *Endangered Species Research*. doi.org/10.3354/esr00890.
- 103 **M.J. Wooller** et al., (2018). A new terrestrial palaeoenvironmental record from the Bering Land Bridge and context for human dispersal. *Royal Society Open Access*. doi.org/10.1098/rsos.180145
- 102 H. L. Mariash, M. Cazzanelli*, M. Rautio, L. Hamerlik, **M.J. Wooller**, and K. S. Christoffersen, (2018). Changes in food web dynamics of low arctic ponds with varying content of dissolved organic carbon. *AAAR*. doi.org/10.1080/15230430.2017.1414472
- 101 C. Glassburn* et al., **M.J. Wooller**, (2018). Application of Strontium and Oxygen Isotope Analyses to Sequentially-Sampled Modern Bison (*Bison bison bison*) Teeth from Interior Alaska as a Proxy of Seasonal Mobility. *Arctic*. doi.org/10.14430/arctic4718.

- 100 B. Gaglioti* et al., **M.J. Wooller**, (2018). Aeolian stratigraphy describes ice-age paleoenvironments in unglaciated Arctic Alaska. QSR. doi.org/10.1016/j.quascirev.2018.01.002.
- 99 L. Arppe et al., **M.J. Wooller**, (2017). A 5500-year oxygen isotope record of high arctic environmental change from southern Spitsbergen. Holocene. doi.org/10.1177/0959683617715698.
- 98 P. Heintzman et al., **M.J. Wooller**, (2017). A new genus of horse from Pleistocene North America" eLife. DOI: 10.7554/eLife.29944.
- 97 Y. Wang*, et al., **M.J. Wooller**, (2017). The southern coastal Beringian land bridge: cryptic refugium or pseudorefugium for woody plants during the Last Glacial Maximum? Journal of Biogeography. doi.org/10.1111/jbi.13010.
- 96 T. Schollmeier* et al. **M.J. Wooller**, (2017). Tracing sea ice algal production into various benthic feeding types on the Chukchi Sea shelf. Polar Biology. doi.org/10.1007/s0030.
- 95 T. Rabanus-Wallace* et al. **M.J. Wooller**, (2017) Megafaunal dietary isotopes reveal role of global moisture-driven decline of rangelands in Late Pleistocene extinctions. Nature Eco Evo. doi.org/10.1038/s41559
- 94 L. Oxtoby* et al. **M.J. Wooller**, (2017) Resource partitioning between Pacific walruses and bearded seals during 2009-2011 in Alaska. Oecologia. doi.org/10.1007/s00442-017-3883-7.
- 93 B. Gaglioti* et al., **M.J. Wooller**, (2017) Younger-Dryas cooling and sea-ice feedbacks were prominent features of the Pleistocene-Holocene transition in Arctic Alaska QSR. doi.org/10.1016/j.quascirev.2017.05.012.
- 92 T. Luoto, et al., **M.J. Wooller**, (2017) Synchronized proxy-based temperature reconstructions reveal mid- to late Holocene climate oscillations in High Arctic Svalbard. JQS. doi.org/10.1002/jqs.3001.
- 91 A. Padilla*, R. Brown and **M.J. Wooller**, (2016). Determining the movements and distribution of anadromous Bering Ciscoes (*Coregonus laurettae*) using otolith strontium isotopes. Transactions of the American Fisheries Society. doi.org/10.1080/00028487.2016.1225599.
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PRESENTATION (last 10 years)

A. Beaudreau, **M.J. Wooller**, & Barst, B. D. (2023). Tracking the fate of mercury in downstream habitats affected by rapid deglaciation in Alaska using stable isotopes. *Alaska Marine Science Symposium 2023*.

A. Rowe*, S. Karpovich, S., Breed, G. A., Reuther, J. D., et al. **M.J. Wooller** (2023). Strontium Isotope Applications to Modern and Ancient Caribou in Alaska. Paper presented at the 2023 North American Caribou Workshop & Arctic Ungulate Conference, Anchorage, Alaska, May 8th-12th, 2023. Anchorage: North American Caribou Workshop & Arctic Ungulate Conference.

J. Bacon* et al., **M.J. Wooller** (2023). Ontogenetic trophic dynamics of whitefish species from the central Beaufort Sea. *American Fisheries Conference*.

M.J. Wooller et al. (2023). Ability of Northern Pike in Southcentral Alaska to use marine habitats revealed using strontium isotope analyses of otoliths. American Fisheries Conference.

M.J. Wooller (2023). Mammoth Hunting in Alaska. University of Alaska Anchorage Geology Department Seminar.

M.J. Wooller (2023). Adopt a Mammoth Project. University of Alaska Fairbanks Biology and Wildlife Department Seminar.

M. VanHardenbroek et al., **M.J. Wooller** (2023). Holocene methane emissions from high latitude lakes in Alaska. INQUA.

J. Irringher et al., **M.J. Wooller** (2022). Expanding the isotopic toolbox in support of the sustainable development goals. Mass Spec Forum Vienna

M.J. Wooller (2022). Isotopic fingerprinting of opioids. Center ICE workshop UAF.

A. Kelly*, Joshua H. Miller, Larisa DeSantis, Grant Zazula, **M.J. Wooller** (2021). A LATE PLEISTOCENE CHRONOLOGY OF *BISON PRISCUS* FROM THE KLONDIKE REGION OF NORTHERN CANADA: NICHE STABILITY THROUGH CHANGING CLIMATE. GSA

M.J. Wooller (2022). Adopt a Mammoth. IAB seminar, UAF.

M.J. Wooller (2023). Ability of Northern Pike in Southcentral Alaska to use marine habitats revealed using strontium isotope analyses of otoliths

Joshua H. Miller, Abigail Kelly, Larisa DeSantis, Grant Zazula, **M.J. Wooller** (2021). Horse over bison: dietary preferences of carnivores in Late Pleistocene Yukon. GSA

Joshua H. Miller, Abigail Kelly, Larisa DeSantis, Grant Zazula, **M.J. Wooller** (2021). Niche stability through environmental change of the Late Pleistocene: A chronology of *Bison priscus* paleoecology from Yukon Territory, Canada. SVP Conference.

Horstmann, Smith, Rode, **M.J. Wooller**, Stimmelmayer (2020). Evidence of two polar bear ecotypes in the Southern Beaufort Sea using compound-specific stable isotope analyses of amino acids. Marine Mammal Conference.

Johnson, JJ; Krakoff, J; Shaw, PA; Votruba, SB; **M.J. Wooller**, O'Brien, DM (2020). $\delta^{15}\text{N}$ values of amino acids respond to meat and fish intakes in a 12-wk inpatient feeding study of adult men. ISOECOL Conference

Michelle Trifari, **M.J. Wooller**, et al. (2021). Identifying pathways of methylmercury through marine food-webs of the Aleutian Islands using a novel coupling of compound specific isotopic approaches. One health conference

Lesleigh Anderson, Bruce Finney, Mary Edwards, Mandy King, **M.J. Wooller**, Matt Finkenbinder, Mark Abbott (2020). A water isotope approach towards conceptualizing the shifting roles of precipitation and evaporation in Beringia across the Pleistocene-Holocene transition. GSA conference.

Benjamin D. Barst, **M.J. Wooller**, Diane M. O'Brien, Andrea Santa-Rios, Niladri Basu, Günter Köck, Jessica J. Johnson, and Derek C.G. Muir. (2020). Dried blood spots (DBS) provide a simple and minimally invasive procedure for collecting, transporting, and storing blood. Society of Environmental Toxicology and Chemistry North America 41st Annual Meeting, Fort Worth, TX

- M.J. Wooller** (2019). Strontium isotope applications in paleoecology: Tracking the movement and ecology a mammoth in Alaska. University of North Texas. Invited seminar.
- M.J. Wooller** (2019). Strontium isotope applications in paleoecology: Tracking the movement and ecology a mammoth in Alaska. University of Newcastle, UK. Invited seminar.
- M.J. Wooller** et al., (2019). Tracking the movement and ecology a mammoth in Alaska using strontium isotopes. IAB, UAF Invited Seminar.
- Shapiro, B., Froese, D., **M.J. Wooller**, & Co-Authored Plenary talk. (2019). *50,000 YEARS OF ENVIRONMENTAL CHANGE AND LARGE MAMMAL DYNAMICS FROM CENTRAL YUKON PERMAFROST*. INQUA, Dublin.
- Jones, **M.J. Wooller**, & Kellar, K. (2019). *Solar forcing controls Bering Sea Climate variability in the late Holocene*. INQUA, Dublin.
- M.J. Wooller** et al., (2019). Tracking the movement and ecology a mammoth in Alaska using a multi-isotope approach.
- Froese, D., **M.J. Wooller**, & Shapiro, B. (2018). *50,000 YEARS OF ENVIRONMENTAL CHANGE AND LARGE MAMMAL DYNAMICS FROM CENTRAL YUKON PERMAFROST*. CANQUA. Canada.
- Rea, L., & **M.J. Wooller** (2018). *Compound specific nitrogen isotopes of amino acids in Sea lion whiskers: testing trophic position changes*. ISOECOL. Chile.
- Funk, J. *, & **M.J. Wooller** (2018). *The life and times of a mummified steppe bison (Bison priscus) from Arctic Alaska told through his isotopic and molecular chemistry*. ISOECOL. Chile.
- M.J. Wooller** (2018). *Tracking the movements of a mammoth in Arctic Alaska using isotopes in a tusk*. ISOECOL. Chile.
- Johnson, J. *, O'Brien, D., & **M.J. Wooller** (2018). *Compound-specific isotope analysis of amino acids indicates human dietary exposures in a clinical feeding study*. ISOECOL. Chile.
- Jones, **M.J. Wooller**, & Kellar, K. (2018). *Solar forcing controls Bering Sea Climate variability in the late Holocene*. AGU.
- Rea, L., & Wooller, M. J. (2018). *Compound specific amino acid isotope composition changes in Sea lion whiskers*. Marine Mammal Conference. Canada.
- M.J. Wooller** et al., (2019). Stable carbon isotope amino acid fingerprinting. Alaska Marine Science Symposium.
- Zinkann*, A.-C., Iken, K. B., O'brien, D. M., & **M.J. Wooller** (2019). Digging Deep: Depth Distribution and Utilization of Carbon Sources in Chukchi Sea Sediments. *Alaska Marine Science Symposium*.
- Johnson, J.*, O'Brien, D., & **M.J. Wooller** (2019). Amino acid carbon isotope ratios indicate sugar sweetened beverage and meat exposure in a clinical feeding study
- Rowe, A.*, Blanchard, A. L., Iken, K. B., O'brien, D. M., & **M.J. Wooller** (2018). *Developing stable isotope fingerprinting of bivalve shells to detect long-term changes in organic matter sources into the Arctic marine ecosystem*. Alaska Marine Science Symposium.

- Rowe, A. *, & **M.J. Wooller** (2018). *Stable carbon isotope amino acid fingerprinting of shells from two Arctic clam genera to track primary production sources. ISOECOL. Chile.*
- Schollmeier, T. *, Iken, K. B., **M.J. Wooller**, & Belt, S. (2018). *Tracing the presence of sea ice algae in Arctic benthic consumers using the biomarker IP25. Alaska Marine Science Symposium.*
- Zinkann, A.-C. *, Iken, K. B., O'brien, D. M., & **M.J. Wooller** (2018). *Contribution of microbially-derived carbon to benthic invertebrates across the Chukchi Sea shelf using amino acid specific stable isotope analyses. Alaska Marine Science Symposium.*
- Zinkann, A.-C. *, Iken, K. B., O'brien, D. M., & **M.J. Wooller** (2018). *Contribution of microbially-derived carbon to benthic invertebrates across the Chukchi Sea shelf using amino acid specific stable isotope analyses. Ocean Sciences Meeting.*
- Zinkann, A., Iken, K. B., O'brien, D. M., & **M.J. Wooller** (2017). *Identifying the sources of amino acids to benthic invertebrates across the Chukchi Sea shelf. Arctic Marine Science Symposium.*
- Bigelow, N., & **M.J. Wooller** (2017). *Holocene Landscape Changes in the Middle Susitna Valley. AAAS.*
- Bigelow, N., & **M.J. Wooller** (2017). *LATE GLACIAL AND HOLOCENE LANDSCAPE CHANGE IN THE MIDDLE SUSITNA VALLEY, ALASKA. GSA.*
- Arppe, L., & **M.J. Wooller** (2017). *Chironomid oxygen isotope record of mid- to late Holocene climate evolution from southern Spitsbergen. EGU.*
- Reuther, J., & **M.J. Wooller** (2017). *Late Quaternary Landscape Evolution of the Shaw Creek Basin. AAAS.*
- Jones, M., & **M.J. Wooller** (2017). *HOLOCENE CLIMATE RECONSTRUCTION FOR THE BERING SEA REGIONS FROM PEAT OXYGEN ISOTOPES, ST. MATTHEW ISLAND, ALASKA. GSA.*
- van Hardenbroek, M., & **M.J. Wooller** (2017). *Stable carbon and nitrogen isotopes of invertebrate remains: a glimpse of food web structure change. Steve Brooks special symposium - London.*
- Kosma, M.*, & **M.J. Wooller** (2017). *Can we use stable carbon and nitrogen isotope analysis to determine the contribution of hatchery salmon to humpback whale diet? SMM.*
- M.J. Wooller** (2017). *Chemical profiling of ancient hearths reveals recurrent salmon use in Ice Age Beringia. AAAS.*
- Reuther, J., & Wooller, M. J. (2017). *Holocene Shoreline Sites and Lake Level Change at Quartz Lake, Interior Alaska. AAAS.*
- M.J. Wooller** Blanchard, A. L., Zinkann, A.-C.*, Choy, K., Iken, K. B., O'brien, D. M., & Rowe, A. (2018). *Determining Primary Production Sources to Benthic Organisms in the Arctic Using Stable Isotope Fingerprinting. CMI Annual Review.*
- M.J. Wooller**, Blanchard, A. L., Zinkann, A.-C.*, Choy, K., Iken, K. B., O'brien, D. M., & Rowe, A.* (2018). *Determining Primary Production Sources to Benthic Organisms in the Arctic Using Stable Isotope Fingerprinting. Alaska Marine Science Symposium.*
- Schollmeier, T. *, & **M.J. Wooller** (2016). *Tracing sea ice algal production into various benthic feeding types on the Chukchi Sea shelf. AMSS.*

- Kosma, M. *, & **M.J. Wooller** (2016). *Can we use stable carbon and nitrogen isotope analysis to determine the contribution of hatchery salmon to humpback whale diet?* AMSS.
- Schollmeier, T. *, & **M.J. Wooller** (2016). *Using different biomarkers to trace sea ice algal production into Arctic benthic invertebrates.* AMSS. Anchorage.
- M.J. Wooller** (2016). *Oxygen Isotope Analyses of Organic materials - a review. Chironomid workshop - Invited Plenary Talk.* Southampton UK.
- M.J. Wooller** (2016). *Paleoecological examples in Alaska. Ice age Alaska Seminar to students UAF.*
- Schollmeier, T. *, Iken, K., **M.J. Wooller**, & Oliveira, A. C. (2015). *Contribution of sea ice algae to various benthic feeding types on the Chukchi Sea shelf. Alaska Marine Science Symposium.* Anchorage, Alaska
- Choy, K.#, Potter, B. A., Reuther, J. D., McKinney, H. J., Bigelow, N. H., & **M.J. Wooller** (2015). *Chemical analyses of terminal Pleistocene hearth residues at the Upward Sun River site in Central Alaska. XIX International Union of Quaternary Research meetings, 2015, Nagoya, Japan.*
- Glassburn, C. *, Potter, B. A., Reuther, J. D., & **M.J. Wooller** (2015). *Steppes across the land: reconstructing steppe bison behavioral ecology in east-central Alaska using strontium, oxygen and carbon isotopic analyses of bison teeth. XIX International Union of Quaternary Research meetings, 2015, Nagoya, Japan.*
- Jones, M., & **M.J. Wooller** (2015). *Mid- to late- Holocene climate and vegetation change in a St. Matthew Island Peatland: a history of precipitation, temperature, and volcanism. XIX International Union of Quaternary Research meetings, 2015, Nagoya, Japan.*
- Choy, K.#, Potter, B. A., Reuther, J. D., McKinney, H. J., Bigelow, N. H., & **M.J. Wooller** (2015). *Chemical analyses of terminal Pleistocene hearth residues at the Upward Sun River site in Central Alaska. 42nd Annual Meeting of the Alaska Anthropological Association.* Anchorage, Alaska.
- Luoto, T., & **M.J. Wooller** (2015). *Multiproxy paleolimnological record of Holocene climate trends in High Arctic Svalbard. XIX International Union of Quaternary Research meetings, 2015, Nagoya, Japan.*
- Gaglioti, B. *, & **M.J. Wooller** (2015). *Using varved lake sediments to detect human impacts on boreal wildfire in Interior, Alaska. XIX International Union of Quaternary Research meetings, 2015, Nagoya, Japan.*
- M.J. Wooller** (2015). *Post-glacial dispersal of northern pike (Esox cf. lucius) in Eastern Beringia inferred using radiocarbon and ancient-DNA results from an 8,800 year old fish skull preserved in Quartz Lake, interior Alaska. XIX International Union of Quaternary Research meetings, 2015, Nagoya, Japan.*
- Wang, Y. *, & **M.J. Wooller** (2015). *Timing and trajectory of mammoth extinction on St. Paul Island, Alaska based on coprophilous spores, aDNA, and 14C bone dates. XIX International Union of Quaternary Research meetings, 2015, Nagoya, Japan.*
- Jones, M., & **M.J. Wooller** (2014). *Mid- to late- Holocene climate and vegetation change in a St. Matthew Island Peatland: a history of precipitation, temperature, and volcanism. Tehphra Conference.*
- Padilla, A. *, **M.J. Wooller**, & Brown, R. (2014). *Using the strontium isotope composition of otoliths from Bering cisco (Coregonus laurettae) to determine commercial stock composition in Alaska. 5th International Otolith Symposium.*

Gaglioti, B. *, Mann, D., & **M.J. Wooller** (2014). *RADIOCARBON AGE-OFFSETS IN AN ARCTIC LAKE DESCRIBE THE RESPONSE OF A PERMAFROST WATERSHED TO CLIMATE CHANGE*. AMQUA.

Stiller, M., **M.J. Wooller**, Shapiro, B., Froese, D., & Zazula, G. (2013). *Targeted high-throughput sequencing of ancient DNA on a population level scale*. CANQUA.

Gaglioti, B. *, **M.J. Wooller**, & Mann, D. (2013). *Incessant Rapid Climate Change Was a Defining Characteristic of the Last Ice Age in Arctic Alaska*. CANQUA.

Gaglioti, B. *, **M.J. Wooller**, & Mann, D. (2013). *Ancient Carbon Inputs to Arctic Streams and Lakes during Climate Warming: Lessons from the Past*. AGU.

Mann, D., Gaglioti, B. *, & **M.J. Wooller** (2013). *Permafrost carbon release and landscape change, before and after boreal wildfires over the last 1000 years*. AGU.

Van Hardenbroek, M., **M.J. Wooller**, & Heiri, O. (2013). *Taxon-specific stable carbon isotope values in chironomid larvae and their remains*. Chironomid Workshop

REASERCH MENTORING OF HIGHLY QUALIFIED PERSONS

(below are listed those individuals Wooller has directly supervised – Note: Wooller has served on >40 graduate student committees since 2002)

Postdoctoral scholars:

Dr. Sambit Ghosh – Current at UAF.

Dr. Ben Baarst – Currently a research faculty member at UAF.

Dr. Amanda Booth, Currently a university professor at APU, USA.

Dr. Ruo He, Currently a university professor in China.

Dr. Thomas Larsen, Currently a postdoc at Leibnitz-Laboratory for Radiometric Dating and Stable Isotope Research, Christian-Albrechts-Universitat zu Kiel, Kiel Germany.

Dr. Kyungcheol Choy, Currently a university professor in South Korea.

Dr. Michelle Epp. Completed post doc 2003 at UAF.

Graduate and undergraduate student research advisees:

Stormy Fields (Current) MS INDS Marine Biology.

Drew Porter (Graduated 2022) MS Marine Biology.

Michelle Trifarri (Graduated 2022) MS Marine Biology

Audrey Rowe (Current) PhD. INDS Marine Biology.

Juliette Funk (Graduated 2020) PhD. Interdisciplinary, Sciences Geological Sciences.

Ben Gaglioti (Graduated 2016) PhD. Interdisciplinary Sciences. Currently a research faculty at UAF.

Shiway Wang (Graduated 2014) PhD. Marine Biology. Currently a post-doc and runs her own environmental consultancy business in Alaska.

Laura Oxtoby (Graduated 2016) PhD. Marine Biology. Currently a post-doc at UAF.

Sean Brennan (Graduated 2014) PhD. Chemical Oceanography. Currently a post-doc at University of Washington.

Y. Wang (Graduated 2010) PhD Geology. Currently a post-doc at Bremen, Germany.

P. DeHart (Graduated 2009) PhD Marine Biology. Currently a university professor at VITS, USA.

Audrey Rowe (Graduated 2019) MS Marine Biology.

Andrew Padilla (Graduated 2016) MS Marine Biology. Currently works at Alaska Department of Fish and Game.

Mark Nelson (Graduated 2018) MS Marine Biology. Currently works at Alaska Department of Fish and Game.

Natalie Monacci (Graduated 2007) MS Marine Biology. (42,51). Currently a laboratory technician, UAF.

Cade Kellman (undergraduate 2018-2019)

Cory Graham (undergraduate 2015-2016)

Robert Marcotte (undergraduate 2004-2006)

Collin Stackhouse (undergraduate 2002-2004)

Technicians:

Timothy Howe (Fulltime - Deputy Director Alaska Stable Isotope Facility and Chief Technician light isotope laboratory) (2002- Current)

Norma Haubenstock (Alaska Stable Isotope Facility Technician) (Fulltime 2002 – 2017, Part-time 2019 – Current)

Karen Spaleta (Fulltime - Deputy Director Alaska Stable Isotope Facility and Chief Technician heavy isotope laboratory) (2018- Current)

Juliette Funck (Alaska Stable Isotope Facility Technician) (Part-time 2018 – 2019)

Arianna Demerley (Alaska Stable Isotope Facility Technician) (Part-time 2018 – 2019)

Stormy Fields (Alaska Stable Isotope Facility Technician) (Part-time 2015 – 2016, Full time 2019 - Present)

REVIEWING

Auk, Canadian Journal of Fish and Aquatic Sciences, Canadian Journal of Zoology, Deep Sea Research, Earth and Planetary Science Letters, Ecology, Functional Ecology, Isotopes in Environmental Health Studies, Journal of Comparative Physiology B, Journal of Experimental Biology, Journal of Paleolimnology, Journal of Quaternary Science,

L&O, Nature Ecology and Evolution, Oecologia, Proceedings of the Royal Society of London B, Paleo3, PNAS, Quaternary Research, Quaternary Science Reviews, Rapid Communications in Mass Spectrometry, Science, Science Advances, Soil Biology and Biochemistry