

Brooke Erin Crowley

Departments of Geosciences and Anthropology
University of Cincinnati, Cincinnati, OH 45221
Phone: 513-556-7181 Fax: 513-556-6931
Email: brooke.crowley@uc.edu Website: www.agoraphotia.com

PROFESSIONAL APPOINTMENTS

2021-present **Professor**, Department of Geosciences, University of Cincinnati
2021-present **Professor**, Department of Anthropology, University of Cincinnati
2019-present **Faculty Affiliate**, UC Center for Public Engagement with Science (PEWS)
2018-present **Graduate Director**, Department of Geosciences, University of Cincinnati
2017-2021 **Associate Professor**, Department of Geology, University of Cincinnati
2017-2021 **Associate Professor**, Department of Anthropology, University of Cincinnati
2012-present **Faculty Affiliate**, Department of Environmental Studies/School for Environment and Sustainability, University of Cincinnati
2011-2017 **Assistant Professor**, Department of Geology, University of Cincinnati
2011-2017 **Assistant Professor**, Department of Anthropology, University of Cincinnati
2011-present **Research Associate**, Vertebrate Paleontology, Cincinnati Museum Center
2010-2011 **Lecturer**, Department of Anthropology, University of Toronto
2009-2010 **Postdoctoral Fellow**, Department of Anthropology, University of Toronto

EDUCATION

2008-2009 **Doctor of Philosophy**, Ecology and Evolutionary Biology, University of California, Santa Cruz
Thesis: The stable isotope ecology of Madagascar's lemurs
Advisors: Drs. Paul Koch and Nathaniel Dominy
2005-2008 **Master of Arts**, Biological Anthropology, Anthropology, University of California, Santa Cruz
Advisors: Drs. Paul Koch and Nathaniel Dominy
2003-2005 **Master of Science**, Earth Sciences, University of California, Santa Cruz
Thesis: Tracing the isotopic rainshadow and elevation history of the Sierra Nevada Mountains, California
Advisor: Dr. Paul Koch
1998-2002 **Bachelor of Arts**, Geology, *Cum Laude*, Vassar College
Honors Thesis: Microbe association with the Wappingers Group
Advisor: Friedrich Pflüger
1998 **High School Diploma**, Cranbrook Schools, Bloomfield Hills, MI

FUNDING

External Proposals Funded:

2022-2025	Co-PI DGE-NSF Research Traineeship DGE-2224857	\$499,999
-----------	--	-----------

"IGE: Engaging Science: Transforming Graduate Education through Public Engagement with Science" (Lead-PI Angela Potochnik, UC)

2021-2024	UC PI	National Science Foundation EAR-2047818 "Collaborative Research: Integrative ecological perspectives on extinction processes - a multi-proxy case study of Hispaniolan subfossil and extant rodents" (Lead PI: Siobhán Cooke, Johns Hopkins)	\$185,556 (UC)
2021-2023	Co-PI	National Science Foundation Award EAR-2110297 "Acquisition of a high temperature elemental analyzer for hydrogen and oxygen isotope analysis of waters and solids for the University of Cincinnati Stable Isotope Laboratory". (PI: Aaron Diefendorf, UC)	\$108,503
2018-2023	UC PI	National Science Foundation Award BCS-1749676 "Collaborative research: Human and non-human influences on species biodiversity in an island ecosystem" (Lead PI: Laurie Godfrey, UMASS Amherst)	\$81,125 (UC)
2019	PI	North American Falconers Association 2 nd Year Renewal "Can strontium and hydrogen isotopes identify breeding grounds? Testing a dual-isotope approach for refining natal areas for migratory accipiters in North America"	\$1,850
2017	PI	North American Falconers Association "Can strontium and hydrogen isotopes identify breeding grounds? Testing a dual-isotope approach for refining natal areas for migratory accipiters in North America"	\$1,000
2017	PI	Sophie Danforth Conservation Biology Fund 2 nd Year Renewal "Can isotopes in feces track the mobility of difficult to observe mammals?"	\$1,000
2016	PI	Sophie Danforth Conservation Biology Fund "Can isotopes in feces track the mobility of difficult to observe mammals?"	\$1,000
2012-2016	Co-PI	National Science Foundation EAR-1229114 "MRI: Acquisition of Stable Isotope Instrumentation for Biogeochemistry Research and Teaching at the University of Cincinnati" (PI: Aaron Diefendorf)	\$400,000
2012-2015	Co-PI	Ohio Board of Regents Action Fund 1010052 In support of NSF EAR-1229114	\$85,714
2013	PI	Ralph E. Powe Junior Faculty Enhancement Award, ORAU	\$5,000
2008	Co-PI	University of California Lab Fees Grant "Climate change, lemurs and recent megafaunal extinction"	\$128,900
2006	PI	Phi Beta Kappa Scholarship	\$5,000

Internal Funding:

2023	PI	UC Center for Public Engagement with Science "Interpreter training workshop"	\$1,500
2022	PI	UC Center for Public Engagement with Science "Leading an elementary school field trip on Cincinnati geology"	\$2,000
2022	PI	Taft Research Center	\$2,379

		"What can hippo isotopes tell us about past distribution of C4 grassy biomes on Madagascar?"	
2020	PI	Taft Research Center "Presenting at the Virtual AAPA 2020"	\$440
2019	Co-PI	College Structures Initiative "Developing curricular offerings for science outreach"	\$5,000
2019	PI	Taft Research Center "Presenting at the AAPA 2019"	\$1,200
2018	PI	UC Individual Faculty Development Grant "Presenting and mentoring at the 2018 GSA Conference"	\$882
2018	PI	Taft Research Center "Travel to international biennial conference held in Chile"	\$2,700
2017	PI	UC Individual Faculty Development Grant "Presenting and networking at the 2017 AAPA Conference"	\$1,262
2016	PI	Taft Research Center "Presenting and networking at the International Primatological Society/American Society of Primatologists joint meeting, August 20-27 2016, Chicago"	\$1,200
2016	Co-PI	UC Academy of Fellows for Teaching and Learning "UC Energy & Education Initiative – 'WATT is a BTU?'"	\$6,759
2016	Co-PI	STEM Interdisciplinary Grant "UC Energy & Education Initiative – 'WATT is a BTU?'"	\$5,730
2013-2014	Co-PI	UC Forward teaching initiative renewal "Changing landscapes, dynamic environments, and geohazards in the Himalaya"	\$10,000
2013-2014	Co-PI	UC Forward teaching initiative renewal "Surviving Climate Change"	\$5,700
2013	PI	UC Individual Faculty Development Grant Conference, Collaboration and Research in Gainesville, Florida	\$1,841
2013	PI	University of Cincinnati Research Council "Assessing vehicle related pollution along the Manali-Leh Highway, Indian Himalaya"	\$6,500
2013	PI	UC Individual Faculty Development Grant "Isotope Ratio Mass Spectrometer Training Course"	\$3,174
2012-2013	PI	University of Cincinnati Research Council "Extinction and Education: Documenting Late Pleistocene Chronostratigraphy and Paleoenvironment of Big Bone Lick, State Park"	\$24,700
2012-2013	Co-PI	UC Forward teaching initiative "Changing landscapes, dynamic environments, and geohazards in the Himalaya"	\$10,000
2012-2013	Co-PI	UC Forward teaching initiative "Surviving Climate Change"	\$5,700

2011	University of Toronto CUPE Conference Fund	\$600
2009	Vassar College Graduate Fellowship	\$2,000
2008	Vassar College Graduate Fellowship	\$5,000
2008	Teaching Assistant Sabbatical	\$8,923
2008	Center on the Dynamics and Evolution of the Land-Sea Interface travel grant	\$500
2008	Center on the Dynamics and Evolution of the Land-Sea Interface mini grant	\$900
2008	UC Santa Cruz Institute for Geophysics and Planetary Physics mini grant	\$900
2006	Center for Tropical Research in Ecology, Agriculture, and Development grant	\$1,200
2007	Vassar College Graduate Fellowship	\$3,000
2003-2005	Center for Informal Learning and Schools (CILS) Fellowship	\$15,000 annually
2003	Gerald Weber and Suzanne Holt Field Camp Scholarship	\$250

RESEARCH

Research Interests

My primary research interests include conservation ecology and paleoecology, food webs, niche partitioning, community ecology, mobility, human-animal interactions, ecological repercussions of habitat fragmentation and degradation, and understanding the causes and consequences of extinction events.

Publications

Peer Reviewed Papers:

#Indicates Undergraduate Student and †Indicates Graduate Student. Up to date citations for each entry can be found on [Google Scholar](#). pdfs of all publications are available at brookecrowleypublications.wordpress.com). ORCID: 0000-0002-8462-6806.

In Review	Vogel, E.R., Alavi, S.E., Watford, M., Brittain, R.S.A., Crowley, B.E. , Naumenko, D., Bransford, T.D., Zulfa, A., Aguado, W.D., Moldawer, A., Farida, W.R., Emery Thompson, M., van Noorwijk, M.A., Mitra-Setia, T., Utami Atmoko, S.S., Rothman, J.M., and Raubenheimer, D. Integrated behavioral and metabolically flexible responses of wild orangutans to ecologically driven dietary variation. Submitted to <i>Proceedings of the National Academy of Sciences</i> .
Early View	Reid, R.B., Crowley, B.E. , and Haupt, R. The prospects of poop: A review of past achievements and future possibilities in fecal isotope analysis. <i>Biological Reviews</i> . DOI: 10.1111/brv.12996
Early View	Crowley, B.E. , Godfrey, L.R., and Samonds, K.E. What can hippopotamus isotopes tell us about past distributions of C ₄ grassy biomes on Madagascar? <i>Plants, People, Planet</i> . https://doi.org/10.1002/ppp3.10402

- Early View **Crowley, B.E.**, Schmidt, H.S., and Vorontsova, M.S. Carbon isotope values for grasses in Madagascar's Central Highlands establish baselines for historical and palaeoecological research. Submitted to *Plants, People, Planet*. <https://doi.org/10.1002/ppp3.10358>
- 2023 **Crowley, B.E.**, Simpson, E.M.B.[†], Hammer, S.J., Smith, J.M., and Johnson, T.M. Comparison of powdered enamel sample pretreatment methods for strontium isotope analysis. *Frontiers in Environmental Chemistry* 4: 1114807.
- 2023 **Crowley, B.E.***, Wultsch, C.*, Simpson, E.M.B.[†], Kelly, M.J. Integrating fecal isotopes and molecular scatology to non-invasively study the spatial ecology of elusive carnivores: a case study with wild jaguars (*Panthera onca*). *European Journal of Wildlife Research* 69: 78.
*Authors contributed equally
- 2023 Simpson, E.M.B.[†], **Crowley, B.E.**, Sturmer, D. Simpson, E.M.B.[†], **Crowley, B.E.**, Sturmer, D. Is the damage worth it? Testing handheld XRF as a non-destructive analytical tool for determining biogenic bone and tooth chemistry prior to destructive analyses. *Frontiers in Environmental Archaeology* 1: 1098403.
- 2022 Britton, K., **Crowley, B.E.**, Bataille, C.P., Miller, J.H., and Wooller, M. Editorial: A golden age for strontium isotope research? Current advances in paleoecological and archaeological research. *Frontiers in Ecology and Evolution* 9: 820295.
- 2022 Cooke, S.B., and **Crowley, B.E.** New radiocarbon dates reveal pan-Holocene deposition of rodents at Trouing Jérémie #5, a sinkhole in the western Tiburon Peninsula, Haiti. *The Holocene* 32: 991-997.
- 2022 Miller, J.H., Fisher, D.C., **Crowley, B.E.**, Secord, R., and Bledar, A.K. Male mastodon landscape use changed with maturation (Late Pleistocene, North America). *Proceedings of the National Academy of Sciences* 119(25): 32118329119.
- 2021 Britton, K., **Crowley, B.E.**, Bataille, C.P., Miller, J.H., and Wooller, M.J. Perspective: Silver Linings at the Dawn of a 'Golden Age'. *Frontiers in Ecology and Evolution* 9: 748938.
- 2021 **Crowley, B.E.***, Bataille, C.P.*, Haak, B., Sommer, K.M.[#] Identifying nesting grounds for migratory birds with dual isotope provenancing: A test with North American raptors. *Ecosphere* 12(10): e03765.
*Authors contributed equally
- 2021 **Crowley, B.E.**, Godfrey, L.R., Hansford, J.P., and Samonds, K.E. Seeing the forest for the trees – and the grasses: Revisiting the evidence for grazer-maintained grasslands in Madagascar's Central Highlands. *Proceedings of the Royal Society of London B* 288: 20201785.
- 2021 Faina, P.[†], Burns, S.J., Godfrey, L.R., **Crowley, B.E.**, Scroxton, N., McGee, D., Sutherland, M.R., and Ranivoharimanana, L. Comparing the paleoclimates of northwestern and southwestern Madagascar during the late Holocene: implications for the role of climate in megafaunal extinction. *Malagasy Nature* 15: 108-127.
- 2021 Godfrey, L.R., **Crowley, B.E.**, Muldoon, K.M., Burns, S.J., Scroxton, H., Klukkert, Z.S., Ranivoharimanana, L., Alumbaugh, J., Borths, M., Dart, R., Faina, P., Goodman, S.M., Guierrez, I.J., Hansford, J.P., Hekkala, E.R., Kinsley, C.W., Lehman, P., Lewis, M.E., McGee, D., Pérez, V.R., Rahantahirivao, N.J., Rakotoarijaona, M., Rasolonjatovo, A.M., Samonds, K.E., Turvey, S.T., Vasey, N., and Widmann, P. Teasing apart impacts of human activity and regional drought

on Madagascar's megafauna: insights from new excavations at Tsimanampesotse and Antsirafaly. *Frontiers in Ecology and Evolution* 9: 742203.

- 2021 Hixon, S.W.,[†] Douglass, K.G., Godfrey, L.R., Eccles, L., **Crowley, B.E.**, Rakotozafy, L.M.A., Clark, G., Haberle, S., Anderson, A., Wright, H.T., Kennett, D. Ecological consequences of a millennium of introduced dogs on Madagascar. *Frontiers in Ecology and Evolution* 9: 689559.
- 2021 Hixon, S.W.,[†] Douglass, K.G., **Crowley, B.E.**, Rakotozafy, L.M.A., Clark, G., Anderson, A., Haberle, S., Ranaivoarisoa, J.F., Buckley, M., Fidiarisoa, S., Mbola, B., Kennett, D.J. Late Holocene spread of pastoralism coincides with endemic megafaunal extinction on Madagascar. *Proceedings of the Royal Society B* 288:20211204.
- 2021 Lentz, D.L., Sloten, V., Dunning, N.P., Jones, J.G., Scarborough, V.L., McCool, J-P., Owen, L.A., Fladd, S.G., Tankersley, K.B., Perfetta, C.J., Carr, C., **Crowley, B.E.**, and Plog, S. Ecosystem impacts by the ancestral Puebloans of Chaco Canyon, New Mexico, USA. *PLoS ONE* 16(10): e0258369.
- 2021 Marciniak, S., Mughal, M.R., Godfrey, L.R., Bankoff, R.J., Randrianatoandro, H., **Crowley, B.E.**, Bergey, C.M., Muldoon, K.M., Randrianasy, J., Raharivololona, B.M., Miller, W., Schuster, S.C., Malhi, R.S., Yoder, A.D., Louis Jr., E.E., Kistler, L., and Perry, G. Evolutionary and phylogenetic insights from a nuclear genome sequence of the extinct, giant 'subfossil' koala lemur *Megaladapis edwardsi*. *Proceedings of the National Academy of Sciences* 118: e2022117118
- 2021 Miller, J.H., **Crowley, B.E.**, Bataille, C.P., Wald, E.J., Kelly, A.[†], Gaetano, M.[†], Bahn, V., and Druckenmiller, P. Historical landscape use of migratory caribou: New insights from old antlers. *Frontiers in Ecology and Evolution* 8: 590837
- 2020 Bataille, C.P., **Crowley, B.E.**, Wooller, M.J., and Bowen, G.J. Advances in global bioavailable strontium isoscapes. *Palaeogeography Palaeoclimatology Palaeoecology* 555: 109849
- 2020 Burney, D.A., Andriamialison, H., Andrianaivoarivelo, R., Bourne, S., **Crowley, B.E.**, de Boer, E., Godfrey, L.R., Goodman, S.M., Griffiths, C., Griffiths, O., Hume, J.P., Joyce, W.G., Jungers, W.L., Marciniak, S., Middleton, G.J., Muldoon, K.M., Noromalala, E., Perez, V.R., Perry, G.H., Randalana, R., and Wright, H.T. Subfossil lemur discoveries from the Beanka protected area in western Madagascar. *Quaternary Research* 93: 187-203
- 2020 **Crowley, B.E.** Captive dwarf lemurs and mouse lemurs have variable fur growth. *Animals* 10: 1288 doi:10.3390/ani10081288
- 2020 Mosher, S.G.[†], **Crowley, B.E.**, Yanes, Y., Diefendorf, A.F., and Barone, R. Spatial variability in foliar carbon and nitrogen isotope values on Tenerife reflects both climate and soils: Establishing an isotopic framework for future work. *Acta Oecologica* 109: 103647
- 2019 **Crowley, B.E.**, and Godfrey, L.R. Strontium isotopes support small home ranges for extinct lemurs. *Frontiers in Ecology and Evolution*. 7: 490 doi: 10.3389/fevo.2019.00490
- 2019 **Crowley, B.E.**, Wultsch, C., and Kelly, M.J. Assessing the viability of isotopes in faecal matter for non-invasively tracking jaguar landscape use. *Isotopes in Environmental & Health Studies* 55(5): 478-498.
- 2019 **Crowley, B.E.**, Yanes, Y., Mosher, S.G.[†], and Rando, J.C. Revisiting the foraging ecology and extinction history of two endemic vertebrates from Tenerife, Canary Islands. *Quaternary* 2, 10; doi:10.3390/quat2010010.

- 2019 Douglass, K., Hixon, S.[†], Wright, H., Wright, H.T., Godfrey, L., **Crowley, B.**, Manjakahery, B., Rasolondrainy, T., Crossland, Z., and Radimilahy, C. A critical review of radiocarbon dates clarifies the human settlement of Madagascar. *Quaternary Science Reviews* 221: 105878.
- 2019 Godfrey, L.R., Scroxton, N., **Crowley, B.E.**, Burns, S.J., Sutherland, M.R., Pérez, V.R., Faina, P., McGee, D., and Ranivoharimanana, L. A new interpretation of Madagascar's megafaunal decline: the "Subsistence Shift Hypothesis". *Journal of Human Evolution* 130: 126-140.
- 2019 Samonds, K.E., **Crowley, B.E.**, Rasolofomanana, T.R.N., Andriambelomanana, M.C., Andrianavalona, H.T., Ramihangihajason, T.N., Rakotozandry, R., Nomenjanahary, Z.B., Irwin, M.T., Wells, N.A., and Godfrey, L.R. A new late Pleistocene subfossil site (Tsaramody, Sambaina basin, central Madagascar) with implications for the chronology of habitat and megafaunal community change on Madagascar's central plateau. *Journal of Quaternary Science* 34: 379-392.
- 2019 Sparks, J.A.[†], **Crowley, B.E.**, Rutherford, M.G., and Jaggernauth, D. Coastal proximity, orientation, and precipitation amount drive spatial variability in $\delta^{34}\text{S}$ values on the Caribbean island of Trinidad. *Journal of Applied Chemistry* 108: 104372.
- 2019 Wallace, J.P.[†], **Crowley, B.E.**, and Miller, J.H. Investigating equid mobility in Miocene Florida, USA using strontium isotope ratios. *Palaeogeography, Palaeoclimatology, Palaeoecology* 516: 232-243.
- 2018 Cooke, S.B.^{*}, and **Crowley, B.E.**^{*} Deciphering the isotopic niches of now-extinct Hispaniolan rodents. *Journal of Vertebrate Paleontology* 38(5): e1510414
^{*}Authors contributed equally
- 2018 Craine, J., Elmore, A.J., Want, L., Aranibar, J., Bauters, M., Pascal Boeckx, P., **Crowley, B.E.**, Dawes, M.A., Delzon, S., Fajardo, A., Fang, Y., Fujiyoshi, L., Gray, A., Guerrieri, R., Gundale, M.J., Hawke, D.J., Hietz, P., Jonard, M., Kearsley, E., Kenzo, T., Makarov, M., Marañón-Jiménez, S., McGlynn, T.P., McNeil, B.E., Mosher, S.G., Nelson, D.M., Peri, P.L., Roggy, J.C., Sanders-DeMott, R., Song, M., Szpak, P., Templer, P.H., Van der Colff, D., Wang, L., Werner, C., Xu, X., Yang, Y., Yu, G., Zmudczyńska-Skarbek, K. Isotopic evidence for oligotrophication of terrestrial ecosystems. *Nature Ecology and Evolution* 2: 1735-1744.
- 2018 **Crowley, B.E.**, Castro, I.[#], Goodman, S.M., and Soarimalala, V. Isotopic evidence for niche partitioning and the influence of anthropogenic disturbance on endemic and introduced rodents in central Madagascar. *The Science of Nature* 105(44) <https://doi.org/10.1007/s00114-018-1564-y>
- 2018 Hixon, S.W.[†], Elliott Smith, E.A., **Crowley, B.E.**, Perry, G.H., Kennett, D.J., and Newsome, S.D. Nitrogen isotope ($\delta^{15}\text{N}$) patterns for amino acids in lemur bones are inconsistent with aridity driving megafaunal extinction in south-western Madagascar. *Journal of Quaternary Science* 33(8): 958-968.
- 2018 McCool, J-P.P.[†], Fladd, S.G., Scarborough, V.L., Plog, S., Dunning, N.P., Owen, L.A., Watson, A.S., Bishop, K.J., **Crowley, B.E.**, Haussner, E.A.[†], Tankersley, K.B., Lentz, D., Carr, C., and Thress, J.L. Soil analysis in discussions of agricultural feasibility for ancient civilizations: A critical review and reanalysis of the data and debate from Chaco Canyon, New Mexico. *PLoS ONE* 13(6): e0198290.
- 2018 Scarborough, V.L., Fladd, S.G., Dunning, N.P., Plog, S., Owen, L.A., Carr, C., Tankersley, K.B., McCool, J-P.[†], Watson, A.S., Haussner, E.A.[†], **Crowley, B.E.**, Bishop,

K.J., Lentz, D.L., and Vivian, G. Water uncertainty and ritual predictability at Chaco Canyon, New Mexico. *Antiquity* 92(364): 870-889

- 2018 Sparks, J.A.[†], and **Crowley, B.E.** Where did people forage in prehistoric Trinidad? Testing the utility of a multi-isotope approach for tracking the origins of terrestrial prey. *Journal of Archaeological of Science Reports* 19: 968-978.
- 2018 Vrazo, M.B.[†], Diefendorf, A.F., **Crowley, B.E.**, and Czaja, A.D. Late Cretaceous marine arthropods relied on terrestrial organic matter as a food source: geochemical evidence from the Coon Creek *Lagerstätte* in the Mississippian Embayment. *Geobiology* 16(2): 160-178.
- 2017 **Crowley, B.E.**, Godfrey, L.R., Bankoff, R.J., Perry, G.H., Culleton, B.J., Kennett, D.J., Sutherland, M.R., Samonds, K.E., and Burney, D.A. Island-wide aridity did not trigger recent megafaunal extinctions in Madagascar. *Ecography* 40: 901-912.
- 2017 **Crowley, B.E.**^{*}, Miller, J.H.^{*}, and Bataille, C.P. Strontium isotopes (⁸⁷Sr/⁸⁶Sr) in terrestrial ecological and paleoecological research: empirical efforts and recent advances in continental-scale models. *Biological Reviews* 92: 43-59.
^{*}Authors contributed equally
- 2017 **Crowley, B.E.**, Slater, P.A., Arrigo-Nelson, S.J., Baden, A.L., and Karpanty, S.M. Strontium isotopes are consistent with low-elevation foraging limits for Henst's Goshawk. *Wildlife Society Bulletin* 41(4): 743-751.
- 2017 Dasgupta, R.[†], **Crowley, B.E.**, and Maynard J.B. Organic and inorganic pollutant concentrations suggest anthropogenic contamination of soils along the Manali-Leh Highway, Northwestern Himalaya, India. *Archives of Environmental Contamination and Toxicology* 74(4): 505-518.
- 2017 Muldoon, K.M., Godfrey, L.R., **Crowley, B.E.**, and Simons, E.L. Predation on subfossil *Prolemur simus* by multiple predator species at Ankarana Massif, Northern Madagascar? *International Journal of Primatology* 38(1): 58-79.
- 2016 Carlson, B.A. and **Crowley, B.E.** Comparative $\delta^{13}\text{C}$ variation in chimpanzee dietary ecology at Ngogo and Bwindi Impenetrable National Park, Uganda. *American Journal of Primatology* 78: 1031-1040.
- 2016 **Crowley, B.E.**, Reitsema, L., Oelze, V.M., and Sponheimer M. Advances in primate stable isotope ecology – achievements and future prospects. *American Journal of Primatology* 78: 995-1003.
- 2016 Godfrey, L.R., and **Crowley, B.E.** Madagascar's ephemeral paleo-grazer guild: Who ate the ancient grasses? *Proceedings of the Royal Society B* 283: 20160360.
- 2016 Godfrey, L.R., **Crowley, B.E.**, Muldoon, K.M., Kelley, E.A., King, S.J., Best, A.W., and Berthaume, M. What did *Hadropithecus* eat, and why should paleoanthropologists care? *American Journal of Primatology* 78: 1098-1112.
- 2015 Baumann, E.J.[#], and **Crowley, B.E.** Stable isotopes reveal ecological differences amongst now-extinct proboscideans from the Cincinnati region, USA. *Boreas* 44(1): 240-254.
- 2015 **Crowley, B.E.**, Melin, A.D., Yeakel, J.D., and Dominy, N.J. Do oxygen isotope values in collagen reflect the ecology and physiology of neotropical mammals? *Frontiers in Ecology and Evolution* 12(3): 127.

- 2015 Gnezdilova, V.V., Ruban, D.A., Bruno, D.E., Perrotta, P., **Crowley, B.E.**, Oheim, K.B., and Zayats, P.P. Geological heritage sites with palaeogeographical value: some geotourism perspectives. *Annales Géologiques de la Péninsule Balkanique* 76:93-104. doi: 10.2298/GABP1576093G.
- 2015 Kistler, L., Ratan, A., Godfrey, L.R., **Crowley, B.E.**, Hughes, C.E., Lei, R., Cui, Y., Wood, M.L., Muldoon, K.M., Andriamialison, H., McGraw, J.J., Tomsho, L.P., Schuster, S.C., Miller, W., Louis, E.E., Yoder, A.D., Malhi, R.S., and Perry, G.H. Comparative and population genomic analyses of Madagascar's extinct, giant 'subfossil' lemurs. *Journal of Human Evolution* 79: 45-54.
- 2015 Tankersley, K.B., Murari, M., **Crowley, B.E.**, Owen, L.A., Storrs, G.W., and Mortensen, L. Quaternary chronostratigraphy and stable isotope paleoecology of Big Bone Lick, Kentucky, USA. *Quaternary Research* 83(3): 479-487.
- 2014 Bruno, D.E., **Crowley, B.E.**, Gutak, J.M., Nazarenko, O.V., and Ruban, D.A. Palaeogeography as geological heritage: Developing geosite classification. *Earth-Science Reviews* 138: 300-312.
- 2014 **Crowley, B.E.** Oxygen isotope values in bone collagen and bone carbonate are consistently offset for New World monkeys. *Biology Letters* 10(11): 20140759.
- 2014 **Crowley, B.E.**, Rasoazanabary, E., and Godfrey, L.R. Stable isotopes complement focal individual observations and confirm dietary variability in reddish-gray mouse lemurs (*Microcebus griseorufus*) from southwestern Madagascar. *American Journal of Physical Anthropology* 155(1): 77-90.
- 2014 **Crowley, B.E.**, and Wheatley, P.V. To bleach or not to bleach? Comparing treatment methods for isolating biogenic carbonate. *Chemical Geology* 381: 234-242.
- 2014 Melin, A.D., **Crowley, B.E.**, Brown, S.T., Wheatley, P.V., Moritz, G.L., Tuh, F., Bernard, H., DePaolo, D.J., Jacobson, A.D., and Dominy, N.J. Calcium and carbon stable isotope ratios as paleodietary indicators. *American Journal of Physical Anthropology* 154(4): 633-643.
- 2014 Pestle, W.J., **Crowley, B.E.**, and Weirauch, M.T. Quantifying inter-laboratory variability in stable isotope analysis of ancient skeletal remains. *PLoS ONE* 9(7):e102844
- 2013 **Crowley, B.E.**, Blanco, M.B., Arrigo-Nelson, S., and Irwin, M.T. Stable isotopes document resource partitioning and differential response to forest disturbance in sympatric cheirogaleid lemurs. *Naturwissenschaften* 100(10): 943-956.
- 2013 **Crowley, B.E.**, and Godfrey, L.R. Why all those spines? Anachronistic defenses in the Didiereoideae against now extinct lemurs. *South African Journal of Science* 109(1/2): 70-76.
- 2013 **Crowley, B.E.**, and Samonds, K.E. Stable isotopes confirm a recent increase in grasslands in Northwestern Madagascar. *The Holocene* 23(7): 1066-1073.
- 2012 **Crowley, B.E.** Stable isotope techniques and applications for primatologists. *International Journal of Primatology* 33: 673-701.
- 2012 **Crowley, B.E.**, McGoogan, K., and Lehman, S.M. Edge effects on foliar stable isotope values in a Madagascan tropical dry forest. *PLoS ONE* 7(9): e44538.
- 2012 **Crowley, B.E.**, Godfrey, L.R., Guilderson, T.P., Zermeno, P., Koch, P.L., and Dominy, N.J. Extinction and ecological retreat in a community of primates. *Proceedings of the Royal Society B* 279: 3597-3605.

- 2012 Muldoon, K.M., **Crowley, B.E.**, Godfrey, L.R., Rasoamiamanana, A., Aronson, A., Jernvall, J., Wright, P.C., and Simons, E.L. Early Holocene fauna from a new subfossil site: A preliminary report from Christmas River, South central Madagascar. *Madagascar Conservation and Development* 7(1): 23-29.
- 2012 Vogel, E.R., **Crowley, B.E.**, Knott, C.D., Blakely, M.D., and Dominy, N.J. A non-invasive method for quantifying nitrogen balance in free-ranging primates. *International Journal of Primatology* 33: 567-587.
- 2012 Vogel, E.R., Knott, C.D., **Crowley, B.E.**, Blakely, M.D., Larsen, M.D., and Dominy, N.J. Bornean orangutans on the brink of protein bankruptcy. *Biology Letters* 8: 333-336.
- 2011 **Crowley, B.E.** Extinction and rediscovery: where the wild things are. *Journal of Biogeography* 38: 1633-1634.
- 2011 **Crowley, B.E.**, Godfrey, L.R., and Irwin, M.T. A glance to the past: Subfossils, stable isotopes, seed dispersal, and species loss in southern Madagascar. *American Journal of Primatology* 73: 25-37.
- 2011 **Crowley, B.E.**, Thorén, S., Rasoazanabary, E., Vogel, E.R., Barrett, M.A., Zohdy, S., Blanco, M.B., McGoogan, K., Arrigo-Nelson, S., Irwin, M.T., Wright, P.C., Radespiel, U., Godfrey, L.R., Koch, P.L., and Dominy, N.J. Explaining geographical variation in the isotope composition of mouse lemurs (*Microcebus*). *Journal of Biogeography* 38: 2106-2121.
- 2011 Godfrey, L.R., **Crowley, B.E.**, and Dumont, E. Thinking outside the box: A lemur's take on hominin craniodental evolution. *Proceedings of the National Academy of Sciences* 108: E472, doi: 10.1073/pnas.1110782108.
- 2010 **Crowley, B.E.** A refined chronology of prehistoric Madagascar and the demise of the megafauna. *Quaternary Science Reviews* 29: 2592-2604.
- 2010 **Crowley, B.E.**, Carter, M.L., Karpanty, S.M., Zihlman, A.L., Koch, P.L., and Dominy, N.J. Stable carbon and nitrogen isotope enrichment in primate tissues. *Oecologia* v. 164, p. 611-626.
- 2010 Samonds, K.E., Parent, S.N., Muldoon, K.M., **Crowley, B.E.**, and Godfrey, L.R. Rock matrix surrounding subfossil lemur skull yields diverse collection of mammalian subfossils: Implications for reconstructing Madagascar's paleoenvironments. *Malagasy Nature* 4: 1-16.
- 2008 **Crowley, B.E.**, Koch, P.L., and Davis, E.B. Stable isotope constraints on the elevation history of the Sierra Nevada Mountains, California. *Geological Society of America Bulletin* 120: 588-598.

Peer Reviewed Book Chapters, Reviews and Encyclopedia Entries:

- In Press Sponheimer, M. and **Crowley, B.E.** Evaluating primate diets with stable isotopes. In *How Primates Eat: A Synthesis of Nutritional Ecology Across a Mammal Order* (J. Lambert, A.H. Bryer, and J. Rothman eds.), University of Chicago Press.
- 2018 **Crowley, B.E.** and Sparks, J.A.[†] Les Aires Protégées Terrestres de Madagascar: Leur Histoire, Description et Biote / The Terrestrial Protected Areas of Madagascar: Their History, Description, and Biota (S.M. Goodman, M.J. Raherilalao, and S. Wolhauser, eds.). Association Vahatra, Antananarivo, pp. 169-180 (Geology overview) and various other pages for geology descriptions of all protected areas.

- 2017 **Crowley, B.E.** Stable isotope ecology. In *The International Encyclopedia of Primatology* (A. Fuentes et al. eds.), Wiley-Blackwell. Entry 314, doi: 10.1002/9781119179313.wbprim0314.
- 2016 Heck, L.,[†] **Crowley, B.**, Thorén, S., and Radespiel, U. Determinants of isotopic variation in two mouse lemur species from northwestern Madagascar. In *Dwarf and Mouse Lemurs of Madagascar: Biology, Behavior and Conservation Biogeography of the Cheirogaleidae* (S. Lehman, U. Radespiel, and E. Zimmermann, eds.), Cambridge University Press series, Studies in Biological and Evolutionary Anthropology, pp. 281-304.
- 2013 **Crowley, B.E.**, and Godfrey, L.R. Isotopic variability and lemur diet in a dry Malagasy forest: A cautionary tale. In *Leaping Ahead: Advances in Prosimian Biology* (J.C. Masters, M. Gamba, and F. Génin eds.). New York, Springer, pp. 173-182.

Other Publications:

- 2023 Miller, J.H., Fisher, D.A., **Crowley, B.E.**, Secord, R., and Bledar, K. 2023 What can tusks tell us about the lives of mastodons? *Paleo Science Journal for Kids and Teens*. February issue.
- 2019 Hixon, S.W.,[†] Elliott Smith, E.A., **Crowley, B.E.**, Perry, G., Randrianasay, J., Ranaivoarisoa, J.F., Kennett, D.J., and Newsome, S.D. Nitrogen isotope values of amino acids in lemur bone help disentangle the history of recent extinction in southwestern Madagascar. *SAS Bulletin*, Spring 2019, pp. 11-15.
- 2018 **Crowley, B.E.** and Haak, B.A. A geochemical tool for determining natal origin of raptors. *Hawk Chalk*, August issue, pp. 16-17.
- 2005 The CentTREAD Working Group. Farmers and the forest: Can agroforestry actually conserve biodiversity? *Conservation Biology* 19: 2043–2044.

Professional Presentations

Invited Talks:

- 2022 “Reviving ghosts: An isotopic investigation of Madagascar’s extinct lemurs”; Department of Anthropology, University of Guelph, Ontario, Canada.
- 2020 “Reviving ghosts: An isotopic investigation of Madagascar’s extinct lemurs” Northern Illinois University; co-sponsored by the departments of Anthropology, Geology, and Environmental Studies.
- 2020 “Lemurs: An overview of Madagascar’s ‘ghosts and specters’”. 19th Systems Biology Workshop - Emerging Model Systems, Bellairs Research Station, Barbados (<https://www.mikehallett.science/barbados/emerging-models/>).
- 2019 “Overview of isotope systems and their relevance to Caribbean Paleoecology” Baltimore Symposium on Caribbean Natural History, Johns Hopkins University.
- 2019 “Reviving ghosts and studying goblins: An isotopic investigation of Madagascar past and present”; University of Veterinary Medicine Hannover, Germany.
- 2019 “Reviving ghosts and studying goblins: An isotopic investigation of Madagascar past and present”; Max Planck Institute for the Science of Human History, Germany.
- 2018 “Can spatial variability in strontium isotopes help protect endangered wildlife in Madagascar?” Research School of Biology, Ecology and Evolution Lecture Series, Australian National University <http://biology.anu.edu.au/news-events/can-spatial-variability-strontium-isotopes-help-protect-endangered-wildlife-madagascar>

- 2017 "Can spatial variability in strontium isotopes help protect endangered wildlife in Madagascar?" Department of Chemistry, University of Cincinnati.
- 2016 "Can spatial variability in strontium isotopes help protect endangered wildlife in Madagascar?" Department of Biological Sciences, University of Cincinnati.
- 2016 "The value of captive individuals in isotope studies" 50th Anniversary Celebration of the Duke Lemur Center, Duke University.
- 2016 "What will biological responses be to current and future climate change" *Uncertain Future: Physical, Biological and Societal Impacts of Global Climate Change*, Public Forum at the University of Cincinnati.
- 2015 "Can spatial variability in strontium isotopes be used to conserve and manage biodiversity in Madagascar?" Quaternary and Anthropocene Research Group, University of Cincinnati.
- 2014 "Reconstructing the ecology of North American megafauna using isotope biogeochemistry" Ohio Wesleyan University.
- 2014 "The biogeography of Madagascar" Department of Geography, University of Cincinnati.
- 2014 "Reviving Ghosts: Reconstructing the ecology of Madagascar's recently extinct megafauna" Department of Earth and Environmental Sciences, University of Kentucky.
- 2014 "Reviving ghosts: Reconstructing the ecology of recently extinct megafauna from Madagascar" Department of Earth Sciences, Indiana University-Purdue University Indianapolis.
- 2012 "What can stable isotopes tell us about the historic ecology of Madagascar?" Dry Dredgers Association of Amateur Geologists and Fossil Collectors, Cincinnati, Ohio.
- 2012 "Stable isotopes document ecological change in Madagascar" Department of Geology, Miami University, Oxford, Ohio.
- 2010 "The stable isotope ecology of Madagascar's lemurs" Department of Geology and Geography, Vassar College, Poughkeepsie, NY.
- 2010 "Where have all the lemurs gone? Ecological Ramifications of Extinction and Habitat Transformation for Lemurs" Department of Anthropology, McGill University, Montreal.
- 2010 "Introduction to stable isotope ecology" Innovative Techniques in Feeding Ecology workshop, George Washington University, Washington, DC.
- 2009 "Seabright Beach - past, present and future: A geologic walking tour for a Santa Cruz beach" Lions Club, Santa Cruz CA.
- 2008 "What can isotopes tell us about lemur ecology?" Department of Anthropology, UMASS Amherst.
- 2007 "Unraveling the mysteries of the Madagascan megafauna: Using stable isotopes to track ecological variability in extinct lemur communities across Madagascar" Department of Biology, San Jose State, CA.
- 2005 "Six Months in the Bahamas: Living and Learning in the Turks and Caicos" Plainwell Public Library, Plainwell, Michigan.

First Authored Podium Presentations at Professional Meetings:

- 2023 **Crowley, B.E.**, Simpson[†], E.M.B., Hammer, S.J., Smith, J.M., and Johnson, T.M. "Impact of sample pretreatment on enamel strontium isotope data". *American Journal of Biological Anthropology*. 180(S75): 39.
- 2022 **Crowley, B.E.**, Godfrey, L.R., and Samonds, K.E. "What can hippo isotopes tell us about past distribution of C₄ grassy biomes on Madagascar?" Society of Vertebrate Paleontology 82nd Annual Meeting Program and Abstracts, p.115.

- 2020 **Crowley, B.E.** and Cooke, S.B. "An initial investigation of niche partitioning among Hispaniola's recent rodent radiation using stable isotopes". Society of Vertebrate Paleontology 80th Annual Meeting Program and Abstracts, pp. 60-61.
- 2020 **Crowley, B.E.** and Godfrey, L.R. "Strontium isotopes support low mobility for Lemuriformes". *American Journal of Physical Anthropology* 171(S69): 61.
- 2019 **Crowley, B.E.** "The history and future of strontium isotopes in ecological and paleoecological applications" Invited keynote speaker for special session "Strontium Isotope Applications in Quaternary Paleoecological and Archaeological Research", 20th Congress of the International Union for Quaternary Research, Dublin (Abstract O-0057).
- 2019 **Crowley, B.E.** and Godfrey, L.R. "Strontium isotopes confirm giant extinct lemurs had small home ranges". 20th Congress of the International Union for Quaternary Research, Dublin. Abstract O-0059.
- 2018 **Crowley, B.E.**, Arrigo-Nelson, S.J., Baden, A.L., and Karpanty, S.M. "Using strontium isotopes to track spatial patterns in depredation of lemurs by endemic goshawks at Ranomafana National Park". *American Journal of Physical Anthropology* 165(S66): 56.
- 2014 **Crowley, B.E.**, and Miller, J.H., "How well do modeled strontium isotope ratios predict bioavailable strontium for migratory and non-migratory mammals in North America?" *The Paleontological Society Special Publications* 13: 44.
- 2014 **Crowley, B.E.**, and Miller, J.H., "How well do modeled strontium isotope ratios predict bioavailable strontium for migratory and non-migratory mammals in North America?" *The Paleontological Society Special Publications* 13: 44.
- 2013 Cooper, C., **Crowley, B.E.**, Frame, A. and Rankey, P., "Thoughtful Decision Making". Lilly International Conference on College Teaching, Talk 28f
<http://celt.miamioh.edu/lillycon/presenters.php?session=2222&year=2013>
(All authors contributed equally to development and delivery of presentation).
- 2013 **Crowley, B.E.**, Blanco, M.B., Arrigo-Nelson, S.J., and Irwin, M.T. "Stable isotopes indicate forest fragmentation affects cheirogaleid lemurs" *American Journal of Physical Anthropology* 150(S56): 106.
- 2012 **Crowley, B.E.**, and Samonds, K. "Stable carbon isotope values document how a Late Holocene expansion in grasslands impacted vertebrates in northwestern Madagascar" American Geophysical Union. Fall Meeting Supplement. Abstract B24A-04.
- 2011 **Crowley, B.E.**, and Godfrey, L.R., "Stable isotopes explain anachronistic plant defenses in Madagascar" Society of Vertebrate Paleontology 71th Annual Meeting Program and Abstracts, p. 93.
- 2010 **Crowley, B.E.**, "Mass extinction, habitat loss, and lemur persistence" Student Conference on Conservation Science, American Museum of Natural History, NY.
- 2010 **Crowley, B.E.**, "Competitive release or ecological retreat: Ecological ramifications of extinctions and habitat transformation for Madagascar's lemurs" Society of Vertebrate Paleontology 70th Annual Meeting Program and Abstracts, p. 76A.
- 2008 **Crowley, B.E.**, Godfrey, L.E., and Burney, D.A. "Unraveling the mysteries of the Malagasy

megafauna: using stable isotopes to track ecological variability in extinct lemur communities across Madagascar” International Primatological Society XXII, Edinburgh, Scotland.

- 2007 **Crowley, B.E.**, and Koch, P.K., “The isotopic history of western North American grasslands”, American Geophysical Union 88 (52): Fall Meet. Suppl., Abstract PP52B-03.
- 2007 **Crowley, B.E.**, “Seabright Beach: The benefits of learning geology outside the classroom” Bay Area Institute 2007, San Francisco, CA.
- 2007 **Crowley, B.E.**, Koch, P.L., Godfrey, L.R., and Burney, D.A., “Lemurs through time: using stable isotopes from modern animals to understand extinct communities” *American Journal of Physical Anthropology* 132 (S44): 94.
- 2007 **Crowley, B.E.**, “Vegetation and isotopic challenges in southern Madagascar” UCSC 2nd Annual Plant Sciences Symposium.
- 2005 **Crowley, B.E.**, and Koch, P.L., “The Isotopic Rain Shadow and Elevation History of the Sierra Nevada Mountains, California” American Geophysical Union 86 (52): Fall Meeting Suppl., Abstract T31E-07.
- 2004 **Crowley, B.E.**, Koch, P.L., and Davis, E.B., “Tracking Sierran uplift with isotopic records from horses” *Journal of Vertebrate Paleontology*, 24 (S3): 49A.

First Authored Poster Presentations at Professional Meetings:

- 2023 **Crowley, B.E.**, Cooke, S.B. “Radiocarbon dates shed light on the extinction chronology of endemic rodents from the Tiburon Peninsula, Haiti” XXI INQUA Congress 2023.
- 2022 **Crowley, B.E.**, and Greenwood, M.[#] “Is what comes out the same as what goes in? First steps towards understanding the isotopic influence of digestion by predatory birds”. Joint 56th Annual North-Central/ 71st Annual Southeastern Section Meeting of the Geological Society of America.
- 2019 **Crowley, B.E.** and Ehmke, E.E. “Fur regrowth varies among and within individual cheirogaleid lemurs”. *American Journal of Physical Anthropology* 168(S68): 51.
- 2018 **Crowley, B.E.**, Haak, B.A., Bataille, C.P. “Strontium and hydrogen isotopes can effectively estimate natal origin for migratory raptors”. GSA Abstracts with Programs 50(6): Abstract No. 315367.
- 2018 **Crowley, B.E.**, Wultsch, C. and Kelly, M. “Testing the utility of isotopes in feces for noninvasively studying the spatial ecology of big cats”. IsoEcol 11, Abstract KR873PL.
- 2017 **Crowley, B.E.** “A multi-isotope investigation of extinct monkey lemurs (*Archaeolemur*) from Antsirondoha cave, Madagascar”. *American Journal of Physical Anthropology* 162(S64): 155.
- 2016 **Crowley, B.E.** “Reconstructing historic mobility of Madagascan vertebrates using strontium isotopes”. Midwest Geobiology Conference 2016.
- 2016 **Crowley, B.E.**, and Ehmke, E.E., “Fur regrowth rates are remarkably variable for captive cheirogaleid lemurs”. *International Primatological Society/ American Society of Primatologists* 2016 Chicago, Abstract 631.
- 2015 **Crowley, B.E.**, Slater, P.A., Muldoon, K.M., and Godfrey, L.R. “Reconstructing the mobility of Madagascar’s fauna using strontium isotopes: results and implications for management and

conservation" *American Journal of Physical Anthropology* 156(S60): 252.

- 2014 **Crowley, B.E.**, Muldoon, K.M., Slater, P., and Godfrey, L.R., "The utility of strontium isotope ratios for identifying the mobility of extant and now-extinct vertebrates in Madagascar" Island Biology 2014, Abstract No. 0068.
- 2014 **Crowley, B.E.**, Pestle, W.J., Weirauch, M.T., and Bartelink, E.J., "Quantifying inter-laboratory variability in stable isotope analysis of bone collagen and hydroxyapatite" Advances in Stable Isotope Techniques and Applications 2014, UC Davis.
- 2014 **Crowley, B.E.**, Melin, A.D., and Dominy, N.J., "Can oxygen isotope values distinguish niche divergence in mammalian communities?" *American Journal of Physical Anthropology* 153(S58): 100.
- 2012 **Crowley, B.E.**, McGoogan, K., and Lehman, S.M., "Quantifying edge effects using stable isotopes" *American Journal of Physical Anthropology* 147(S54): 122.
- 2010 **Crowley, B.E.**, Godfrey, L.R., and Burney, D.A., "New support for a human hand in the collapse of Madagascar's megafaunal community: using ^{14}C dates to track species persistence and population decline during the Holocene" *American Journal of Physical Anthropology* 141(S50): 88.
- 2009 **Crowley, B.E.**, Knott, C.D., Haryati, S., Zulfa, A., Blakely, M.E., and Vogel, E.R., "What urine can tell us about protein balance in wild orangutans" *American Journal of Physical Anthropology* 138(S48): 164.
- 2008 **Crowley, B.E.**, Godfrey, L.R., Karpanty, S., "Isotopic fractionation patterns in primates" *American Journal of Physical Anthropology* 135(S46): 84-85.
- 2007 **Crowley, B.E.**, "Bringing geology to a community: The benefits of using interpretive signs in a self-guided tour", American Geophysical Union 88(52) Suppl., Abstract ED31A-0085.
- 2007 **Crowley, B.E.**, and Godfrey, L.R., "Sun, sand and spines: isotopic challenges in southwestern Madagascar", International Congress Prosimians 2007, Ithala, South Africa.
- 2007 **Crowley, B.E.**, "Seabright Beach, past, present and future, A geologic walking tour of a Santa Cruz beach", 3rd Annual Graduate Research Symposium, UC Santa Cruz.
- 2007 **Crowley, B.E.**, Koch, P.L., Godfrey, L.R., and Burney, D.A., "Lemurs through time: using stable isotopes from modern animals to understand extinct communities" *American Journal of Physical Anthropology* 132 (S44): 94.
- 2006 **Crowley, B.E.**, Koch, P.L., and Godfrey, L., "The Future of Madagascar's Lemurs: Coping with Change" *IsoEcol* 5: 85.
- 2005 **Crowley, B.E.**, "Our Dynamic Coasts: An interpretive Guide for a Santa Cruz Beach" Bay Area Institute 2005, San Francisco, CA.

Student Advisee (# Indicates Undergraduates, †Indicates Graduates) Presentations at Meetings:

- 2023 Hensley, A.K. †, **Crowley, B.E.**, Viñola-López, L.W., and Cooke, S.B. "Putting the 'who' in hutia: a comprehensive isotopic evaluation of Hispaniola's recently extinct rodents. Society of Vertebrate Paleontology. Society of Vertebrate Paleontology 83rd Annual Meeting Program and Abstracts, pp. 211-212.

- 2023 Simpson, E.B.,[†] **Crowley, B.E.**, Borths, M.R., Leichliter, J.N., Vonhof, H.B., and Lüdecke, T. "Stable isotopes confirm niche partitioning among morphologically diverse Paleogene hyraxes (Hyracoidea; Pliohyracidae) from the Fayum, Egypt". Society of Vertebrate Paleontology 83rd Annual Meeting Program and Abstracts, pp. 395-396.
- 2023 Ward, C.T.,[†] **Crowley, B.E.**, and Secord, R. "Home on the range: A multi-isotope investigation of ungulate resource partitioning from Ashfall Fossil Beds, Nebraska, USA". Society of Vertebrate Paleontology. Society of Vertebrate Paleontology 83rd Annual Meeting Program and Abstracts, pp. 437-438.
- 2022 Simpson, E.B.,[†] **Crowley, B.E.**, Sturmer, D. "Evaluating a non-destructive method for assessing specimen preservation". Joint 56th Annual North-Central/ 71st Annual Southeastern Section Meeting of the Geological Society of America.
- 2022 Ward, C.T.,[†] **Crowley, B.E.**, Secord, R. "A multi-isotope reconstruction of *Teleoceras major* (Mammalia, Thinocerotidae) mating system from Ashfall Fossil Beds State Historical Park, Nebraska". Great Lakes Student Paleoconference 2022 Program and Abstracts, pp. 18-19.
- 2021 Hixon, S.W.,[†] Douglass, K.G., Godfrey, L.R., Eccles, L., **Crowley, B.E.**, Rakotozafy, L.M.A., Clark, G., Haberle, S., Anderson, A., Wright, H.T., Kennett, D. Ecological consequences of a millennium of introduced dogs on Madagascar. European Geophysical Union General Assembly 2021, EGU21-927 <https://doi.org/10.5194/egusphere-egu21-927>.
- 2020 Hixon, S.W.,[†] Smith, E.A., **Crowley, B.E.**, Perry, G.H., Rakotozafy, L.M.A., Randrianasy, J., Ranaivoarisoa, J.F., Douglass, K.G., Kennett, D.J., and Newsome, S.D. "Insight on trophic level estimation through amino acid $\delta^{15}\text{N}$ values from Madagascar megafauna". Society of Vertebrate Paleontology 80th Annual Meeting Program and Abstracts, pp. 119-120.
- 2020 Mosher, S.G.,[†] **Crowley, B.E.**, Yanes, Y., Diefendorf, A.F., and Barone, R. "Characterizing spatial variability in foliar carbon and nitrogen isotopes on Tenerife, Canary Islands". The Ecological Society of America Annual Meeting.
- 2020 Simpson, E.M.B.,[†] **Crowley, B.**, and Sturmer, D. "Testing a non-destructive method for analyzing preservation of vertebrate remains". Society of Vertebrate Paleontology 80th Annual Meeting Program and Abstracts, pp. 250-251.
- 2020 White, J.,[†] Mays, H., Mattern, T., Hopkins, J. III, Garcia-Borboroglu, P., Ellenberg, U., Seddon, P., Houston, D.M., and **Crowley, B.**, "Investigating Fiordland penguin (*tawaki*) dietary plasticity using stable isotope analysis". Virtual North American Ornithological Conference 2020, p. 163 of abstract book.
- 2019 Hixon, S.,[†] Douglass, K., Rakotozafy, L., **Crowley, B.**, and Kennett, D. "Past temporal and dietary overlap among introduced and extinct endemic herbivores in SW Madagascar", 56th Annual Meeting of the Association for Tropical Biology and Conservation in Antananarivo, Madagascar.
- 2019 Hixon, S.,[†] Douglass, K., Wright, H., **Crowley, B.**, and Godfrey, L. "A critical review of radiocarbon dates clarifies the human settlement of Madagascar". Society of American Archaeology. Abstract 248.
- 2019 White, J.,[†] Mattern, T., Ellenberg, U., Garcia-Borboroglu, P., Houston, D.M., Seddon, P., Hopkins J. III, Crowley, B., Mays, H. Investigating Fiordland penguin (*tawaki*) dietary plasticity using stable isotope analysis. The 10th International Penguin Conference, Dunedin, New Zealand.

- 2017 Hixon, S.,[†] Smith, E.E., Kennett, D., Perry, G., **Crowley, B.E.**, Bankoff, R., and Newsome, S. "Patterns in amino acid $\delta^{15}\text{N}$ values of lemurs are inconsistent with aridity driving megafaunal extinction in southwestern Madagascar". Society of American Archaeology 82nd Annual Meeting, Abstract No. 152, p. 254.
- 2017 Sommer, K.,[#] Haak, B., and **Crowley, B.E.** "Using a multi-isotope approach to determine natal region for juvenile accipiters". Goldschmidt Paris 2017, Poster board 2324, Session 12b.
- 2017 Sommer, K.,[#] **Crowley, B.E.**, and Haak, B. "Assessing natal regions for migratory juvenile accipiters using hydrogen isotopes". GSA Abstracts with Programs 49(2): Abstract No. 290842.
- 2017 Wallace, J.,[†] **Crowley, B.**, and Miller, J.H. "Reconstructing equid mobility in Miocene Florida" GSA Abstracts with Programs 49(6): Abstract No. 301838.
- 2016 Castro, I.O.,[#] **Crowley, B.E.**, Goodman, S. E., and Strand, A.[#] "Does vegetation removal influence bioavailable strontium isotope ratios ($^{87}\text{Sr}/^{86}\text{Sr}$)?" GSA Abstracts with Programs 48(5): Abstract No. 275124.
- 2016 Rice, K.S.,[†] Zohdy, S., **Crowley, B.E.**, and Tecot, S.R. "Healthy forests, healthy lemurs?: the effect of habitat disturbance on diet, parasitism, and immunity in brown mouse lemurs (*Microcebus rufus*)" *International Primatological Society/ American Society of Primatologists* 2016 Chicago, Abstract 7348.
- 2016 Vrazo, M.B.,[†] Diefendorf, A.F., **Crowley, B.E.**, and Czaja, A.D. "Late Cretaceous marine arthropods relied on terrestrial organic matter as a food source: evidence from the Coon Creek *Lagerstätte* in the Mississippian embayment". GSA Abstracts with Programs 48(7): Abstract No. 286933.
- 2014 Mosher, S.,[†] **Crowley, B.E.**, and Yanes, Y. "Using a multi-isotope approach to assess environmental spatial patterns on Tenerife, Canary Islands", GSA Abstracts with Programs 46(6): Abstract No. 247005.
- 2014 Sparks, J.A.,[†] **Crowley, B.E.**, and Gilhooly W.P. "Establishing the effect of sea spray on sulfur isotope values in vegetation on the island of Trinidad", GSA Abstracts with Programs 46(6): Abstract No. 245019.
- 2014 Dasgupta, R.,[†] and **Crowley, B.E.** "Assessing traffic-related sulfur in soils along the Manali-Leh Highway, northwestern Himalaya, India", GSA Abstracts with Programs 46(4): Abstract No. 237945.
- 2014 Mosher, S.,[†] **Crowley, B.E.** and Yanes, Y. "A multi-isotope approach for characterizing spatial variability on Tenerife, Canary Islands", GSA Abstracts with Programs 46(4): Abstract No. 237701
- 2014 Sparks, J.A.,[†] and **Crowley, B.E.** "Establishing the effects of sea spray across Trinidad using sulfur isotopes", GSA Abstracts with Programs 46(4): Abstract No. 237920.
- 2014 Vrazo, M.B.,[†] **Crowley, B.E.**, Diefendorf, A.F., and Brett, C.E. "Can stable isotopes in fossil marine arthropods serve as paleoecological indicators?" *The Paleontological Society Special Publications* 13: 149.
- 2013 Baumann, E.,[#] and **Crowley, B.E.** "Investigating the ecology of extinct proboscideans from the Cincinnati region using stable isotopes", GSA Abstracts with Programs 45(4): Abstract No.

218204.

- 2013 Cox, A.,[†] Perez, V.R., **Crowley, B.E.**, Borgerson, C., Vasey, N., and Godfrey, L.R. "Human predation of *Pachylemur*. Evidence of butchery of extinct lemurs in south central Madagascar" *American Journal of Physical Anthropology* 150(S56): 105.
- 2013 Dasgupta, R.,[†] **Crowley, B.E.**, Carrillo-Chavez, A. "Assessing heavy metal contamination of surface water bodies along the Manali-Leh Highway, Northern India", GSA Abstracts with Programs 45(4): Abstract No. 218483.
- 2013 Kenney, B.,[†] and **Crowley, B.E.** "Using stable isotopes to ascertain paleo-foraging strategies through the study of woodland bison behavior" *American Journal of Physical Anthropology* 150(S56): 166.
- 2012 Meyer, D.,[#] **Crowley, B.E.**, Murray, E.A., and Baird-Titus, J.M. "Dietary analysis of Washington Park remains using stable isotope ratios", PITTCO Conference and Expo, Orlando, FL, Abstract No.1090-04P.

Co-authored Abstracts:

- 2022 Vogel, E.R., Avlavi, S.E., Naumenko, D., Watford, M., Utami Atmoko, S.A., **Crowley, B.E.**, Ransford, T.D., Emery Thompson, M., Sulfa, A., Van Noordwijk, M.A., Rothman, J.M., Raubenheimer, D. Integrated behavioral and metabolically flexible responses of wild orangutans to variation in nutritional intake. *American Journal of Biological Anthropology* 177(S73): 191.
- 2020 Godfrey, L.R., Muldoon, K.M., Burns, S.J., **Crowley, B.E.**, Klukkert, Z.S., Scroxton, and N., Ranivoharimanana, L. "Natural and human impacts on vertebrate megafauna in southwest Madagascar". *American Journal of Physical Anthropology* 171(S69): 102.
- 2020 Lewis, M.E., Godfrey, L.R., Rakotondramavo, J.C., Klukkert, Z.S., Scroxton, N., Burns, S.J., **Crowley, B.E.**, McGee, D., Muldoon, K.M., Meador, L.R., Lehman, P., Rahantaharivao, N.J., and Ranivoharimanana, L. "A new extinct large predator in Madagascar: predation pressure on large-bodied Malagasy lemurs through time". *American Journal of Physical Anthropology* 171(S69): 160.
- 2020 Marciniak, S., Mughal, M.R., Godfrey, L.R., Bergey, C.M., Bankoff, R.J., **Crowley, B.E.**, Muldoon, K.M., Miller, W., Schuster, S.C., Mahli, R.S., Yoder, A.D., Louis E.E. Jr., Kistler, L., and Perry, G. "Evolutionary and phylogenetic insights from a nuclear genome of the extinct giant koala lemur *Megaladapis edwardsi*". *American Journal of Physical Anthropology* 171(S69): 173-174.
- 2019 Bataille, C.P., **Crowley, B.E.**, Serna, A., Funck, J., and Wooller, M.J. "Methods in strontium isoscapes". 20th Congress of the International Union for Quaternary Research, Dublin. Abstract O-0058.
- 2019 Miller, J.H., **Crowley, B.E.**, Fisher, D.C., and Secord, R. "Trail of the mastodon: Isotopically reconstructing landscape use from a serially sampled tusk". 20th Congress of the International Union for Quaternary Research, Dublin. Abstract O-0060.
- 2019 Knott, C., **Crowley, B.E.**, Kane, E., Brown, M., and Wahyu Susantu, T. "Fecal isotopes as indicators of weaning and diet in wild Bornean orangutans" *American Journal of Physical Anthropology* 168(S68): 128-129.

- 2018 Feranec, R.S., Pagnac, D.C., **Crowley, B.E.**, Maguire, K.C., and DeSantis, L.G. "Implications of C₄ plants to faunal adaptations during the early to middle Miocene in North America". Society of Vertebrate Paleontology 78th Annual Meeting Program and Abstracts, p. 56.
- 2018 Godfrey, L.R., Scroxton, N., **Crowley, B.E.**, Burns, S.J., Sutherland, M.R., Pérez, V.R., Faina, P., and Ranivoharimanana, L. "A new interpretation of Madagascar's megafaunal decline: the 'Subsistence Shift Hypothesis'". *American Journal of Physical Anthropology* 165(S66): 100-101.
- 2018 Juarez, C.A., and **Crowley, B.E.** "Reconstructing diet for a population of Colonial Enslaved Africans". *American Journal of Physical Anthropology* 165(S66): 135.
- 2018 Miller, J.H., **Crowley, B.E.**, Fisher, D.C., and Secord, R. "Tracking an American mastodon: isotopic reconstruction of landscape use from a serially sampled tusk". Society of Vertebrate Paleontology 78th Annual Meeting Program and Abstracts, p. 68.
- 2017 Jungers, W.L., Godfrey, L.R., Goodman, S.M., Burney, D.A., **Crowley, B.E.**, Griffiths, O.L., Hume, J.P., Andrianaivoarivelo, R. "Living and extinct lemurs of Beanka, Western Madagascar". Malagasy Primatological Society Congress.
- 2017 Miller, J.H., **Crowley, B.E.**, Fisher, D.C., and Secord, R. "Isotopically reconstructing Late Pleistocene landscape use by an American Mastodon". GSA Abstracts with Programs 49(6): Abstract No. 301838.
- 2017 Vogel, E.R., Bransford, T.D., Alavi, S.E., Emery Thompson, M., **Crowley, B.E.**, Erb, W.M., Van Noordwijk, M.A., Utami-Atmoko, S.S., Raubenheimer, D., and Rothman, J.M. "The power of protein: protein regulation, energetics, and health in wild Bornean orangutan". *American Journal of Physical Anthropology*. *American Journal of Physical Anthropology* 162(S64): 397.
- 2016 Dietl, G., Burney, D., Casey, M., **Crowley, B.E.**, Durham, S., Reed, E., and Smith, J., 2016. "Conservation Paleobiology: Using the Past to Manage the Future". IUCN World Conservation Congress, Poster 1767.
- 2016 Godfrey, L.R., **Crowley, B.E.**, Sullivan, A.P., and G. H. Perry, G.H. "Subfossil sifakas speak: how Madagascar's past informs the present". *International Primatological Society/ American Society of Primatologists* 2016 Chicago, Abstract 7671.
- 2016 Godfrey, L.R., Pérez, V.R., Meador L.R., **Crowley, B.E.**, Bankoff, R.J., Culleton, B.J., Kennett, D.J., and Perry, G.H. "New evidence of widespread hunting of giant lemurs on Madagascar". *American Journal of Physical Anthropology* 159(S62): 156-157.
- 2015 Feranec, R.S., Pagnac, D., **Crowley, B.E.**, Maguire, K.C., DeSantis, L.R.G. (2015) "Stable isotope values from ungulate tooth enamel shed light on the Miocene biogeography of C₄ plants in the United States". GSA Abstracts with Programs 47(7): Abstract No. 266097.
- 2015 Godfrey, L.R., **Crowley, B.E.**, Samonds, K.E., and Sutherland, M.R. "Did climate change trigger megafaunal extinctions in Madagascar?" *American Journal of Physical Anthropology* 156(S60): 148-149.
- 2015 Perry, G., Kistler, L., Godfrey, L., **Crowley, B.E.**, Muldoon, K., Malhi, R., Schuster, S., Miller, W., Yoder, A., and Louis, E. "Nuclear genome sequences from the extinct subfossil lemurs *Palaeopropithecus ingens* and *Megaladapis edwardsi*". *American Journal of Physical Anthropology* 156(S60): 252.
- 2015 Vogel, E.R., Moldawer, A.M., Bransford, T.D., Emery-Thomson, M.E., Knott, C.D., van

Noordwijk, M.A., Utami Atmoko, S.S., **Crowley, B.E.**, Rothman, J.M., Raubenheimer, D. "Nutritional balancing, health, and energetics in wild Bornean orangutans". *American Journal of Physical Anthropology* 156(S60): 315-316.

- 2014 Melin, A.D., **Crowley, B.E.**, Mortiz, G.L., Jacobson, A.D., and Dominy, N.J. "Calcium and carbon stable isotope ratios as paleodietary indicators" *American Journal of Physical Anthropology* 153(S58): 183.
- 2014 Miller, J.H, and **Crowley, B.E.** "The last march of the proboscideans: changes in landscape use and mobility preceding the Pleistocene megafaunal extinction" Society of Vertebrate Paleontology 74th Annual Meeting Program and Abstracts, p. 188.
- 2014 Miller, J.H, and **Crowley, B.E.** "The last march of the proboscideans: changes in landscape use and mobility preceding the Pleistocene megafaunal extinction" GSA Abstracts with Programs 46(6): Abstract No: 245214
- 2014 Samonds, K.E. Godfrey, L.R., **Crowley, B.E.**, and Sutherland, M.R. "In the footsteps of giants: deciphering the details of the demise of Madagascar's subfossil lemurs" *American Journal of Physical Anthropology* 153(S58): 227-228.
- 2013 Godfrey L.R., **Crowley, B.E.**, King, S.J., Muldoon, K.M., and Dumont, E.R. "What did *Hadropithecus* eat? And why should paleoanthropologists care?" *American Journal of Physical Anthropology* 150(S56): 131-132.
- 2013 Perry, G., Kistler, L., Hughes, C., Cui, Y., Ratan, A., **Crowley, B.E.**, Godfrey, L.R., Lei, R., Schuster, S., Louis, E., Yoder, A., Malhi, R., and Miller, W. "Ancient DNA genomics of Madagascar's extinct subfossil lemurs: *Palaeopropithecus ingens* genetic diversity" *American Journal of Physical Anthropology* 150(S56): 220.
- 2013 Pestle, W.J., Weirauch, M.T., and **Crowley, B.E.** "Investigating inter-laboratory variability in stable isotope data" *American Journal of Physical Anthropology* 150(S56): 220-221.
- 2013 Samonds, K.E. Godfrey, L.R., **Crowley, B.E.**, Sutherland, M. "The chronology of lemur extinction in near and deep time" Society of Vertebrate Paleontology 73rd Annual Meeting Program and Abstracts, p. 203.
- 2012 Muldoon, K.M., Godfrey, L.R., and **Crowley, B.E.** "The role of elevation in understanding the biogeographic distribution of the extinct lemurs of Madagascar" Society of Vertebrate Paleontology 72nd Annual Meeting Program and Abstracts, p. 147.
- 2011 Godfrey, L.R., **Crowley, B.E.**, Perez, V.R., Burney, D.A., Jungers, W.L, and Ramarolahy, M. "A time frame for butchery of giant lemurs and sifakas at Taolambiby, SW Madagascar" *American Journal of Physical Anthropology* 144(S52): 144.
- 2009 Baden, A.L. and **Crowley, B.E.** "Intraspecific isotopic variability in *Varecia variagata*, Ranomafana National Park" *American Journal of Physical Anthropology* 135(S48): 113.
- 2008 Godfrey, L.R., **Crowley, B.E.**, Muldoon, K.M., King, S.J., and Burney, D.A. "The *Hadropithecus* conundrum" *American Journal of Physical Anthropology* 135(S46): 105.

Past Research Experience

- 2010-2012 **Research Fellowship**, Earth and Planetary Sciences, University of California, Santa Cruz
- Prepared and analyzed vertebrate bone collagen from Madagascan cave deposits for

- radiocarbon dating and stable carbon and nitrogen isotopes.
 - Reconstructed paleoecology of extinct mammals and interpreted environmental change for Holocene Madagascar.
- 2009-2011 **Postdoctoral Research**, Department of Anthropology, University of Toronto
- Collected and analyzed leaf and lemur fur samples from a dry forest edge in northwestern Madagascar.
 - Used isotopic patterns in plants to identify the effects of forest edges on lemurs.
- 2006-2010 **Dissertation and Master of Arts Research**, Ecology and Evolutionary Biology & Anthropology, University of California, Santa Cruz
- Organized and carried out three field seasons in Madagascar.
 - Collected, prepared and analyzed organic samples using isotope ratio mass spectrometry, X-ray diffraction, and radiocarbon dating.
 - Determined ecological niches in living and extinct lemurs using stable isotope biogeochemistry.
 - Formed long-lasting scientific collaborations and obtained funding for research.
 - Delivered award-winning presentations at workshops and conferences.
 - Wrote and published manuscripts in high profile scientific journals.
- 2009 **Apprenticeship**, Center for Accelerator Mass Spectrometry, Lawrence Livermore National Laboratory, Livermore, CA
- Trained in the preparation of bone samples for radiocarbon dating. Training included and familiarization with vacuum lines and scientific glassblowing techniques.
 - Gelatinized, combusted and graphitized 400 bone samples from Madagascar.
- 2003-2005 **Master of Science Research**, Earth Sciences, University of California, Santa Cruz
- Used stable oxygen isotopes in fossil horse teeth to detect uplift of the Sierra Nevada, CA.
 - Isolated, prepared, and analyzed powdered tooth enamel.
- 2002 **Honors Undergraduate Research**, Geology, Vassar College, Dutchess County, NY
- Reconstructed the paleoenvironment of a Cambrian carbonate sequence.
 - Used the absence of evidence for grazing or burrowing organisms, and the presence of algal mat features to conclude that the carbonates were deposited in a shallow, calm, hypersaline environment.
- 2000 **Directed Research**, Centre for Tropical Rainforest Management, School for Field Studies, Queensland, Australia
- Used GIS to Survey 62 hectares of tropical moist forest with a team of other students.
 - Examined forest composition using GIS and presented results at a public meeting.
- 2000 **Directed Research**, Undergraduate Research Summer Internship, Vassar College, Oneonta, NY
- Raised willow seedlings and conducted research on their growth and resistance to parasites.
- 1999& 2001 **Research Assistantship**, Institute of Arctic and Alpine Research (INSTAAR), University of Colorado, Boulder
- Conducted vegetation surveys, measured soil respiration, and built research towers in a subalpine conifer forest.

TEACHING

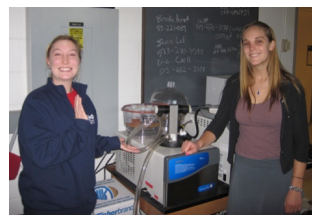
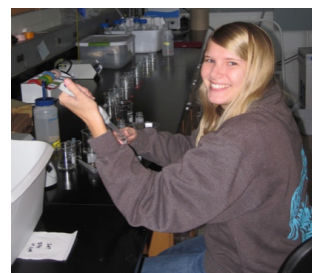
New Course Design and Development at the University of Cincinnati

As of Fall 2023, I have designed and taught six new courses, co-taught five courses, and redesigned and

taught two existing courses at UC. Each course is described in detail below. More information about my teaching philosophy and examples of syllabi and teaching materials are available in my Teaching portfolio: <https://crowleyteaching.wordpress.com/>.

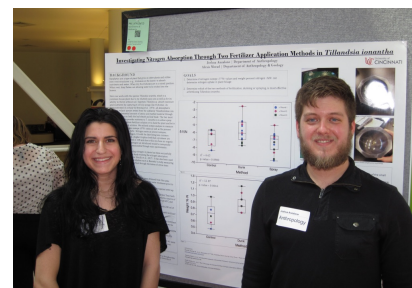
Regularly Taught Courses:

- ANTH/EVST 2040 “Humans and Nature: Living in the Anthropocene” (taught odd Spring terms):
In this introductory course, we survey a broad spectrum of interdisciplinary topics including geologic time, atmospheric and oceanic circulation, domestication and the agricultural revolution, urbanism, environmental impacts associated with our modern lifestyles, and solutions for a sustainable future. Many of these topics have had a significant impact on my own life and were responsible for my initial desire to go into academia and teach. The primary goals of this course are to inform students about topics that will impact them during their lifetimes, help them understand the relevance of these topics to their own lives, give them practice in developing critical communication skills, and inspire them to become more engaged in the future of our planet. Accordingly, I incorporate a sense of stewardship and sustainability in this course. Assignments and activities are designed to teach students real world lessons. For example, students are asked to calculate their ecological footprints and their water use, keep a journal about what they consumed for a week, and complete a life cycle analysis for an every-day item such as a battery, light bulb, or candy bar. Students are provided extra credit if they attend a local environmentally-related event, write a letter to an editor or start a petition about an environmental topic. As with all of my course, I endeavor to get all students as involved as possible. Many of the topics we discuss in this class do not have a clear “correct” side (e.g., genetically modified organisms, food and water security, alternative energy technologies). I hold regular discussions (followed by short essay responses) that allow students to voice their own informed opinions. Guest lectures by UC faculty in other departments or community members help students relate course material to broader community issues. Additionally, field trips to the UC Power Plant, a UC sustainability tour, and a day in Burnet Woods at the end of the term help get the students out of their seats. The course culminates with final group project that must be a tangible educational product that is relevant to Cincinnati (e.g., waste disposal, air quality, water quality, transportation, energy sources and consumption, planning for the future, etc.). This diversity of activities makes for a very dynamic and exciting course.
- GEOL/ANTH 4029/6029 “Stable Isotope Ecology” (taught even Fall terms):
In this discussion-based course, we cover a broad overview of stable isotope biogeochemistry and the ecological applications of this rapidly expanding field. We review isotope basics (e.g., terminology, notation) and discuss ecological patterns in naturally occurring carbon, nitrogen, oxygen, hydrogen, sulfur and strontium isotopes in biological organisms. A mix of undergraduate and graduate students from anthropology, geology, geography, and biology take this course. Not surprisingly, these students come to class with a range of backgrounds and interests. Keeping these in mind, I carefully choose papers to encompass fundamental as well as recent advances in the field. All readings, assignments, interactive resources, and PowerPoint presentations from each week’s discussion remain available to students indefinitely on the course website (www.stableisotopeecology.wordpress.com). The website can be accessed using the username “crowleyguest” and password “crowleyguest1”. The students and I rotate leading each week’s discussion. Weekly leaders are tasked with guiding the discussion and ensuring that all students participate. The participation criterion has resulted in some dynamic and truly enjoyable activities (including isotope jeopardy). In order to emphasize the importance of critical thinking, I also ask students to write a five-sentence summary of each assigned reading (due before the start of class). In addition to assuring that all of the students actually did the reading, these summaries allow me to confirm if everyone is following the weekly topics. In order to help students who might need a bit more background, I also created and posted pre-recorded lectures on each isotope system. These optional lectures are available to students to view at any time.



Students preparing samples for Stable Isotope Ecology

For their final project, groups of 3-5 students design and carry out their own research projects from deciding on a project topic through sample preparation and analysis, data interpretation, and presentation. This helps students gain a much clearer understanding of how much work goes into carrying out even a small project, and they learn how to critically examine and interpret data. Projects are creative and fun. Topics to date have been quite diverse. Some of the more informative ones have been determining if companies touting shade grown and fair-trade coffee are being honest, comparing eggs cage free, free range, pasture, and conventionally raised chickens, and determining if urban raccoons eat more garbage than rural ones. Groups periodically present their projects at the UC graduate student expo or undergraduate research showcase, and two projects led to an Anthropology MA thesis (Alexis Niekamp; 2016), and an undergraduate senior research project (Madison Greenwood, BS 2019; Alexis Morad, MA 2020).



Students presenting their project at the Undergraduate Research Showcase

- ANTH/GEOL 4048/6048c “Zooarchaeology” (taught odd Fall terms):

In this course, students use my personally acquired comparative osteology teaching collection to study skeletal anatomy, comparative osteology, bone modification, and approaches to quantifying and interpreting faunal assemblages. Small class size is critical. Students spend a significant amount of the course handling skeletal material. I encourage students to work together and to build off each other's strengths. It is not possible to become a master of zooarchaeological analysis in a single semester. My goal is to introduce students to the types of methods used by zooarchaeologists and to give them time to practice these skills in class. In order to accommodate different learning styles, I alternate the class format between lectures, discussions and tutorials. One of the more exciting activities in this course is an actualistic exercise where we go outside and attempt to modify fresh cow limb bones by (1) stepping on them (to try to abrade them), (2) disarticulating them using stone tools, or (3) smashing them open with rocks. In addition to giving the students an appreciation for how hard it is to extract marrow from a long bone, this activity will allow me to build a collection of “student modified” material that I can use in future iterations of the course. We also periodically discuss course readings. To keep these discussions lively (and ensure that students do the reading), I assign pairs of students a question about a central theme of one of the readings. Each team is then responsible for presenting their particular point to the rest of the class (most choose to use props such as giant sticky notes). I then keep photograph and post these notes for students to use for exam reviews. At the end of the term, students are equipped with the skills necessary to identify and distinguish bony remains, and to explain how zooarchaeological remains can be used to interpret hunting practices, domestication, and the non-culinary roles that animals played in past societies. Students write two short essays during the term and present one of these topics to the rest of the class at the end of the term.



Students in Zooarchaeology

- GEOL 4050/6050 “Teaching Geoscience”¹ (taught even Fall terms):

This course is designed to assist students in transforming their understandings of geoscience and scientific reasoning into challenging, dynamic and inclusive classroom, lab, or field-based experiences. Students increase their understanding of educational theory and research as well as pedagogical content knowledge through course discussions, activities, and reflections. We cover the learning pyramid, the distinction between learning objectives and outcomes, the “5 E” instruction model (Engage, Explore, Explain, Elaborate, Evaluate) and discuss the importance of inclusive classrooms and the Universal Design of Learning (UDL) framework. We work in a collaborative environment that helps build self-

confidence and risk-taking. Students design and test out two activity-based lessons over the course of the semester (once in pairs mid-term, and once individually at the end of the term) and receive constructive feedback from other class members.

¹Formerly co-taught with Dr. Chris Atchison and cross-listed with Curriculum and Instruction (C&I).

- GEOL 7005 “Graduate Research” (taught every Fall term):

This seminar is required for all graduate students during their first year in our program. Using feedback from students who had taken previous iterations of the course, I redesigned the course to ensure that various needs are being met and help set students up for success. Weekly meetings are devoted to topics such as productively searching the literature, building networks, stress and time management, giving and receiving feedback, making figures, teaching tips, and discussing achievements and challenges. Students actively work on developing a good research question for a thesis project and gain practice both writing and speaking about their research (including developing an elevator pitch). I ask students to regularly complete reflections in personal learning journals, submit multiple drafts of a research (i.e. funding) proposal, provide feedback on a peer’s proposal, and give a research talk at the end of the semester. I also created a brief pre- and post-survey that I will use to monitor the effectiveness of the course in future years.

Periodically Taught Courses:

- GEOL 1015 “Ice Age Mammals”:

I developed this introductory course to teach students about the evolutionary history of mammals with a focus on the Pleistocene megafauna of North America. I also introduce students to basic geologic concepts including climate, evolution, geologic time, and modes of preservation. I integrate as much hands on and active participation in this course as possible by using established techniques like gallery walks and “think-pair-share”, as well as an innovative small group discussion format I developed with several colleagues at UC. Two very successful group activities are a debate about Pleistocene extinctions, and a hypothetical town hall meeting about building a “Pleistocene Park” in Cincinnati. Additionally, I developed several lab-based activities about comparative osteology and fossil preservation. Coordinating tutorial exercises for large groups of students is not an easy task, but I believe that it is crucial for students to actually touch bones and fossils and gain practice making their own observations. I also spend a considerable amount of time helping students with their writing and presentation skills, which are two critical skills that are frequently underdeveloped in undergraduate students. Over the course of the term, students work on an individual essay and a creative group project. I emphasize the importance of revision and practice, providing time for students to work on both of these projects in class, and setting clear “road checks” to ensure that they both receive and give feedback on drafts of their essay prior to turning in a final draft to me at the end of the term.

- GEOL 1024 “Geology of the National Parks”:

This large introductory-level course uses key US national parks to illuminate a diversity of basic geologic features and principles. In addition to developing lectures, I created several tutorial exercises and group discussion activities to encourage student participation and engagement as well as raise awareness about threats to the preservation of our nation’s natural heritage. Tutorials emphasize critical thinking skills (ranging from recording observations about modes of fossil preservation to calculating glacial retreat); discussions focus on current events and highlight the relevance of Geology to societal issues (e.g., discussing proposed developments in and around the Grand Canyon; preparing for volcanic hazards around Mount Rainier). The course culminates with a weekend trip to Mammoth Cave National Park. In 2016, 20 students attended, most of whom had never camped before.

- HUM/SOCS/NSCI 7000 “Sharing Science Experience!” (co-taught with Angela Potochnik, UC Philosophy and Brian Pollock, Cincinnati Museum Center):

This cross-listed two-day workshop for graduate students in any discipline provides a hands-on experience with public engagement with science (PEWS). Students are exposed to informal education techniques, practice leading an activity in an informal science setting (the Cincinnati Museum Center), guided through the process of creating a novel, collaborative PEWS activity, and tasked with considering how to incorporate PEWS in their graduate education and longer-term career.

Past Courses Taught at UC:

- GEOL 822 “Evolutionary History of Mammals” (taught Winter term 2012):

In this graduate seminar, we discussed a variety of topics. We started the term with a discussion of early mammals and placental mammal diversity. We then focused on the taxonomy and paleoecology of five groups of mammals that are, or were, common in North America: sloths, ungulates, carnivores, elephants, and bats. We finished the term discussing Pleistocene extinctions and the controversy surrounding the suggestion to “rewild” North America by introducing large herbivores and carnivores from Africa. Readings ranged from classic chapters by Alfred Romer, Robert Carroll and Philip Gingerich to cutting edge phylogenetic reviews (e.g., Asher & Helgen 2010. *BMC Evolutionary Biology* 10: 102). I believe that this seminar was a resounding success. The learning environment was welcoming and the students and other faculty who participated appeared to genuinely enjoy our weekly discussions and I, in turn, learned a lot from them. The course material stretched all of us in new directions. No one hesitated to ask questions when they did not understand something, and many of the participants connected course material into their own disparate research areas.

- Honors Course GEOL 380 “Landscape Evolution and Environmental Change on the Edge of the Caribbean, Trinidad” (Co-taught with Drs. Lewis Owen and Ken Tankersley Winter 2012 term):

This interdisciplinary course introduced students to the geology, natural history, and cultural history of the island of Trinidad that culminated in a week-long trip to the island. I introduced students to the flora, fauna, and general ecology of Trinidad, and discussed human impacts via lectures and field-based activities.



Trinidad Honors Course at Pitch Lake

- ANTH 4039c “Surviving Climate Change” (Co-taught with Drs. Aaron Diefendorf, Linda Plevyak, and Kenneth Tankersley Summer 2013 term):

Dr. Plevyak and I worked with students to develop an educational self-guided tour of Big Bone Lick State Park, Kentucky. The guide is available on the park’s website (<http://parks.ky.gov/parks/historicsites/big-bone-lick/>).

- GEOL 6021C/6041c “Changing Landscapes, Dynamic Environments, and Geohazards in the Himalaya + Fieldtrip” (Co-taught with Drs. Brian Davies, Craig Dietsch, and Lewis Owen Spring & Summer 2013): This capstone semester-long course and summer field trip familiarized students with the geology of the Himalaya mountains, and the associated flora, fauna, and unique challenges for humans inhabiting this landscape. I delivered lectures about flora, fauna, and ecotourism during the semester-long spring course. Assignments included an informed discussion about the pros and cons of the ecotourism industry and the construction of a personal natural history guide for use in the field. I then accompanied the students on a three-week field trip through the high Himalaya of western India in July 2013.



Brooke and undergraduate Eric Baumann at Khardung La, India the world’s highest driveable

Invited Guest Lectures

2015-17 “How to start a research project” for GEOL 7005, Graduate Research Workshop (U Cincinnati)

- 2015 “*Flora and Fauna*” for GEOL 6041C, Changing Landscapes, Dynamic Environments, and Geohazards in the Himalaya (U Cincinnati)
- 2015 “*Ecotourism in the Himalaya*” for GEOL 6041C, Changing Landscapes, Dynamic Environments, and Geohazards in the Himalaya (U Cincinnati)
- 2014 & 15 “*Biology and Conservation of Madagascar*” for GEOL 1019, Tropical Islands, Endangered Paradises (U Cincinnati)
- 2014 & 15 “*The Evolutionary History of Mammals*” for GEOL 2003C “Paleontology and Evolution” (U Cincinnati)
- 2014 “*Quaternary Mammals*” for GEOL 1010, Evolution and Earth Systems (U Cincinnati)
- 2012 “*Using stable isotopes to document ecological change in Madagascar*” for ANTH 1000, Introduction to Anthropology (U Cincinnati)
- 2012 “*Stable Isotope Paleoecology*” for GEOL 6011, Quaternary Geology (U Cincinnati)
- 2012 “*Stable Isotope Paleoecology*” for GEOL 2003C, Paleontology and Evolution (U Cincinnati)
- 2006 “*Geology of the Bahamas*” for EART 003, Geology of National Parks (UC Santa Cruz)
- 2006 “*Designing a self-guided geology walking tour*” Science Teaching and Learning in Elementary Classrooms, Department of Education (UC Santa Cruz)
- 2004 “*The Tectonic History of the Sierra Nevada*” for EART 007, The History of Life (UC Santa Cruz)

Past Teaching Experience

- 2010-2011 **Sessional Lecturer**, “The Nature of Humans”, Anthropology, University of Toronto
I created and delivered lectures on topics relating to the evolution of *Homo sapiens*. I designed tutorial exercises that introduced students to basic anatomy, comparative osteology, the living primates, geography, geologic time, fossil preservation, the extinct hominids, and modern human diversity.
- 2003-2008 **Student Instructor for Discussion and Laboratory Tutorials**, UC Santa Cruz
- “Comparative Functional Anatomy” – I assisted with set up and direction of laboratory exercises. Supervised dissection of old world monkey cadavers.
 - “Human Functional Anatomy” – I led wet and dry laboratory tutorials designed to familiarize students with bones and muscles. Dissected human and monkey cadavers for demonstration purposes. Created, proctored, and graded all exams. Graded assigned essays.
 - “Introduction to Human Evolution”, Developed and led laboratory exercises and discussions, graded student essays, proctored and graded course exams.
 - “Introduction to Archaeology” – I led tutorial exercises and discussions, graded student essays, and proctored and graded exams.
 - “Geology of National Parks” – I led tutorial exercises, designed and delivered a guest lecture, proctored and graded exams.
 - “Evolution of the Earth” – I developed and led tutorial exercises. Graded assignments, proctored

and graded exams.

- “Natural History of Dinosaurs” – I led tutorial exercises, proctored and graded of exams.

- 2008 **Teaching Assistant**, “Field Methods in Primatology”, UC Santa Cruz & Costa Rica.
• Participated in all aspects of running a four-week field school in Costa Rica. Designed student exercises in botany and floristic assessment and led student discussions. Delivered guest lectures. Supervised and managed student projects and schedules in the field.
- 2005 **Intern**, School for Field Studies, Centre for Marine Resource Studies, Turks and Caicos, BWI
• Taught coral and fish Identification, and led scientific snorkel and dive sessions. Assisted field exercises in monitoring, surveying, tag and release, and artificial reef recruitment. Guided students on an intensive and demanding week-long inter-island expedition.
- 2004 & 2006 **Teaching Assistant**, Field Camp, Earth Sciences, UC Santa Cruz
• Helped students map a complex geologic area in the extreme 115-120 °F high desert heat of Deep Springs Valley, CA. Assisted with all logistical aspects of an intensive field-based course.
- 2002 **Student Instructor**, Collins Field Station at Vassar College Farm
• Taught elementary school groups about ladybugs, spiders, and land snails.

Mentoring and Directing Research

- UC Geosciences:
Emily Simpson (PhD expected in Fall 2023)
Dissertation Title: TBD
Funding: Dry Dredgers Paleontological Research Grant; Geological Society of America Graduate Student Research Grant; North Carolina Fossil Club Student Research Award; Sigma Xi Grant in Aid of Research; Western Interior Paleontological Society Research Award.

Andrew Hensley (PhD expected in Spring 2026)
Thesis Title: TBD
Funding: Sigma Xi Grant in Aid of Research

Harley Bailey (MS expected in Spring 2025)
Thesis Title: TBD
Funding: TBD

Clark Ward (MS completed in Summer 2023)
Thesis Title: Home on the range: A multi-isotope reconstruction of *Teleoceras major* paleoecology from Ashfall Fossil Beds, Nebraska, USA
Funding: Geological Society of America Graduate Student Research Grant; Sigma Xi Grant in Aid of Research; Western Interior Paleontological Society.

Jenelle Gaylord, née Wallace (MS completed in Summer 2018)
Thesis Title: “Reconstructing equid mobility in Miocene Florida”
Funding: American Society of Mammalogists Grant in Aid of Research; Association of Women Geoscientists Winifred Goldring Award; Geological Society of America Graduate Student Research Grant; Sigma Xi Grant in Aid of Research.

Janine Sparks (PhD completed in Summer 2017)
Dissertation Title: “Modern and ancient investigations into natural and anthropogenic drivers of sulfur isotope variability”

Funding: Geological Society of America Graduate Student Research Grant; Sigma Xi Grant in Aid of Research

Stella Mosher (MS completed in Spring 2015)

Thesis Title: "Carbon isotope discrimination and nitrogen isotope values indicate that increased relative humidity from fog decreases plant water use efficiency in a subtropical montane cloud forest"

Funding: Sigma Xi Grant in Aid of Research

Rajarshi Dasgupta (MS completed in Spring 2014)

Thesis Title: "An analysis of elemental and PAH concentrations in soils due to vehicular traffic along the Manali-Leh Highway, northwestern Himalaya, India"

Funding: Sigma Xi Grant in Aid of Research

- UC Undergraduate Projects:

Alexis Morad (Anthropology/Archaeology BA completed in Spring 2020)

"Investigating nitrogen absorption through two fertilizer application methods in *Tillandsia ionantha*"

Madison Greenwood (Anthropology BA completed in Spring 2019)

"The isotopic influence of digestion on animal tissues"

Kaitlin Sommer (Geology BS completed in Spring 2017)

"Assessing natal regions for migratory juvenile accipiters using hydrogen isotopes"

Ian Castro (Geology BS completed in Spring 2016)

"Assessing the influence of disturbance and diet on strontium isotope ratios in sympatric rodent species"

Ian Macadam (Anthropology BA completed in Spring 2015)

"Reconstructing the isotope ecology of an extinct mammal community at Ankilitelo Sink Hole, Madagascar"

Danielle Strasinger (Geology BS completed in Spring 2015)

"Can bones be used to establish spatial and temporal isotopic variability on Tenerife?"

Eric Baumann (Geology BS completed in Summer 2013)

"The Isotope Ecology of extinct proboscideans from the Cincinnati region"

Thesis Committees:

- University of Cincinnati:

Anthropology:

Past: Maria Fox (MA completed in Summer 2013); Lauren Heitkamp (MA completed in Spring 2016); Jessica Hughes (MA completed in Fall 2012); Denise Knisely (MA completed in Spring 2013); Ashley McCall (MA completed in Spring 2013); Alexis Niekamp (MA completed in Spring 2016); Dayna Reale (MA completed in Summer 2016); Jacob Weakley (MA completed in Summer 2021).

UC Geosciences:

Current: Lilja Carden (PhD expected Spring 2026); Maddie Gaetano (PhD expected Spring 2024).

Past: Jeanette Arkle (PhD completed Fall 2019); Meg Corcoran (PhD completed Spring 2023); Douglas Disbennett (MS completed Spring 2014); Erika Freimuth (PhD completed Spring 2018); Sharmila Giri (MS completed in Summer 2013); Jeff Hannon (PhD completed in Fall 2020); Abby Kelly (PhD completed in Spring 2022); Wesley Parker (switched from MS to PhD Spring 2018); Kristen Schlanser (PhD completed in Spring 2020); Yeon Jee Suh (PhD completed Fall 2017); Matt Vrazo (PhD completed Summer 2016); Jonas Zajonz (MS completed Spring 2023)

- External Committees:

Current:

Eva Hernandez-Janer (PhD in Human Evolutionary Sciences expected in Spring 2025; Rutgers University)

Past:

Sophie Habinger (PhD in Geosciences Summer 2023; University in Tübingen, Germany and University of Poitiers France)

Sean Hixon (PhD in Anthropology Summer 2021; UC Santa Barbara)

Undergraduate Volunteers and Independent Study Mentees:

- University of Cincinnati: Christina Emery, Megan Hannah, Madelyn Moeller (UC Anthropology); Sophia Eberts, Daisy Frabel, Cheyenne Hassan, Angelina Jelks, and Michael Karaus, Daniel LeSaint, Logan Nonnez, and Alaina Strand (UC Geosciences); Radhika Bhargava, Sarah Fretwell, Sierra Richardson, Ellie Severson, and Amelia Tomi (UC Environmental Studies).
- University of Toronto: Emma Cancelliere, Marlena Cravens, Emily Hofstetter, Christine Ishu, Heather Kristjanson, and Tommy Oliver.
- UC Santa Cruz: Katherine Baritell, Megan Carri, Seth Cohen, Sean Edgerton, Lucas Goldstone, Lucas Joel, Artur Linkowski, Wesley McCandless, Kathleen Minh Nguyen, and Giana Pieraccini.
- Visiting students: Laila Brahmia and Irene Fedyshyn (Rutgers University); George William Harrison (Wooster College); Helen Dietsch and Zoë Zorn (local Cincinnati high school students).

AWARDS AND HONORS

2008	Best Student Oral Presentation (2 nd place), International Primatological Society Congress XXII
2005 & 2006	Outstanding Teaching Assistant, Earth Sciences Department, University of California, Santa Cruz
2004	Outstanding Student Employee, University of California, Santa Cruz
2002	Outstanding Student, Erminnie Adele Platt Smith Excellence in Mineralogy and Geology, Vassar
1999-2002	Outstanding Student Employee, Vassar College

SERVICE

Service to the Scientific Community

Editorial and Other Services:

2022	Associate editor for <i>Paleoecology</i> , a specialty section of <i>Frontiers in Ecology and Evolution</i>
2022	Review editor for <i>Archaeological Isotope Analysis</i> , a specialty section of <i>Frontiers in Environmental Archaeology</i>
2022	Review editor for <i>Organic Geochemistry</i> , a specialty section of <i>Frontiers in Geochemistry</i>
2020-present	Editorial board member for <i>Animals</i>
2020/2024	Planning committee member for annual Society of Vertebrate Paleontology meeting (original meeting moved to virtual due to COVID)
2020	Scientific Committee member for the 2nd Palaeontological Virtual Congress (May 2020). http://palaeovc.uv.es/index.php/scientific-committee/
2019-2020	Lead Guest Editor, <i>Frontiers in Ecology and Evolution</i> , topic theme "A Golden Age for Strontium

Isotope Research? Current Advances in Paleoecological and Archaeological Research”
www.frontiersin.org/research-topics/10825/a-golden-age-for-strontium-isotope-research-current-advances-in-paleoecological-and-archaeological-r

- 2017-2022 Review editor for *Paleoecology*, a specialty section of *Frontiers in Ecology and Evolution*.
- 2017 Panelist for the National Science Foundation
- 2015 Lead Guest Editor, *American Journal of Primatology* special issue on “Advances in primate stable isotope ecology”
- 2011 Contributing Author, *The International Encyclopedia of Human Evolution*, Wiley-Blackwell

Grant Proposal Reviews (ad hoc):

National Geographic Foundation Biological Anthropology, NSF Archaeology, German Research Foundation, M.J. Murdock Charitable Trust, Leakey Foundation, Natural Environment Research Council (NERC), and The Paleontological Society

Manuscript Reviews (ad hoc):

American Journal of Physical Anthropology, American Journal of Primatology, Chemical Geology, Current Zoology, Diversity, Earth and Planetary Science Letters, Geology, International Journal of Primatology, Journal of Animal Ecology, Journal of Animal Science, Journal of Archaeological Science, Journal of Human Evolution, Marine Biology, Naturwissenschaften, Oecologia, Palaeogeography Palaeoclimatology Palaeoecology, PLoS ONE, Proceedings of the National Academy of Sciences USA, Proceedings of the Royal Society of London B, Royal Society Open Science, Quaternary Research, Rapid Communications in Mass Spectrometry, Tropical Conservation Science

Book Reviews (ad hoc):

- Foundations of Paleoecology: Classic Papers with Commentaries. Edited by S. Kathleen Lyons, Anna K. Behrensmeyer, and Peter J. Wagner, University of Chicago Press, 800 p.
- Life Amongst the Thorns: Biodiversity and Conservation of Madagascar's Spiny Forest. A coffee-table book by Louise Jasper and Charlie Gardner with a foreword by Sir David Attenborough

Organized Conferences and Symposia:

2020 and '23 Local Organizing Committee for the 2020 Society of Vertebrate Paleontology Meeting* (co-organized with Glenn Storrs and Brenda Hunda at the Cincinnati Museum Center, Josh Miller at the University of Cincinnati, and Julie Reizner at Northern Kentucky U)

* Due to COVID 19, the original conference became virtual. It was rescheduled for Cincinnati in 2023.

- 2021 “Malagasy Grassy Biomes” (co-advisor for virtual workshop attended by scholars from all over the world). Generated fruitful discussions about the antiquity and past extent of grassy biomes on Madagascar. The workshop has led to a special collection of articles for *Plants People Planet* called “Madagascar’s Grassy Biomes, from Holocene to Anthropocene”.
- 2019 “Strontium isotope applications in Quaternary paleoecological and archaeological research” INQUA 2019, Dublin (co-organized with Drs. Matthew Wooller, University of Alaska Fairbanks; Kate Britton, University of Aberdeen, Scotland; and Josh Miller, UC)
- 2014 “Isotopic Advances in Primate Foraging Ecology” The American Association of Physical Anthropologists (co-organized with Dr. Matt Sponheimer, CU Boulder),

- 2014 "Reconstructing past continental environments from the biogeochemistry of fossils", 2014 North American Paleontological Convention, Gainesville, FL (co-organized with Dr. Yurena Yanes, UC Geology).
- 2008 "Isotopic Applications in Evolutionary Anthropology" The American Association of Physical Anthropologists (co-organized with Dr. Nate Dominy, Dartmouth College)

Professional Memberships:

American Association of Biological Anthropologists, American Association of University Professors, Ohio Academy of Sciences, Phi Beta Kappa, Sigma Xi, Union of Concerned Scientists

University Service

- 2023-present Membership Chair, UC Chapter of Sigma Xi
- 2022-present Sustainability Fellow with the Center for Public Engagement with Science
- 2019-2023 Executive Committee Member of the UC Chapter of Sigma Xi
- 2020-2022 Member of the Graduate Council Executive Committee
- 2021-2022 College of Arts & Sciences Staffing committee
- 2019 Member of College Structures Committee
- 2018 Invited participant in discussions about A&S Master Plan
- 2017 Reviewer for Core Facilities Grant Program
- 2015-2017 Participant in cross-college discussions about starting an outdoor education program at UC.
- 2015 Assisted with Phi Beta Kappa initiation ceremony and reception.
- 2015 Spoke about the academic job search for the UC Graduate School's "Preparing Future Faculty" (PFF) program.
- 2014-2015 Reviewed collaborative proposals for the University Research Council.
- 2012-2015 Faculty Advisor for UC Vegetarian Health Club
- 2003-2010 Ambassador, Vassar Alumni Admissions
- 2006 & 2007 Workshop designer and leader, Teaching Assistant Orientation, UC Santa Cruz

Departmental Service

Anthropology:

- 2021-2022 Awards Committee member
- 2021 Member of graduate policy committee
- 2019 Led a field trip to the Cincinnati Zoo for the undergraduate club (Anthropos)
- 2017 Organized and participated in first-year retention study session events
- 2016-17 & 19-20 Colloquium Committee member
- 2015-present Ad-hoc committee member for replacement Biological Anthropology faculty and adjunct hires
- 2015-present Hosted visiting speakers for Taft Lecture Series: Drs. Deanna Grimstead (Ohio State University), Kevin Hunt (Indiana University), Anneke Janzen (U Tennessee, Knoxville), and Chelsey Juarez (North Carolina State)

- 2015-2023 Director and curator of the osteology lab
- 2012 Contributor to the UC Graduate Student Journal of Anthropology "The Importance of Field Experience in Your Graduate Research" (June 2012 volume 4, issue 3)
- 2011 Presented at the Research Lunch Seminar

Geosciences:

- 2020-present Faculty facilitator for graduate student outreach (see <http://www.geology-uc-outreach.org/>).
- 2018-present Graduate Program Director
- 2013-present Co-director of the Stable Isotope Biogeochemistry Facility
- 2011-present Hosted visiting speakers for the departmental colloquium series: Drs. Stephen Burns (UMASS Amherst), Rónadh Cox (Williams College), Dione Lee Rossiter (Carnegie Institute), Sora Kim (University of Chicago), Will Pestle (University of Miami), Lixin Wang (Indiana University-Purdue University, Indianapolis), Patrick Wheatley (Smithsonian), and Chris Widga (Illinois State Museum)
- 2019 Member of Head Replacement Search Committee
- 2015-2017 Leader for curriculum committee tasked with redesigning the undergraduate curriculum
- 2016-2018 Member of undergraduate STEM awards review committee
- 2015 Served on the review committee for graduate applications
- 2014-2015 Wrote a funded proposal for the Geology department to take part in a workshop to build a stronger department led by the National Association of Geoscience Teachers. Organized and helped facilitate the two-day workshop in March 2015
- 2014 Helped redesign the Geology Department's prospective graduate student brochure to better highlight the variety of research programs that we now offer
- 2013 Helped write a funded proposal to increase the diversity of our graduate students through a University "Departmental Diversity Initiative"
- 2012 Served on search committees for three new faculty hires and a departmental laboratory manager
- 2012 Spoke for departmental colloquium series
- 2004-2005 Earth Sciences Department Representative, Graduate Student Association, UC Santa Cruz

Environmental Studies

- 2023 Curriculum Committee Member

Community Outreach and Public Engagement

- Ongoing Answer science-related questions for students and other community members.
- 2023 Led public workshop about bones for Norwood Branch of the Cincinnati Public Library
- 2023 Discussion Panelist for University of Cincinnati Institute for Research in Sensing Alloy Series #10: "Sensing Time", Cincinnati Mercantile Library
- 2023 Volunteer school group activity leader on water chemistry and quality for Mill Creek Alliance.
- 2022 Speaker for virtual "Science Shots" event, hosted by Science on Tap and the UC Sigma Xi chapter
- 2021 Lead presenter on Ohio's Geology for an Ohio Certified Naturalist Course, Cincinnati Nature Center

2021	Panelist for STEM Careers Q&A panel, Sycamore High School, Ohio
2020-2023	Coordinated Geoscience-themed field trip to Sharon Woods Park for 4 th grade students at Bond Hill Elementary School, Cincinnati
2020	Delivered workshop about bones for EICK Global STEM Academy, Monroe, Ohio
2020	Judge for Sigma Xi Virtual Student Scholars Symposium
2020	Scientific committee member for the 2nd Paleontological virtual congress
2019	Panelist in interdisciplinary discussion on “Understanding Climate Change”, Cincinnati Mercantile Library. https://vimeo.com/383921899 ; https://ucengagingscience.org/mercantile-library-science-talks/
2019	Participant in “Science around Cincy” educational video series for regional high school students. https://sciaroundcincy.com/ ; https://www.youtube.com/watch?v=gMVPnycAwVw&t=118s
2016-2019	Participant in redesign of Ice Age exhibit at the Cincinnati Museum Center
2017-2018	Pen Pal with Maple Ave Middle School in Littlestown, PA
2018	Delivered presentation called “Why are there mountains?” for science outreach event, Zimitlán Middle School, Oaxaca, Mexico
2018	Delivered workshop on bones for Covington Latin Schools summer program, KY
2016-2017	Participant in <i>Curate my Community</i> , an initiative to install publicly accessible museum exhibits on the UC campus.
2017	Advisory committee for Biomedical program at Butler Tech’s Bioscience Center
2017	Panelist for “Defend our Beer” Public Forum on Climate Change (Partnership with UC, Defend our Future, and the Ohio Environmental Council)
2015	Served as a “Featured Girl in Real Life Science” for the Cincinnati Museum Center newsletter.
2015	Organized and delivered a workshop on comparative osteology for the summer teacher’s retreat at the Cincinnati Nature Center.
2014	Featured scientist on “Mostly mammoths, mummies, and museums” mostlymammoth.wordpress.com/2014/10/26/dr-brooke-crowley-secrets-revealed-from-mammoths-mastodons-in-the-ohio-region/
2014	Designed and created a permanent exhibit called “Climate and Us” at the Cincinnati Museum Center www.cincymuseum.org/new-component-on-the-causes-and-impact-of-climate-change-to-open-at-Cincinnati-Museum-Center
2014	Organized and delivered a workshop on comparative osteology for volunteers at the Cincinnati Nature Center.
2014	Conducted a radio interview about the Anthropocene with Science for the People www.scienceforthepeople.ca/episodes/last-ape-standing
2013	Competed in the first annual UC “Science Idol” Competition www.uc.edu/news/NR.aspx?id=17590
2013	Worked with UC students to create a self-guided tour outlining the cultural and natural history of Big Bone Lick State Park, Kentucky. The brochure is available on the park’s website: http://parks.ky.gov/parks/historicsites/big-bone-lick/
2012	“The Human Side” Virtual Career Panel Discussion www.thehumanside.org/gabriel-roybal-dr-brook-crowley/
2010-2011	Volunteer, Royal Ontario Museum, OWLS Education Program
2010	Participant, Team Science, Union of Concerned Scientists
2006	Workshop designer and leader, CalTeach Recruitment Event, UC Santa Cruz
2005	Author of “Bahamian Geology” article for <i>Baller</i> , a popular Turks and Caicos magazine

- 2004-2006 Design and development of interpretive signs about coastal processes, Santa Cruz, CA. The guide is available for download from my website. It is currently used by the Santa Cruz Natural History Museum with their "On the Spot" outdoor public education program.
- 1997-1998 Volunteer, Cranbrook Institute of Science, Bloomfield Hills, MI

ADDITIONAL EXPERIENCE

Leadership Experience

- 2019-2020 **University of Cincinnati Women LEAD Program**
- Cultivated a better understanding of my professional developmental needs as well as personal leadership skills and goals via interdisciplinary group meetings, peer and executive coaching, and enactment of an institutional service project.
- 2015-2017 **Curriculum Redesign (Team Leader)**, Geology Undergraduate Curriculum, U Cincinnati
- Leading the redesign and implementation of a revised undergraduate curriculum for the Geology majors (BA and BS) and minor.
- 2014 **Course Facilitator** for MA student Margaret Fox, Antioch College
- "The Relationship of Cosmology, Society and Sustainability" (Spring 2014)
 - "Sacred Space: Nature, Place & Environment" (Summer 2014)
 - Helped Ms. Fox develop her syllabi, and served as her advisor for two semesters of independent study courses. We met weekly to discuss her progress and I read and critiqued her writing assignments. For her final project in each course, Ms. Fox wrote a series of poems. She presented these poems at a public event in Cincinnati and is currently in the process of publishing a short book of her work.
- 2013 **Museum Exhibit Design (Team Leader)**, Design and installation of "Climate and Us", Cincinnati Museum Center
- Worked closely with two other UC Faculty and staff at the Museum Center to design and build an exhibit on climate and climate change at the Natural History Museum. I secured funding for the project, helped design the exhibit from the ground up, conducted background research for the scientific content of the exhibit, coordinated interactions and communications between team members, and found colleagues to participate in recorded video interviews.
- 2010 **Scientific Workshop Leader**, "Innovative Techniques in Feeding Ecology", George Washington University
- Introduced workshop participants to the fundamentals of stable isotope ecology and led a laboratory session demonstrating preparation techniques for plant and fur samples.
- 2004-2005 **Resident Advisor**, Graduate Student Housing, UC Santa Cruz
- Mediated conflicts and organized events for 80 fellow graduate students.
- 1998 **Wilderness Expedition Co-Leader**, Cranbrook Schools, Bloomfield Hills, MI
- Insured the safety and morale of 10 sophomores during an intensive 10-day winter backpacking expedition in the Monongahela National Forest.

Ancillary Education and Professional Development

- 2022 Leadership for Interdisciplinary Teaching of Sustainability Faculty Learning Community, U Cincinnati Center for the Enhancement of Teaching and Learning (CET&L)
- Semester-long working group that brainstormed ideas for making teaching of sustainability at UC more cohesive and connected with external partners in the Cincinnati community.

- 2019-present Science of Teaching and Learning (SOTL) Journal Club, U Cincinnati Center for the Enhancement of Teaching and Learning (CET&L)
 • Monthly meetings to discuss readings on evidenced-based practices in teaching and learning.
- 2017-2018 Active Learning Fellows Program, UC CET&L
 • Learned, applied, and evaluated new techniques for enhancing and maintaining an active learning classroom, and fostering self-regulated learning behavior in students.
- 2020 Research Mentoring: Optimize Your Practice Learning Community, Faculty Enrichment Center, University of Cincinnati.
 • Eight-week program including weekly discussion sections, learning modules, and group coaching sessions designed to help research mentors develop productive, mutually satisfying relationships with mentees.
- 2014 Grant Writing Workshop “Write Winning Grant Proposals”, Grant Writers’ Seminars and Workshops and the University of Cincinnati
 • Attended a day-long workshop that outlined key success strategies for writing successful grant applications.
- 2013 ISOMASS Isotope Ratio Mass Spectrometry Training Workshops, University of Ottawa
 • Trained in all aspects of EA-IRMS, MS-IRMS, and GC-IRMS.
- 2013 Lesson Study, U Cincinnati Center for the Enhancement of Teaching and Learning
 • Worked with an interdisciplinary team to design, observe, evaluate, and redesign a lesson about thoughtful decision making and students’ real and perceived fears in academia.
- 2012-2013 New Faculty Institute, U Cincinnati Center for the Enhancement of Teaching and Learning
 • Participated in teaching, mentoring, publication and funding workshops
- 2012 Digital Faculty Portfolio Development Initiative, U Cincinnati Faculty Development Council
 • Designed and developed a digital teaching portfolio using WordPress.
- 2012 UC Forward Course Design Institute, UC Center for the Enhancement of Teaching and Learning
 • Discussed and developed student learning goals, activities, and assessment strategies for transdisciplinary solutions-oriented courses.
- 2012 Early Career Geoscience Faculty: Teaching, Research, and Managing Your Career Workshop, College of William and Mary.
 • Interacted other early career scientists, learned new strategies for engaging large introductory courses.
- 2012 Systems, Society, Sustainability and the Geosciences Teaching Workshop, Science Education Resource Center, Carleton College.
 • Learned and shared successful strategies and materials for teaching sustainability.
- 2010 Managing Projects, Business Conduct Excellence, Practice your Presentation Skills, and Becoming an Entrepreneur workshops, Mitacs Skills Training and Entrepreneurship Program, Toronto Ontario.
 • Participated in five short (1/2-1 day) interactive, hands-on workshops with other postdoctoral fellows, graduate students, and young professionals.
- 2006 Stable Isotopes in Ecology Lecture and Laboratory Short Course, University of Utah.
 • Received training in stable isotope theory as well as sample collection, preparation and data processing. Practiced using vacuum lines to cryogenically extract water from organic samples.

- 2006 Center for Informal Learning and Schools Professional Development Workshop, Maui, Hawaii
 - Developed innovative inquiry-based teaching techniques.
- 2005 Wilderness medicine and first aid training, School for Field Studies, South Caicos, Turks and Caicos Islands.
 - Trained in patient assessment, treatment for injuries and common illnesses, and evacuating decision making.
- 2003-2005 Science Fellow, Center for Informal Learning and Schools, UC Santa Cruz
 - Received training and practice in formal and informal education theory. Collaborated with education researchers to develop outdoor interpretive signs about coastal processes.
- 2003 Geology Field Camp, Earth Sciences, UC Santa Cruz
 - Deciphered the geologic history of the Poleta Fold Belt. Projects included mapping, creating a cross section, and producing a stratigraphic column.
- 2002 PADI Divemaster training and certification
 - Worked on the company dive boat and led dives for certified divers.
- 2002 German Study Abroad Program, Vassar College, Münster, Germany
 - Lived with a family, took fully-day courses in German and participated in community activities for one month.
- 2000 Student at School for Field Studies, Tropical Rainforest Management, Queensland Australia
 - Studied natural and cultural history of NE Queensland. Worked with local community on revegetation and forest corridor projects.

MEDIA ATTENTION

Miller, M. 2023 “How to track animal of legend? Look to the poop”
<https://www.uc.edu/news/articles/2023/07/how-to-track-animal-of-legend-look-to-the-poop.html>

This article was picked up by the following:

- * The local news in Belize: <https://edition.channel5belize.com/>
- * *The Revelator* (a news and ideas initiative of the Center for Biological Diversity): Lohan, T. 2023, “What can we learn from jaguar poop? A lot!” <https://therevelator.org/jaguars-belize-scat/>

Miller, M. 2023 “Madagascar's hippos were forest dwellers”
<https://www.uc.edu/news/articles/2023/07/madagascars-hippos-were-forest-dwellers.html>

Miller, M. 2022 “Mastodon: But I would walk 500 miles...UC study is first of its kind to reveal annual migration patterns of extinct Ice Age animals”
<https://www.uc.edu/news/articles/2022/06/uc-study-tracks-seasonal-migration-of-extinct-mastodons.html>

This article was picked up by multiple other organizations, including:

- * The New York Times (<https://www.nytimes.com/2022/06/13/science/mastodon-tusk-migration.html>);
- * “All things considered” on National Public Radio (<https://www.npr.org/2022/06/27/1107961608/the-story-of-fred-the-mastodon?fbclid=IwAR1nSxTNe7JJC1GyWHgwPYPCzmNgZ5g-FQDQhcM4btlrZeK9SWmlVNqcXqU>);
- * Atlas Obscura (<https://www.atlasobscura.com/articles/mastodon-indiana-fred-buesching>);
- * SciShow (<https://www.youtube.com/watch?v=JC5LkUYAR4>).

Godfrey, L. 2021 “Late Holocene changes in Madagascar’s large vertebrates: Recent cave findings offer insights into what caused the extinction of some megafauna” *Natural History* magazine, November issue, pp. 9-11.

Miller M., 2021 “Feather chemistry helps track origin of birds”

<https://www.uc.edu/news/articles/2021/09/feather-analysis-allows-researchers-to-track-wide-ranging-hawks-and-falcons.html>

This piece inspired a spinoff for kids in the outdoors section of the Billings Gazette: “Feathers reveal clues to a bird’s birth place” by Brett French. https://mtstandard.com/outdoors/just-for-kids/feathers-reveal-clues-to-a-birds-birthplace/article_8ca2db13-1810-5825-bcc1-793bafd5bf91.html

Miller, M. 2021 “Shift in caribou movements may be tied to human activity”

<https://www.uc.edu/news/articles/2021/01/uc-geology-professor-tracks-caribou-using-antlers-isotopes.html>

PBS Eons, 2020 “When Giant Lemurs Ruled Madagascar”

<https://www.youtube.com/watch?v=1hTJh8W0khU>

Features findings of Crowley and Godfrey (2013) publication in the South African Journal of Science. doi: 10.1590/sajs.2013/1346.

2019 Participant in “Science around Cincy” educational video series for regional high school students.

<https://sciaroundcincy.com/>; <https://www.youtube.com/watch?v=gMVPnycAwVw&t=118s>

Anderson, C. 2019 “Downtown's Mercantile Library to host lecture series on climate change”

<https://www.citybeat.com/arts-culture/culture/article/21084535/downtowns-mercantile-library-to-host-lecture-series-on-climate-change>

Miller, M. 2019 “UC discovers new way of tracking jaguars” www.uc.edu/news/articles/2019/08/n20852487.html

This article led to an interview with WVXU in October 2019

<https://www.wvxu.org/post/uc-professor-helps-track-jaguars>

Rees, D. 2019. “Geology, anthropology professor shares passion for nature through photography, research”.

The News Record. <https://www.newsrecord.org/news/geology-anthropology-professor-shares-passion-for-nature-through-photography-research/>

Schefft, M. 2019 “Earth, wind, flora sway Trinidad sulfur levels”

<https://www.uc.edu/news/articles/2019/09/n20858504.html>

Miller, M. 2018 “UC study: Prehistoric horses were homebodies. Geochemical analysis of fossils suggests horses in Florida did not make epic migrations” <https://www.uc.edu/news/articles/2018/12/n2057444.html>

Miller, M. 2018 “UC hawk study could benefit conservation” www.uc.edu/news/articles/2018/10/n204725.html

Miller, M. 2017 “Hope for Goshawks”

http://magazine.uc.edu/editors_picks/recent_features/goshawk.html

Miller, M. 2017 “Commuting at the Top of the World”

http://magazine.uc.edu/editors_picks/recent_features/himalaya.html

Fuller, D. 2015 “New Study Highlights Valuable Tool for Studying Living and Extinct Animals: Findings could support a number of fields from animal poaching to paleoecology” <http://www.uc.edu/news/NR.aspx?id=22216>

This research is also highlighted in the New Historian:

Worthington, D. 2015 “New tool for studying extinct mammals”

<http://www.newhistorian.com/new-tool-for-studying-extinct-animals/4997/>

Schefft, M. 2015 “Lemur Teeth Help Take a Bite Out of Madagascar’s Mysteries”

<http://www.uc.edu/news/NR.aspx?id=21429>

Papandrea, D. 2015 "The Most Awarded Professors in the State of Ohio"
<http://www.onlinecolleges.com/ohio/most-awarded-professors-ohio.html>

Robinette, T. 2014 "Mammoth and Mastodon Behavior Was Less Roam, More Stay at Home"
<http://www.uc.edu/news/NR.aspx?id=20119>

- This article led to interviews for Cincinnati radio stations WVXU and WCPO in July 2014.
- The research story is also highlighted on livescience.com:
Geggel, L. 2014 "Mammoths and mastodons of the Ohio Valley were homebodies"
<http://www.livescience.com/47054-mammoths-mastodons-diet-roaming.html?cmpid=514645>

Pasquinucci, R. 2014 "UC Creates Climate Change Exhibit in the Cincinnati Museum Center"
<http://www.uc.edu/news/NR.aspx?id=19969>

Science for the People Radio Show, Episode #246 "Last Ape Standing"
<http://www.scienceforthepeople.ca/episodes/last-ape-standing>

Robinette, T. 2013 "UC Research Looks at How Fate of Tiny Lemurs Could Be Linked to Forest Health"
<http://www.uc.edu/news/NR.aspx?id=18422>

Gosselin, D.C. 2013 Transforming the teaching of geoscience and sustainability, EOS 94(25): 221-222.

Hand, G. 2013 "Plants Keep Spines Long After Their Grazer Went Extinct"
<https://www.uc.edu/news/articles/legacy/enews/2013/01/plants-keep-spines-long-after-their-grazer-went-extinct.html>

Hand, G. 2012 "Stable Isotopes May Unravel Dry Forest Ecology" <http://www.uc.edu/news/NR.aspx?id=16394>

Reilly, M.B. 2012 "Lemur lessons: factors driving lemur species extinctions for past 2,000 years have also sparked ongoing 'ecological retreat' by surviving species" <http://www.uc.edu/news/NR.aspx?id=15874>

2012 "LLNL study finds current lemurs retreated to riparian environs"
<https://www.llnl.gov/news/llnl-study-finds-current-lemurs-retreated-riparian-environs>

Varney, R. 2011 "New UC professor uses the past to see the future"
<https://www.uc.edu/profiles/profile.asp?id=14651>

Sohn, E., 2007 "The littlest lemurs, science news for kids"
<http://www.sciencenewsforkids.org/articles/20070103/Feature1.asp>

Lubick, N., 2005 "Horses' mouths date Sierra Nevada uplift" Geotimes,
http://www.geotimes.org/jan05/NN_SNhorses.html