

Emma A. Elliott Smith, Ph.D.

Peter Buck Postdoctoral Research Fellow,
Department of Anthropology, National Museum of Natural History, Smithsonian Institution
+15056030228 • ElliottSmithE@si.edu • <https://isotopeecology.weebly.com>

EDUCATION

- 2020** **Ph.D.** University of New Mexico, Albuquerque, New Mexico
Biology; Primary advisor Dr. Seth Newsome
Graduated with Distinction
- 2018** **MS.** University of New Mexico, Albuquerque, New Mexico
Plan II in Biology; Primary advisor Dr. Seth Newsome
Graduated with Distinction
- 2013** **BSc.** University of California, Santa Cruz, Santa Cruz, California
Ecology and Evolutionary Biology
Summa Cum Laude and Highest Honors in the Major

POSITIONS

- 10/2022 – Present **Adjunct Assistant Professor, Department of Biology**
University of New Mexico, Albuquerque NM, 87131
- 09/2022 – Present **Adjunct Assistant Professor, Department of Anthropology**
San Diego State University, San Diego, CA, 92182
- 03/2022 – Present **Peter Buck Postdoctoral Research Fellow**
Smithsonian Institution, Washington, DC 20010
- 03/2020 – 03/2022 **NSF Postdoctoral Research Fellow in Biology**
Smithsonian Institution, Washington, DC 20010
- 08/2015 – 07/2018 **NSF Graduate Research Fellow**
University of New Mexico, Albuquerque, NM 87131
- 08/2014 – 12/2019 **Graduate Student Research/Teaching Assistant** (6 semesters)
University of New Mexico, Albuquerque, NM 87131

PROFESSIONAL PUBLICATIONS

21. Elliott Smith EA, Braje TJ, Gobalet KW, Campbell B, Newsome SD, Rick TC (*In Press*). Archaeology and stable isotope analyses reveal patterns of fishing across the food web on California's Channel Islands. *The Holocene*.
20. Smith FA, Elliott Smith EA, Villaseñor A, Tomé CP, Lyons SK, Newsome SD. (2022). Late Pleistocene megafauna extinction leads to missing pieces of ecological space in a North American mammal community. *Proceedings of the National Academy of Science USA* 119:e2115015119.
19. Elliott Smith EA, Rick TC, Hofman CA (2022). Investigating fishing strategies and habitat differences in late Holocene sturgeon (*Acipenser* spp.) from northern Oregon through coupled genetic and isotope analyses. *Quaternary Science Advances* 7:100052.

18. Reeder-Myers LA, Braje TJ, Hofman CA, **Elliott Smith EA**, Garland C, Grone M, Hadden CS, Hatch M, Hunt T, Kelley A, LeFebvre M, Lockman M, McKechnie I, McNiven IJ, Newsom B, Pluckhahn T, Sanchez G, Schwadron M, Smith K, Smith T, Spiess A, Tayac G, Thompson VD, Weitzel EM, Rick TC. (2022). Indigenous oyster fisheries spanning thousands of years should inform future management. *Nature Communications* 13:1-13
17. **Elliott Smith EA**, Fox MD, Fogel ML, Newsome SD. (2022). Amino acid $\delta^{13}\text{C}$ fingerprints of nearshore marine autotrophs are consistent across broad spatiotemporal scales: an intercontinental isotopic library and likely biochemical drivers. *Functional Ecology* 36:1191-1203.
16. Besser AC, **Elliott Smith EA**, Newsome SD. (2022). An essential amino acid $\delta^{13}\text{C}$ fingerprint library for use in southwestern food web and plant-microbe interaction studies. *Journal of Ecology* 00:1-16.
15. **Elliott Smith EA**, Fox MD. (2022). Characterizing energy flow in kelp forest food webs: a geochemical review and call for additional research. *Ecography*: e05566. *
* Published online Sept 2021 and selected as part of the *Ecography Early Career Competition for Excellence in Ecology and Evolution*
14. **Elliott Smith EA**, Harrod C, Docmac F, Newsome SD. (2021). Intraspecific variation and energy channel coupling within a Chilean kelp forest. *Ecology* 102:e03198.
13. Dombrosky JD, Besser AC, **Elliott Smith EA**, Conrad C, Pagès Barceló, L, Newsome SD. (2020). Resource risk and stability in the zooarchaeological record: the case of Pueblo fishing in the Middle Rio Grande. *Archaeological and Anthropological Sciences* 12:1-11.
12. **Elliott Smith EA**, Tinker MT, Whistler EL, Kennett DJ, Hylkema M, Vellanoweth RL, Gifford-Gonzalez D, Newsome SD. (2020). Reductions in the dietary niche of southern sea otters (*Enhydra lutris nereis*) from the Holocene to the Anthropocene. *Ecology and Evolution* 10:3318-3329.
11. Phillips ND*, **Elliott Smith EA***, Newsome SD, Houghton JDR, Carson C, Alfaro Shigueto J, Mange J, Eagling LE, Kubicek L, Harrod C. (2020). Bulk & amino acid stable isotope analysis reveal global ontogenetic patterns in ocean sunfish diet and habitat-use. *Marine Ecological Progress Series* 633:127-140.
*Joint first authors
10. Tomé CP, Smith FA, **Elliott Smith EA**, Lyons SK, Newsome SD, Stafford Jr TW. (2019). The response of a small herbivorous mammal (*Sigmodon hispidus*, hispid cotton rat) to the Late Pleistocene megafauna extinction. *Ecography* 42:1-16.
9. Fox MD, **Elliott Smith EA**, Smith JE, Newsome SD. (2019). Trophic plasticity in a common reef-building coral: Insights from $\delta^{13}\text{C}$ analysis of essential amino acids. *Functional Ecology* 00:1-12.
8. Whiteman JP, **Elliott Smith EA**, Besser AC, Newsome SD. (2019). Using compound-specific stable isotope analysis to study molecular and ecological diversity. *Diversity* 11:8.
7. **Elliott Smith EA**, Harrod C, Newsome SD. (2018). The importance of kelp production to an intertidal ecosystem varies by trophic level – insights from amino acid $\delta^{13}\text{C}$ analysis. *Ecosphere* 9:e02516.
6. Hixon SW, **Elliott Smith EA**, Crowley BE, Perry GH, Kennett DJ, Newsome SD. (2018). Patterns in $\delta^{15}\text{N}$ values for amino acids in lemur bone are inconsistent with aridity driving megafaunal extinction in southwestern Madagascar. *Journal of Quaternary Science* 33:958-968.
5. Braje TJ, Rick TC, Szpak P, Newsome SD, McCain JM, **Elliott Smith EA**, Glassow M, Hamilton SL (2017). Historical ecology and the conservation of large, hermaphroditic fishes in Pacific coast kelp forest ecosystems. *Science Advances* 3: e1601759
4. Elliott S, Jeffery N, Hunke E, Deal C, Jin M, Wang S, **Elliott Smith EA**, Oestreicher S (2017). Strategies for the simulation of sea ice organic chemistry: Arctic tests and development. *Geosciences* 7:52.

3. Yeakel JD, Bhat U, **Elliott Smith EA**, Newsome SD (2016). Exploring the isotopic niche: isotopic variance, physiological incorporation, and the temporal dynamics of foraging. *Frontiers in Ecology and Evolution* 4:2188.
2. Smith FA, Tomé CP, **Elliott Smith EA**, Lyons SK, Newsome SD, Stafford TW (2016). Unraveling the consequences of the terminal Pleistocene megafauna extinction on mammal community assembly. *Ecography* 39:223-239.
1. **Elliott Smith EA**, Newsome SD, Estes JA, Tinker MT (2015). The cost of reproduction: differential resource specialization in female and male California sea otters. *Oecologia* 178:17-29.

Publications In Review and Revision

2. **Elliott Smith EA**, Szpak P, Braje TJ, Newsom B, Rick TC (*In Review*). Pre-industrial ecology and movement of swordfish (*Xiphias gladius*) in the eastern North Pacific. *Marine Ecology Progress Series*.
1. Smith, FA, **Elliott Smith EA**, Carson C, Lyons SK, Pardi MI, Tomé CP (*In Review*). After the mammoths: the ecological legacy of late Pleistocene megafauna extinctions. *Cambridge Prisms: Extinction*. *

*Solicited submission

FELLOWSHIPS AND GRANTS

Research Fellowships

2021	Smithsonian Institution – Peter Buck Postdoctoral Fellowship. \$64,000
2019	NSF BIO – Postdoctoral Research Fellowship in Biology. \$138,000
2019	Smithsonian Institution – Peter Buck Postdoctoral Fellowship. \$104,000
	<i>Awarded, but turned down to accept NSF Postdoctoral Research Fellowship.</i>
2015	NSF GRFP – Graduate Research Fellowship. \$138,000
2014	North Pacific Research Board – Graduate Student Research Award. \$25,000

Research Grants

06/2022	<p><i>Historical Ecology of the Pacific Cod Fishery.</i></p> <p>NSF – Navigating the New Arctic Incubator Grant.</p> <p>PIs – Catherine West, Courtney Hofman, Bruce Anderson, Katherine Reedy, Loren McClenachan, Ingrid Spies.</p> <p>Role – <i>Senior Personnel</i> responsible for generating bulk tissue and compound-specific stable isotope data from archaeological Pacific cod samples and characterize (1) the ecological niche and trophic role of historical cod populations, and (2) the sources of primary production (benthic macroalgae vs pelagic phytoplankton) supporting historical cod populations. \$68,000 (isotopes).</p>
10/2021	<p><i>Historical Ecology and Archaeology of Point Conception, California.</i></p> <p>The Nature Conservancy.</p> <p>PIs – Torben Rick, Courtney Hofman, Todd Braje.</p> <p>Role – <i>Senior Personnel</i> responsible for conducting stable isotope analysis on modern materials to construct Point Conception hydrologic and terrestrial isoscapes to evaluate historical connectivity among marine/terrestrial food webs. \$25,000 (isotopes).</p>

Student Grants

2019	UNM Graduate and Professional Student Association – Student Research Grant. \$470
2019	UNM Biology Graduate Student Association – Travel Award. \$300
2018	UNM Department of Biology – Grove Summer Scholarship. \$2,500
2017	UNM Latin American Iberian Institute – Field Research Grant. \$3,360

2017	UNM Graduate and Professional Student Association – Student Research Grant. \$500
2016	American Society of Mammalogists – Travel Award. \$400
2015	UNM Biology Graduate Student Association – Research Award. \$400
2015	Society for Marine Mammalogy – Travel Award. \$200
2015	UNM Department of Biology – Joseph Gaudin Scholarship. \$3,000
2015	American Association of University Women – Santa Fe Chapter Scholarship. \$2,000
2015	American Society of Mammalogists – Travel Award. \$300

TEACHING AND PROFESSIONAL PRESENTATIONS

Mentorship and Training

Dara Yui, Ph.D. student, University of Maine Bigelow Laboratory for Ocean Sciences (2021-current). Dara is studying the effects of kelp deforestation on nearshore fish communities using niche modeling, stable isotope analysis, and environmental DNA.

Alana Robinson, undergraduate honors research program, University of New Mexico (2018-current). Under my supervision, Alana has been conducting independent research into the ecology and physiology of sea otters using stable isotope analysis. In Spring of 2022 she won an award for Best Undergraduate Presentation at the annual UNM Biology Research Day.

University Courses

08-12/2019	<i>Elemental Ecology</i> . Co-instructor. Upper level/graduate student course with lab component investigating the use of stable isotopes in animal ecology and physiology.
08-12/2018	<i>Biodiversity</i> . Teaching assistant. Introductory course covering biodiversity across temporal/environmental gradients, and modern human influences.
08-12/2014	<i>Introductory Biology for the Health-Related Sciences</i> . Teaching assistant; taught three laboratory sections.

Invited Workshops

06/2022	<i>IsoCamp</i> . Laboratory Instructor and Project Group Leader. A specialized course in stable isotope principles, analytical techniques, and their application in environmental and ecological studies. The course includes lectures, field- and laboratory-based experiences. Albuquerque, NM.
07/2021	<i>IsoCamp</i> . Laboratory Instructor and Project Group Leader. Founded in 1996 at the University of Utah, IsoCamp is a specialized course in stable isotope principles, analytical techniques, and their application in environmental and ecological studies. In 2021 the course moved to the University of New Mexico, where it is now based, and includes lectures, field- and laboratory-based experiences. Albuquerque, NM.
07/2019	<i>Stable isotopes in ecological and environmental studies</i> . Co-instructor. Sociedad Mexicana de Mastozoología Marina. La Paz, Mexico.
10/2017	<i>Application and validation of compound-specific stable isotope analysis in studies of marine mammal ecology and eco-physiology</i> . Co-instructor. Society of Marine Mammalogy. Halifax, Canada.

- 11/2016 *The use of stable isotope analysis to study the trophic ecology, movement patterns, and life history of marine mammals.* Co-instructor. Sociedade Latino Americana de Especialistas en Mamíferos Acuáticos. Valparaiso, Chile.

Community Outreach

- 09/2022 *What the Demise of Mammoths Can Teach Us About Future Extinctions.* Interview for a popular press article written by Jack Tamisiea for Smithsonian Voices Magazine.
Article Link: <https://www.smithsonianmag.com/blogs/national-museum-of-natural-history/2022/09/23/smithsonian-scientist-helps-measure-a-mammoth-sized-ecological-gap/>
- 05/2022 *Infographic on California sea otters and historical ecology for the California Department of Parks and Recreation.* Co-developed with Dr. Annabel Beichman, this infographic will be displayed in local California museums to bring broader awareness to the long history, and ecological importance of the species in the region.
- 10/2019 *Stable Isotope Workshop – Bosque Ecological Monitoring Program (BEMP).* BEMP is a local nonprofit organization dedicated to engaging middle and high school students from all backgrounds in citizen science. As part of a collaboration between BEMP and UNM scientists, I helped develop and teach a three-day workshop on the use of stable isotope analysis to ecological studies. This is an immersion place-based course and combines lecture and active learning; for half of each day students design research questions, conduct sampling in the local riparian corridor (Bosque), learn laboratory processing techniques, and analyze data. Albuquerque, NM.
- 10/2018 *Stable Isotope Workshop – Bosque Ecological Monitoring Program (BEMP).* As above – a two-day long, immersion place-based course combining lecture and active learning; for half of each day students design research questions, conduct sampling in the local riparian corridor (Bosque), learn laboratory processing techniques, and analyze data. Albuquerque, NM.
- 09/2015 *Expanding Your Horizons Workshop (EYH).* Hosted and organized annually by the local chapter of the American Association of University Women (AAUW), EYH is a conference which seeks to engage middle and high school girls in STEM careers by providing role models and hands-on workshops and activities. I gave two one-hour workshops on paleontology and its relevance to modern conservation biology. These involved a combination of short lectures with hands-on activities and exercises. Santa Fe, NM.

Invited Presentations

3. American Society of Mammalogists. *Evaluating the past and present ecology of mammals: stable isotope analysis of biological collections.* Transforming the Digital Frontiers of Mammalogy. Invited by Dr. Joe Cook. (June 2022) Tucson, AZ.
2. International Biogeography Society. *Historical ecology of sea otters from Alaska to California: a case study in the use of compound-specific stable isotope analysis for paleoecology and conservation.* Innovation and Technology in Biogeography, Plenary Symposium. Invited by Dr. Felisa Smith. (June 2022) Vancouver, Canada.
1. American Geophysical Union. *A new tool for paleoenvironmental reconstruction: amino acid $\delta^{13}\text{C}$ and $\delta^2\text{H}$ analysis reveals shifts in a Holocene nearshore ecosystem.* Multiple Isotope Patterns Within Organic Compounds. Invited by Dr. Marilyn Fogel. (December 2019) San Francisco, CA.

Contributed Conference Presentations

Alaska Marine Science Symposium (2021, 2016)
 American Society of Mammalogists (2019, 2016, 2015)
 American Quaternary Association (2016)
 California Islands Symposium (2016)
 Geological Society of America (2015)
 International Conference on the Applications of Stable Isotope Techniques to Ecological Studies (2018)
 International Mammal Congress (2017)
 Sea Otter Conservation Workshop IX (2015)
 Sea Otter Research and Conservation Symposium (2021)
 Simposio Nacional [Chile] de Isótopos Estables (2017)
 Society for American Archaeology (2019)
 Society of Marine Mammalogy (2017, 2015)
 Southern Sea Otter Research Update Meeting (2014)
 University of New Mexico Biology Research Day (2019, 2017, 2016)

ADDITIONAL INFORMATION

Honors and Awards

2019	Ph.D. Dissertation Defense – Passed with Distinction
2019	Best Graduate Student Oral Presentation – UNM Biology Research Day
2018	Best Graduate Student Oral Presentation – 11th International IsoEcol Conference
2017	Ph.D. Comprehensive Examination – Passed with Distinction
2017	M.S. Examination – Passed with Distinction
2017	Best Graduate Student Oral Presentation – UNM Biology Research Day
2016	Best Graduate Student Oral Presentation – UNM Biology Research Day

Professional Memberships

2022 – present	International Biogeography Society
2014 – present	American Society of Mammalogists
2019 – present	Conservation Paleobiology Network
2019 – 2021	American Geophysical Union

Professional Service

2015 – present	American Society of Mammalogists Marine Mammal Conservation Committee
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Diversity, Equity, and Inclusion Service

01/2021 – 09/2021	Unlearning Racism in Geoscience (URGE) – member of the UNM EPS Pod
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Peer Reviewer Service

I have reviewed manuscripts for the following journals: *Ecology Letters*, *Global Ecology and Biogeography*, *Food Webs*, *Hydrobiologia*, *Isotopes in Environmental & Health Studies*, *Journal of Mammalogy*, *Limnology and Oceanography*, *Marine Biology*, *Marine Ecological Progress Series*, *Marine Mammal Science*, *Oecologia*, *Polar Biology*, *Rapid Communications in Mass Spectrometry*