

Beth E. Gerstner

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EDUCATION

- 2017 – 2023 **Dual Ph.D. in Fisheries & Wildlife and Ecology, Evolution, & Behavior**
Michigan State University - East Lansing, MI
Advisor: Dr. Phoebe L. Zarnetske
Thesis: Towards improving biodiversity assessments for mammals and birds within the Neotropics
- 2016 **M.S. in Biology**
City College of New York, New York, NY
Advisor: Robert P. Anderson
Thesis: Revised distributional estimates for the recently discovered olinguito (*Bassaricyon neblina*), using museum and citizen science records
- 2012 **B.S. in Biology**
Stony Brook University, Long Island, NY

PROFESSIONAL APPOINTMENTS

- 2020 - 2022 **NASA Graduate Fellow (NASA FINESST)**
Michigan State University – East Lansing, MI
- 2019 - 2022 **MSU's Kellogg Biological Station Academic Programs Assistant**
Kellogg Biological Station, Michigan State University – Hickory Corners, MI

FELLOWSHIP AWARDS & GRANTS

2023	Michigan State University Enrichment Fellowship	\$30,000
2020 - 2022	Future Investigators in NASA Earth and Space Science and Technology	\$135,000
2019 - 2022	Kellogg Biological Station (KBS) Academic Programs Graduate Fellowships	\$37,500
2021	Ecology, Evolution, and Behavior Program Digital Fellow	\$3,000
2019	KBS Academic Programs Marketing and Social Media Graduate Fellowship	\$5,000
2019	MSU Joseph Lawrence Maison Conservation Award	\$2,000
2018	Kellogg Biological Station Academic Programs Graduate Fellowship	\$30,000
2018	MSU Graduate Student Research Enhancement Award	\$1,000
2017	Michigan State University Enrichment Fellowship	\$28,000

ACADEMIC AWARDS

- 2018 Honorable mention for prospective talk – MSU Fisheries & Wildlife Symposium
- 2016 CCNY Professor Martin Sacks/Sylvia F. Rubin Award
- Greatest proficiency in environmental research

RESEARCH EXPERIENCE

- 2017 - 2023 **Graduate Assistant**, Michigan State University, East Lansing, MI
- Improve conservation assessments by combining insights from community ecology, remote sensing, and species distribution modeling.
- 2017 – 2022 **Wallace Fellow**, American Museum of Natural History, New York, NY
- Beta test Wallace species distribution modeling software and conservation modules and help generate worked examples for grants and manuscripts (Merow et al. 2022; Galante et al. 2022; see Publications)
- 2016 – 2017 **Research Assistant**, City College of New York, New York, NY
- Perform a conservation assessment for a new species of mammal, *Bassaricyon neblina* (Olinguito), found in the Northern Andes, considering both deforestation and climate change.
 - Evaluating the effect of past climate change on the evolution and biogeography of shrews in montane humid forests from northern Mesoamerica (Guevara et al. 2018; see Publications)
- 2014 - 2016 **Graduate Assistant**, City College of New York, New York, NY
- Generating distributional estimates for a new species of mammal, *Bassaricyon neblina* (Olinguito), using both citizen science and museum records (Gerstner et al. 2018; see Publications).
- 2012 – 2014 **Mammalogy Research Volunteer**, American Museum of Natural History, New York, NY
- Took measurements of bat skulls and teeth for an analysis of their dietary origins (Yohe et al. 2015; see Publications).
- 2012 **Invertebrate Paleontology Intern**, American Museum of Natural History, New York, NY
- Participated in an NSF-funded project to upgrade the microfossil collections in the Invertebrate Paleontology Department.
- 2011- 2012 **Undergraduate Research Assistant**, Stony Brook University, Long Island, NY
- Assist in comprehensive analysis of dietary origins of Phyllostomid bats and respective rates of species divergence.

PUBLICATIONS

Peer Reviewed:

In Prep:

11. **Gerstner, B.E.**, Zarnetske, P.L.. Spatial alignment and mismatch of taxonomic and functional diversity of frugivorous species in the Tropical Andes. *For submission to Biological Conservation*.

Re-submitted:

10. **Gerstner, B.E.**, Zarnetske, P.L.. Can scale-dependent geodiversity improve species distribution models in a montane biodiversity hotspot? *Re-submitted to Philosophical Transactions A*.

Published:

9. **Gerstner, B.E.**, Bills, P. & Zarnetske, P.L. (2023) Frugivoria: A trait database for birds and mammals exhibiting frugivory across contiguous Neotropical moist forests. *Global Ecology and Biogeography*, 32, 1466–1484.
8. Galante, P.J., Chang Triguero, S., Paz, A., Aiello-Lammens, M., **Gerstner, B.E.**, Johnson B.A., et al. changeRanger: An R package for reproducible biodiversity change metrics from species distribution estimates. *Conservation Science and Practice* 5, e12863 (2023).
<https://doi.org/10.1111/csp2.12863>

7. Merow, C., Galante, P.J., Kass, J.M., Aiello-Lammens, M.E., Babich Morrow, C., **Gerstner, B.E.**, Grisales Betancur, V., Moore, A.C., Noguera-Urbano, E.A., Pinilla-Buitrago, G.E., Velásquez-Tibatá, J., Anderson, R.P. & Blair, M.E. (2022) Operationalizing expert knowledge in species' range estimates using diverse data types. *Frontiers of Biogeography*, **14**.
<https://doi.org/10.21425/F5FBG53589>
6. Charney, N.D., Record, S., **Gerstner, B.E.**, Merow, C., Zarnetske, P.L. & Enquist, B.J. (2021) A Test of Species Distribution Model Transferability Across Environmental and Geographic Space for 108 Western North American Tree Species. *Frontiers in Ecology and Evolution*, **9**.
<https://doi.org/10.3389/fevo.2021.689295>
5. Gavrutenko, M., **Gerstner, B.E.**, Kass, J.M., Goodman, S.M. & Anderson, R.P. (2021) Temporal matching of occurrence localities and forest cover data helps improve range estimates and predict climate change vulnerabilities. *Global Ecology and Conservation*, **27**, e01569.
<https://doi.org/10.1016/j.gecco.2021.e01569>
4. Record, S., Strecker, A., Tuanmu, M.-N., Beaudrot, L., Zarnetske, P., Belmaker, J. & **B.E. Gerstner** (2018) Does scale matter? A systematic review of incorporating biological realism when predicting changes in species distributions. *PLOS ONE*, **13**, e0194650.
<https://doi.org/10.1371/journal.pone.0194650>
3. Gerstner, B. E., Kass, J. M., Kays, R., Helgen, K. M. & Anderson, R. P. Revised distributional estimates for the recently discovered olinguito (*Bassaricyon neblina*), with comments on natural and taxonomic history. *Journal of Mammalogy* 99, 321–332 (2018).
<https://doi.org/10.1093/jmammal/gyy012>
2. Guevara, L., **Gerstner, B. E.**, Kass, J. M. & Anderson, R. P. Toward ecologically realistic predictions of species distributions: A cross-time example from tropical montane cloud forests. *Global Change Biology* 24, 1511–1522 (2018).
<https://doi-org.proxy2.cl.msu.edu/10.1111/gcb.13992>
* Credited by Global Change Biology as one of the top 25 most downloaded papers of 2018
1. Yohe, L.R. et al. Bayesian hierarchical models suggest oldest known plant-visiting bat was omnivorous. *Biology Letters* 11, (2015).
<https://doi.org/10.1098/rsbl.2015.0501>

Popular Science:

1. **Gerstner, B.E.** (2022, May 10). "Save the umbrella for a rainy day: an alternative way forward for conservation"
<https://www.canr.msu.edu/news/umbrella-alternative-conservation>

INVITED PRESENTATIONS

2022	Successful mentoring relationships. Kellogg Biological Station, Michigan State University, Hickory Corners, MI. Professional Development Seminar.
2022	Creating better biodiversity maps. NASA Topical Workshop: Broadening the use of NASA datasets by the Species Distribution Modeling community. University of Montana (virtual). B.E. Gerstner & M.E Blair.
2021	Species distribution modeling for conservation. New York University, Guest Lecturer for Environmental Studies Class (ENVST-UA 101).
2019	Successful mentoring relationships. Kellogg Biological Station, Michigan State University, Hickory Corners, MI. Professional Development Seminar.

- 2016 Museum and citizen science records change distributional estimates for the olinguito (*Bassaricyon neblina*). The City College of New York, City University of New York. April 5th, 2016, Guest Lecturer for Zoogeography Class (BIO V/79012).
- 2015 Ecological niche models in conservation biology. The City College of New York, City University of New York. Guest Lecturer for Biogeography Class (BIO 45800/A4580)
- 2015 Using forest cover data to make more realistic estimates of suitability for highland forest mammals. New York Regional Species Distribution Modeling Discussion Group, The American Museum of Natural History, New York, NY. Presented by B.E. Gerstner and M. Gavrutenko.

CONTRIBUTED PRESENTATIONS (AS PRESENTING AUTHOR)

- 2023 Can scale-dependent geodiversity improve species distribution models in a biodiversity hotspot? ESA annual meeting, Portland, Oregon.
- 2023 Can scale-dependent geodiversity improve species distribution models in a biodiversity hotspot? ASM annual meeting, Anchorage, Alaska.
- 2023 Can scale-dependent geodiversity improve species distribution models in a biodiversity hotspot? NASA CCE Joint Science Workshop, College Park, Maryland (Poster).
- 2022 Can scale-dependent geodiversity improve species distribution models in a biodiversity hotspot? North American Congress for Conservation Biology Meeting, Reno, Nevada.
- 2021 Frugivoria: an open trait database of birds and mammals exhibiting frugivory in montane Neotropics. Ecological Society of America Annual Meeting (virtual).
- 2021 Frugivoria: an open trait database of birds and mammals exhibiting frugivory in montane Neotropics. Ecology, Evolution and Behavior Program Symposium, Michigan State University, East Lansing, Michigan (virtual).
- 2019 A trait database of birds and mammals exhibiting frugivory in Central and South America. International Biogeography Society Meeting. Quito, Ecuador (Poster).
- 2018 Species distribution modeling for data poor species in Northern Andean Cloud forests. Fisheries and Wildlife Symposium, Michigan State University, East Lansing, Michigan.
- 2017 Conservation assessment for an endemic Malagasy rodent (*Gymnuromys roberti*) and recommendation of new niche modeling software to facilitate such studies. International Biogeography Society Conference, Tucson, Arizona (Poster).
- 2016 Museum and citizen science records change distributional estimates for the olinguito. Student Conference on Conservation Science, American Museum of Natural History, Center for Biodiversity and Conservation, New York, New York.
- 2016 Revised distributional estimates for the recently discovered olinguito (*Bassaricyon neblina*), using museum and citizen science records. Department of Biology, The City College of New York, City University of New York (Master's Defense).
- 2016 Museum and citizen science records change distributional estimates for the olinguito (*Bassaricyon neblina*). 96th Annual Meeting, American Society of Mammalogists, University of Minnesota, Minneapolis, Minnesota.
- 2015 Distributional estimates for *Bassaricyon neblina* (Olinguito) in the Northern Andes. Student Conference on Conservation Science, American Museum of Natural History, Center for Biodiversity and Conservation, New York, New York.

- 2015 Distributional estimates for a new mammal species, the Olinguito (*Bassaricyon neblina*), using new localities, ecological niche models and forest cover data. 100th Annual Meeting, Ecological Society of America, Baltimore, Maryland.

CONTRIBUTED PRESENTATIONS (MENTEE AS PRESENTING AUTHOR)

- 2021 Using species' traits to improve extinction risk assessments. Student Conference on Conservation Science- New York. Virtual Conference. Presented by M. Bhatt, E. Ralston.
- 2021 Using species' traits to improve extinction risk assessments. University Undergraduate Research and Arts Forum. Michigan State University, East Lansing, Michigan. Presented by M. Bhatt & E. Ralston.
- 2018 Can we identify regions that maximize species conservation by aligning charismatic species' habitat with biodiversity hotspots? SROP Presentation. Mid-Michigan Symposium for Undergraduate Research. Presented by K. Hernandez.
- 2015 Conservation assessment for an endemic Malagasy rodent, *Gymnuromys roberti* (Family Nesomyidae), using ecological niche models and forest cover data. CCNY Biology Department Honors Research Presentations, March 26, 2015. New York, New York. M. Gavrutenko, B.E. Gerstner, S.M. Goodman, and R.P. Anderson. Presented by Maria Gavrutenko.
- 2015 Conservation assessment for an endemic Malagasy rodent, *Gymnuromys roberti* (Family Nesomyidae), using ecological niche models and forest cover data. 100th Annual Meeting, Ecological Society of America, Baltimore, Maryland. Presented by Maria Gavrutenko.
- 2014 Preliminary conservation assessment for an endemic Malagasy rodent *Gymnuromys roberti* using ecological niche models and forest cover data. City College Academy for Professional Preparation 2014 Annual Poster Presentation, New York, NY. Presented by Maria Gavrutenko.

TEACHING EXPERIENCE

Workshops:

- 2022 **Lead Instructor** – Interactive, Reproducible, and Accessible Species Distribution Modeling for Conservation with Wallace. North American Congress for Conservation Biology, Reno, Nevada
- 2021 **Lead Instructor** – Species Distribution Modeling for Conservation in R & Wallace: A Wallace workshop. Student Conference on Conservation Science, American Museum of Natural History, NY, New York.
- 2020 **Co-Instructor** – Species distribution modeling for conservation with Wallace. Association for Tropical Biodiversity Conservation Workshop, Cartagena, Colombia (Virtual).

Formal Teaching:

- 2018 **Teaching Assistant** – Organismal Biology Lab, Michigan State University, East Lansing, MI
- 2017 **Teaching Assistant** – Ecology Lecture, Kellogg Biological Station, Michigan State University, Hickory Corners, MI
- 2014 – 2017 **Adjunct Lecturer** – Organismal Biology Lab (4 semesters), City College of New York, NY, NY
- 2014 **Instructor** – CTY Poison Workshop, American Museum of Natural History, NY, NY

2012 **Teaching Assistant** – Chordate Zoology Lab, Stony Brook University, Long Island, NY
2010 **Teaching Assistant** – Introductory Biology 1 & 2 (2 semesters), University of the Sciences
 in Philadelphia, Philadelphia, PA

STUDENTS MENTORED

* Presented at scientific meetings and or/published collaborative research (see Presentations and Publications)

2021 - 2022 Aaron Guggenheimer, Michigan State University
2021 - 2022 Ashley Ezzo, Michigan State University
2020 - 2022 Kate Kelly, Michigan State University
2020 - 2022 Olivia Melville, Michigan State University
2020 - 2021 Chakata Hart, Michigan State University
2020 - 2022 Taylor Stehouwer, Michigan State University
2020 - 2021 Nellie Chalem, Michigan State University
2020 Caroline Blommel, Michigan State University
2020 Alison McCormick, Michigan State University
2019 Arpita Nyak, Michigan State University
2019 - 2021 Erik Ralston, Michigan State University*
2019 - 2021 Minali Bhatt, Michigan State University*
2019 - 2021 Hazel Anderson, Michigan State University*
2019 Emma Mushaka, Michigan State University
2018 Cameo Chilcutt, Michigan State University*
2018 Krymsen Hernandez, Michigan State University*
2014 - 2016 Maria Gavrutenko, City College of New York*

ADMINISTRATIVE EXPERIENCE

2018 – 2022 **Academic Programs Fellow**, Kellogg Biological Station, Michigan State University, Hickory
 Corners, MI
 ▪ Assist with all aspects of Academic Programming at KBS (e.g., running
 summer REU Program, professional development, marketing, enrollment,
 reporting).
2021 – 2022 **EEB Digital Fellow**, Michigan State University, East Lansing, MI
 ▪ Manage and create content for all social media content for the Ecology,
 Evolution, and Behavior Program

SERVICE AND ACTIVITIES

2018 – 2021 **Treasurer & Founding Member**, Women in Nature Network: MSU Chapter, Michigan
 State University, East Lansing, MI
 ▪ Attended International Women in Nature Network event in Georgetown,
 Guyana (August 6th-9th, 2018)
2019 **Director of Programs**, Fisheries & Wildlife Graduate Student Symposium, Michigan State
 University, East Lansing, MI
2018 – 2019 **Council of Graduate Students (COGS) Representative**, Fisheries and Wildlife
 Department, Michigan State University, East Lansing, MI
2014 – 2017 **Director of Mentoring**, Biology Department, City College of New York, New York, NY

- Pair students and faculty at all levels of higher education for our mentoring program to help foster relationships between women in science and help support those struggling with issues particular to women scientists.

OUTREACH

- 2018– 2019 **User Consultant**, Consultation Workshop: Expanding Wallace biodiversity modeling software to support Colombia BON assessment and reporting, Alexander von Humboldt Institute, Bogotá, Colombia
- Brainstorm with stakeholders, conservation professionals, and academics about the applications of Wallace to conservation management
- 2014 – 2016 **Taxon Leader** (insects), Macauley Honors BioBlitz, City College of New York, New York, NY
- Guide students through insect sampling techniques, lead group expeditions, and manage those specimens collected at the New York Botanical Garden (2014), Freshkills Park (2015), Brooklyn Bridge Park (2016).
- 2015 **Question Presenter**, GBIF Symposium and Panel Discussion: Frontiers of biodiversity informatics and modeling species distributions, Center for Biodiversity and Conservation, American Museum of Natural History, New York, NY.
- 2013 – 2014 **Poison Lab Presenter**, The Power of Poison Exhibit, American Museum of Natural History, New York, NY
- Engaged museum visitors in a 15-minute interactive presentation on the history of toxicology and tailor presentations to the audience.
- 2012 – 2013 **Sackler Human Evolution Lab Volunteer**, American Museum of Natural History, New York, NY.
- Educated museum visitors, child and adult, in the different aspects of human evolution.
- 2012 **MEEP Intern**, American Museum of Natural History, New York, NY.
- Developed a comprehensive tour of the museum based on animal adaptations to be administered to multi-age camp groups, throughout the summer.

TECHNICAL SKILLS

- *Programs*: R, proficient in ArcGIS, Git and GitHub, Microsoft Office Suite
 - Species distribution modeling & spatial analyses
 - External partner and beta-tester for Wallace Software and related packages (Galante et al. 2023; Merow et al. 2022; <https://wallaceecomod.github.io/>)
 - Wrangling 'Big Data'
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