

# Beth E. Gerstner, M.S.

## *Curriculum vitae*

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### **Department of Fisheries and Wildlife**

Michigan State University  
Natural Resources Building  
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**CAREER OBJECTIVES:** Research and education in ecology and conservation science, especially regarding the impacts of global change. I aim to apply the knowledge gained through my studies and professional experience to help protect biodiversity.

### **EDUCATION:**

Michigan State University, East Lansing, MI

Cumulative GPA: 4.0

Advisor: Phoebe Zarnetske

Thesis: Species distribution modeling for data poor species: using geodiversity data, functional roles, and biodiversity hotspots to improve conservation assessments

**Ph.D. Fisheries & Wildlife**

Anticipated graduation: 2022

City College of New York: New York, NY

Cumulative GPA: 3.86

Advisor: Robert P. Anderson

Thesis: Revised distributional estimates for the recently discovered olinguito (*Bassaricyon neblina*), using museum and citizen science records

**M.S. in Biology**

Graduation: September 2016

Stony Brook University: Stony Brook, NY

Cumulative GPA: 3.38

**B.S. in Biology**

Graduation: May 2012

### **FELLOWSHIPS:**

MSU Cloud Computing Fellowship – small stipend

Future Investigators in NASA Earth and Space Science and Technology (FINESST) – 3 years funding; \$125,000

Kellogg Biological Station Academic Programs Graduate Fellowship 2019 – 1 year funding; \$30,000

MSU Enrichment Fellowship – 2 years funding; \$56,000

### **AWARDS & GRANTS**

MSU Joseph Lawrence Maison Conservation Award (April 2019) - \$2,000 in support of conservation research

MSU Graduate Student Research Enhancement Award (April 2018) – \$1,000 to attend Wallace Biodiversity Software Consultation Workshop in Bogotá, Colombia

MSU Fisheries and Wildlife Symposium (Feb 2018) – honorable mention for prospective talk

CCNY Professor Martin Sacks/Sylvia F. Rubin Award (May 2016) – greatest proficiency in environmental research

CCNY Women in Science Grant (March 2016) – to attend Student Conference on Conservation Sciences at the American Museum of Natural History

## **RESEARCH EXPERIENCE:**

### Michigan State University, East Lansing, MI

*Graduate Assistant: Dr. Phoebe Zarnetske* (May 2017 - Present)

- Conducting research that aims to understand the effects of global change on biodiversity by combining insights from citizen science, remote sensing, and species distribution modeling.
  - Mentee – Arpita Nyak (Fall 2019 – Present)
  - Mentee – Erika Ralston (Fall 2019 – Present)
  - Mentee – Minali Bhatt (Fall 2019 – Present)
  - Mentee – Hazel Anderson (Fall 2019 – Present)
  - Mentee – Emma Mushaka (Spring 2019 – Present)
  - Mentee – Krymsen Hernandez (Summer 2018)

### The City College of New York, New York, NY

*Research Projects, Supervisor: Dr. Robert P. Anderson* (September 2016 – May 2017)

- Performing a conservation assessment for a new species of mammal, *Bassaricyon neblina* (Olinguito), found in the Northern Andes, taking into account both deforestation and climate change.
- Assisting on two projects led by post-doc Lázaro Guevara:
  - Testing niche conservatism in small-eared shrews (Mammalia, genus *Cryptotis*) in the Mesoamerican highlands.
  - Evaluating the effect of the past climate change on the evolution and biogeography of shrews in montane humid forests from northern Mesoamerica. (Guevara et al. 2017, *Global Change Biology*; see **Publications**)

### The City College of New York, New York, NY

*Master's Researcher, Advisor: Dr. Robert P. Anderson* (February 2014-August 2016)

- Generating distributional estimates a new species of mammal, *Bassaricyon neblina* (Olinguito), using both citizen science and museum data.
- Visiting relevant museums to collect verbatim locality information for *Bassaricyon neblina* specimens.
- Close mentoring of undergraduate student on her own research project.
  - Mentee - Maria Gavrutenko (graduated 2015)
- Leading and organizing weekly lab meetings (four consecutive semesters).
- Building and designing lab website on Wix (andersonlab.ccny.cuny.edu).

American Museum of Natural History, New York, NY

*Mammalogy Research Volunteer, Supervisor: Dr. Paúl Velazco* (September 2012-November 2012, September 2013-January 2014)

- Handled and photographed phyllostomid bat skull specimens and uploaded them onto an online database.
- Depicted morphological characteristics of teeth and mapped these onto their corresponding images on the online database.
- Took measurements of bat skulls and teeth for an analysis of their dietary origins (Yohe et al. 2015, *Biology Letters*; see **Publications**).
- Sorted and identified bat fossils from Oleg's Bat Cave of the Dominican Republic.

Stony Brook University, Stony Brook, NY

*Research Assistant: Phyllostomid Bat Project, Supervisor: Dr. Liliana Dávalos* (September 2011-May 2012)

- Used the statistical program 'R' to evaluate 1000 phyllostomid bat phylogenies and prepare each tree for a comprehensive analysis of the bat's dietary origins and respective rates of species divergence.

### **PEER-REVIEWED PUBLICATIONS:**

*In preparation:*

Gavrutenko, M., **Gerstner, B.E.**, Goodman, S.M., Jansa, S.A., Anderon, R.P., Conservation assessment for an endemic malagasy rodent, *Gymnuromys roberti* (Rodentia: Nesomyidae), using ecological niche models and forest cover data. For submission to *Conservation Biology*.

*Published:*

Record, S. et al. Does scale matter? A systematic review of incorporating biological realism when predicting changes in species distributions. *PLOS ONE* 13, e0194650 (2018).  
<https://doi.org/10.1371/journal.pone.0194650>

**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. *J Mammal* 99, 321–332 (2018).  
<https://doi.org/10.1093/jmammal/gyy012>

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

Yohe, L. R. et al. Bayesian hierarchical models suggest oldest known plant-visiting bat was omnivorous. *Biol. Lett.* 11, (2015).  
<https://doi.org/10.1098/rsbl.2015.0501>

## **ORAL PRESENTATIONS:**

### **Scientific Meetings:**

Species distribution modeling for data poor species in Northern Andean Cloud forests. Fisheries and Wildlife Symposium, 16 February 2018, Michigan State University, East Lansing, Michigan. **B.E. Gerstner.**

Museum and citizen science records change distributional estimates for the olinguito. Student Conference on Conservation Science, 20-22 October 2016, American Museum of Natural History, Center for Biodiversity and Conservation, New York, New York. **B.E. Gerstner,** J.M. Kass, K.M. Helgen, R.W. Kays, R.P. Anderson.

Museum and citizen science records change distributional estimates for the olinguito (*Bassaricyon neblina*). 96<sup>th</sup> Annual Meeting, American Society of Mammalogists, 24-28 June 2016, University of Minnesota, Minneapolis, Minnesota. **B.E. Gerstner,** K.M. Helgen, R.W. Kays, J.M. Kass, R.P. Anderson.

Distributional estimates for *Bassaricyon neblina* (Olinguito) in the Northern Andes. Student Conference on Conservation Science, 7-9 October 2015, American Museum of Natural History, Center for Biodiversity and Conservation, New York, New York. **B.E. Gerstner,** M. Gavrutenko, K.M. Helgen, R.W. Kays, R.P. Anderson.

Using niche models, forest-cover data, and future climatic forecasts in conservation assessments: an example for an endemic Malagasy rodent (*Gymnuromys roberti*). M. Gavrutenko, **B. E. Gerstner,** S. M. Goodman, and R. P. Anderson. Natural History of Madagascar Symposium, September 20<sup>th</sup> 2015, Bruce Museum, Greenwich, Connecticut. Presented by R. P. Anderson

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, 9–14 August 2015, Baltimore, Maryland. **B.E. Gerstner,** M. Gavrutenko, K.M. Helgen, R.W. Kays, R.P. Anderson.

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, 9–14 August 2015, Baltimore, Maryland. M. Gavrutenko, **B.E. Gerstner,** S.M Goodman, R.P. Anderson. Presented by Maria Gavrutenko.

### **Other:**

Successful mentoring relationships. Kellogg Biological Station, Michigan State University, Hickory Corners, MI. Professional Development Seminar. June 12<sup>th</sup>, 2019. **B.E. Gerstner.**

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, July 25<sup>th</sup> 2016. **B.E. Gerstner** (Master's Defense)

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 5<sup>th</sup>, 2016. **B.E. Gerstner**, Guest Lecturer for Zoogeography Class (BIO V/79012).

Ecological niche models in conservation biology. The City College of New York, City University of New York. October 27<sup>th</sup>, 2015. **B.E. Gerstner**, Guest Lecturer for Biogeography Class (BIO 45800/A4580)

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, NY, NY, September 18<sup>th</sup> 2015. **B.E. Gerstner**, M. Gavrutenko, S.M. Goodman, K.M. Helgen, R.W. Kays, R.P. Anderson. Presented by B.E. Gerstner and M. Gavrutenko.

#### **POSTER PRESENTATIONS:**

A trait database of birds and mammals exhibiting frugivory in Central and South America. August 2019. International Biogeography Society Meeting. Quito, Ecuador. **B.E. Gerstner**, P.L. Zarnetske.

Disturbance effects on species richness within and across co-located NEON-LTER sites: A Cross-site REU-Project. 1<sup>st</sup>-3<sup>rd</sup> October, 2018. C. Chilcutt, K. Hoerr, H. Wei, **B.E. Gerstner**, P.L. Zarnetske, S. Record, B. Baiser. LTER All Scientists Meeting.

Can we identify regions that maximize species conservation by aligning charismatic species' habitat with biodiversity hotspots? SROP Presentation. Mid-Michigan Symposium for Undergraduate Research. 24 July, 2018. K. Hernandez, **B.E. Gerstner**, P.L. Zarnetske.

Conservation assessment for an endemic Malagasy rodent (*Gymnuromys roberti*) and recommendation of new niche modeling software to facilitate such studies. International Biogeography Society Conference, 9-13 January 2017, Tucson, Arizona. **B.E. Gerstner**, M. Gavrutenko, J.M. Kass, S.M. Goodman, R.P. Anderson.

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.

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, November 20<sup>th</sup> 2014, New York, NY. M. Gavrutenko, **B.E. Gerstner**, and R.P. Anderson. Presented by Maria Gavrutenko.

## **TEACHING EXPERIENCE:**

### Michigan State University, East Lansing, MI

*Graduate Teaching Assistant, Organismal Biology Lab* (August 2018-December 2018)

- Led students through the lab material, explaining core concepts in genetics and hypothesis testing.
- Trained students in how to use relevant equipment (i.e. microscopes, probes, etc.).
- Instructed students on the best practices in science writing.
- Graded exams and lab reports.
- Designed semester field project leading students through a biodiversity analysis of leaf litter insects on campus.

### Kellogg Biological Station, Michigan State University, Kalamazoo, MI

*Teaching Assistant, Ecology Lecture* (May 2017-August 2017)

- Assisted facilitation of each class activity, helping to explain core concepts in ecology.
- Graded quizzes and in class activities.
- Co-led field trips to Warren Dunes, the Kalamazoo Nature Center, and the Kellogg Bird Sanctuary.
- Prepared and presented lecture on species distribution modeling for conservation.

### The City College of New York, New York, NY

*Adjunct Lecturer, Foundations of Biology II Lab* (February 2014-May 2014, February 2015-May 2015, February 2016- May 2016, February 2017-May 2017)

- Guided students through each lab, explaining core concepts fundamental to biology.
- Instructed students in how to use relevant equipment (i.e. microscopes, probes, etc.).
- Coached students on the best practices in writing for science.
- Prepared and graded quizzes, exams and lab reports.

### The City College of New York, New York, NY

*Adjunct Lecturer, Organismal Biology Lab* (June 2014-July 2014, August 2014-December 2014, June 2015-August 2015, August 2015-December 2015, June 2016-August 2016, August 2016-Present)

- Facilitated each lab, explaining physiological adaptations that terrestrial, aquatic and marine organisms have to their different environments.
- Instructed students in how to use relevant equipment (i.e. transducers, interfaces, etc.).
- Coached students on the best practices in writing for science.
- Prepared and graded exams and quizzes and graded tutorials and lab reports.

Smarten Up Learning, New York, NY

*Tutor* (January 2015-October 2015)

- Instruct non-traditional learners in techniques to develop better organizational and executive functioning skills.
- Generate weekly lesson plans.
- Track long-term progress, strengths and weaknesses through weekly session reports.
- Act as liaison for parents, teachers, and students.

American Museum of Natural History, New York, NY

*Instructor, CTY Poison Workshop*, (March 8<sup>th</sup>, 2014)

- Guided students (ages 8-12) and parents participating in the Johns Hopkins Center for Talented Youth program, through a famous case of cyanide poisoning in an hour-long workshop.
- Facilitated a mock experiment known as the ‘Prussian Blue’ test to test for cyanide.
- Answered targeted questions on the mechanisms of poisoning from both students and parents.

Stony Brook University, Stony Brook, NY

*Chordate Zoology Lab Teaching Assistant*, (January 2012-May 2012)

- Aided the instructors in labs and prepared specimens.
- Guided students through the lab and assisted with mink dissections.

University of the Sciences in Philadelphia, Philadelphia, PA

*Introductory Biology Lab 1 & 2 Teaching Assistant*, (September 2009-May 2010)

- Prepared experiments before each lab.
- Aided the instructors in labs and answered questions from students, guiding students through each lab. Assisted in grading of term project.

**OTHER PROFESSIONAL EXPERIENCE:**

Kellogg Biological Station, Michigan State University, East Lansing, MI

*Academic Programs Fellow, Supervisor: Dr. Danielle Zoellner*

- Assist with all aspects of Academic Programming at KBS
- Field issues related to enrollment for summer programs
- Oversee summer resident mentors
- Plan and facilitate all Professional Development seminars for summer program students (Undergraduate Research Assistants, REUs, and summer interns).
  - Included over 10 seminars and two special events: 1) a career panel with professionals in ecological fields, 2) field trip to Bell Isle Aquarium and MSU’s Tolgate Farm.

The City College of New York, New York, NY

*Laboratory Technician, Supervisor: Ana Carnaval* (August 2015-May 2017)

- Provide help with databasing, web-site maintenance and network assistance for the lab
- Aid in specimen curation and the ordering of materials.

American Museum of Natural History, New York, NY

*Poison Lab Presenter, The Power of Poison Exhibit* (October 2013-June 2014)

- Engaged museum visitors in a 15-minute interactive presentation on the history of toxicology, 20 hrs a week.
- Demystified questions on the history of poisons, as well as their effects on human biology.
- Presentations were given every half hour and each was tailored to the specific audience.

American Museum of Natural History, New York, NY

*Invertebrate Paleontology Intern*, (June 2013-August 2013)

- Participated in an NSF-funded project to upgrade the microfossil collections in the Invertebrate Paleontology Department.
- Rehoused, conserved, databased (using Panorama) and in some cases identified microfossils from the classes Foraminifera and Ostrocods.
- Used microscope camera to photograph holotype specimens and edit the images in Photoshop.

American Museum of Natural History, New York, NY

*Sackler Human Evolution Lab Volunteer*, (August 2012-Feb 2013)

- Maintained the Sackler lab classroom and prepared tables for the day's activities.
- Educated museum visitors, child and adult, in the different aspects of human evolution.

American Museum of Natural History, New York, NY

*MEEP Intern: Department of Youth Initiatives*, (June 2012-August 2012)

- Developed a comprehensive tour of the museum based on animal adaptations to be administered to camp groups, 20 hrs a week, throughout the summer.
- Facilitated hands-on learning while working on education carts within each of the different museum halls.
- Practiced inquiry-based education while giving tours and working on carts.

**SERVICES AND ACTIVITIES**

*Memberships in Professional Societies*

American Society of Mammalogists

International Biogeography Society

*Leadership*

Fisheries and Wildlife's Graduate Student Organization, Michigan State University

- 2019 GSO Symposium: Director of Programs
- FW Council of Graduate Students (COGS) representative (August 2018- Present)

Consultation Workshop: Expanding Wallace biodiversity modeling software to support Colombia BON assessment and reporting, Alexander von Humboldt Institute, Bogotá, Colombia (April 18-21<sup>st</sup>, 2018 & June 12<sup>th</sup>-16<sup>th</sup>, 2019).

- User-consultant



- Brainstorm with conservation professionals and academics about the applications of Wallace to conservation management

Women in Nature Network, Michigan State University (December 2018-Present)

- Treasurer & founding member
  - Establish club's mission
  - Handle club finances
  - Assist in planning of club events
- Attended International Women in Nature Network event in Georgetown, Guyana (August 6<sup>th</sup>-9<sup>th</sup>, 2018)

Graduate Panel, Graduate Student Open House, City College of New York (October 20<sup>th</sup>, 2016)

- Division of Sciences Panelist
  - Chosen as the graduate student to represent the Division of Sciences for the Graduate Student Panel at the admissions open house.
  - One student was chosen from each of the 8 divisions of study within City College's Graduate Program.
  - Discuss experience as a Master's student within the sciences with a large audience of potential graduate students to inspire their application.

City College of New York's Women in Science (WinS) Group (August 2014-May 2017)

- Executive Board Member: Director of Mentoring
  - Implement yearly mentoring workshops.
  - 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.
  - Mentoring female undergraduate students in support of their future scientific careers.
  - Assist in planning and implementing of WinS events.
  - Liaison to AMNH Women in Science group.

Macaulay Honors BioBlitz (August 2014, August 2015, September 2016)

- Taxon Leader (Insects)
  - 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).
  - Part of a larger sampling effort with the goal of assessing the biodiversity of NYC parks.

GBIF Symposium and Panel Discussion, Center for Biodiversity and Conservation,  
AMNH

- Question Presenter
  - Worked on a team of two other ecologists to choose, field and present questions to panelists on GBIF data (from people tuning in via the web) for the GBIF Symposium at the American Museum of Natural History.
- “Symposium and Panel Discussion: Frontiers of biodiversity informatics and modeling species distributions” (M. E. Blair, R. P. Anderson, and D. Schigel, organizers). Global Biodiversity Information Facility and American Museum of Natural History, November 4<sup>th</sup> 2015, New York, New York.

### **PROFESSIONAL SKILLS**

- *Computer software: ArcGIS Suite, R, Microsoft Office Suite*
- *Website design and maintenance.*
- *Biodiversity sampling (invertebrates).*
- *Experience using museum collections, databases, and archives.*
- *Experience handling and measuring fragile museum specimens.*