

American Museum  
of Natural History

# Center for Biodiversity and Conservation

Celebrating  
15 years of  
SCCS-NY!



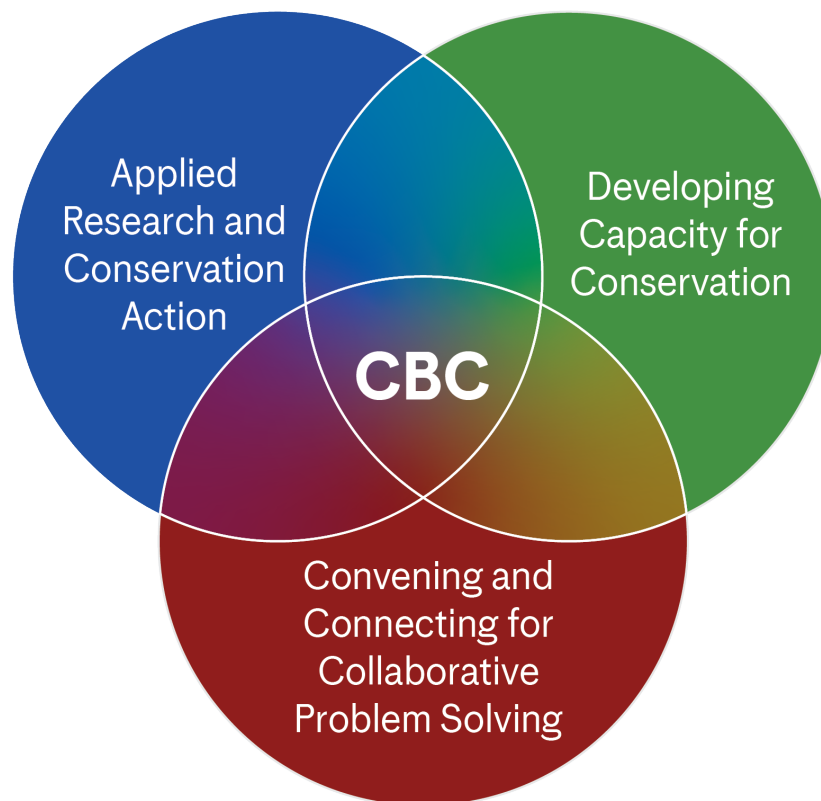
Photo: D. Kim/AMNH

## Progress Update Fall 2024

## Center for Biodiversity and Conservation

### What we do

Sustaining life on Earth is the fundamental challenge of our time. The CBC is responding to this challenge by bringing strong evidence—from multiple sources of knowledge and perspectives—to bear on complex conservation challenges, and catalyzing collaboration on robust, innovative, and equitable solutions. The challenge is both scientific and social, so we work by **connecting different strands of knowledge in our research**, **connecting people to knowledge**, and **connecting people to each other**.



Both longstanding and new projects are helping us deepen synergies with other scientific work at the Museum, support decision-making under climate change, and contribute to local and regional conservation and climate resilience. We are pleased to share recent highlights from our work.

# News, Awards, and Appointments

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**We are delighted to share that CBC will be receiving new funding from NASA** to co-develop, along with Arctic Indigenous reindeer herders, approaches to better understand and monitor the links between reindeer, people, and climate change. Reindeer herding has a large ecological footprint and is both affected by and affects climate change impacts in the region as well as green infrastructure and related changes in land use. The project was co-developed and will be co-led by Director of Biodiversity Informatics, Dr. Mary Blair, and local colleagues, who will leverage NASA remote sensing data, CBC software development expertise, and Indigenous knowledge to strengthen community capacity for reindeer pasture monitoring and resilience in the face of global change. This important work is also a part of NASA's new Earth Action program "[Climate Resilient Communities](#)", just launched in 2024.

**We are part of a new Museum-wide Climate Impact Initiative aimed at driving action, education, research, and outreach, with initial funding from the National Oceanic & Atmospheric Administration (NOAA).** Dr. Ana Porzecanski, CBC Director, is leading one of three tracks within this initiative, focused on co-developing, with local partners, research relevant to the impacts of climate change and biodiversity loss in New York City.

**We welcomed three new staff members this past season.**

Dr. Adam Jadhav, Rizavi Innovation in Conservation Fellow, will blend environmental history and genomics to investigate critically important fish species whose histories and ecology are intertwined with the forces of the Anthropocene, such as colonization, harvesting, marine pollution, and climate change.

Dr. Ann Marie Gawel, Eleanor J. Sterling Fellow, will build on previous socio-ecological research on endangered snails, and refine ethnobotanical methods to integrate the biocultural value of plants into conservation planning in Micronesia.

Riley Trist, our new Outreach and Production Coordinator, will help the CBC further advance internal and external communications, and help us promote our research and capacity development work, such as the Student Conference on Conservation Science, as well as our outreach and public engagement events.

The Museum looks forward to welcoming Dr. Jesse Barber as Curator and Jaffe Chief Conservation Scientist in January 2025.

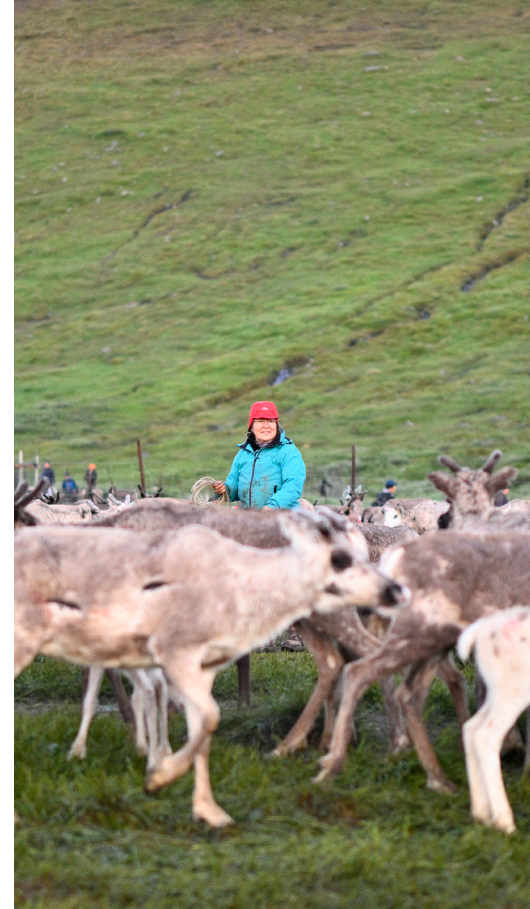


Photo: H. Thach

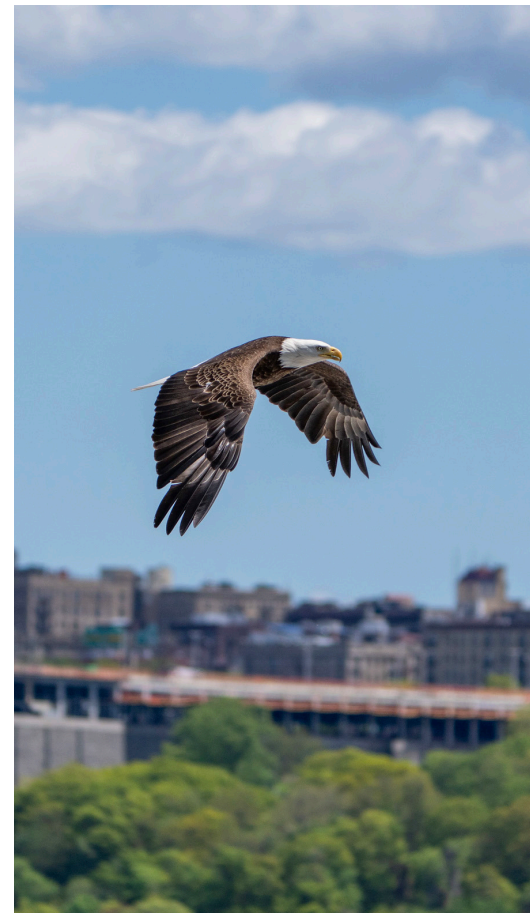


Photo: R. Madonna

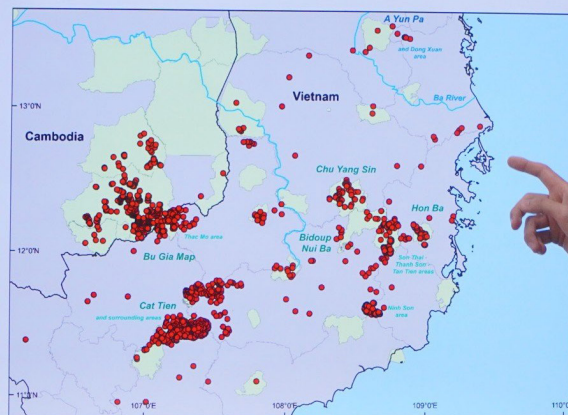
## The CBC has published several new studies this past season.

Dr. Blair and colleagues from the Colombia Biodiversity Observation Network published a paper in the journal *BioScience* just this month (October 2024), showing what can be accomplished when end-users are involved in software development from day one. The authors highlight how NASA-funded projects were able to support intensive collaboration between end-users, scientists, and developers in a way that led to innovative tools to drive critical decision-making for biodiversity. The paper details an example collaboration with the Biodiversity Observation Network of Colombia, modifying common paradigms of software production, including co-design and agile development, to facilitate collaboration through all stages (including conceptualization, development, testing, and feedback) to ensure the accessibility and applicability of new tools that leverage Earth Observations to inform decision-making for biodiversity conservation. Importantly, the methods outlined in this paper combined with feedback Dr. Blair and colleagues have been providing to NASA for years culminated in a restructuring of the NASA Biodiversity and Ecological Conservation funding program this year to involve a greater focus on co-design of research with end-users and practitioners.

Research on primate conservation, led by Dr. Blair and collaborators, continues in Vietnam. The project, supported by the Arcus Foundation, convened experts and practitioners in June 2024, at Da Nang University in Da Nang City, Vietnam, and was held in partnership with Da Nang University, Hanoi University of Science, and GreenViet. Participants reviewed distribution data for six species of endangered gibbons native to Vietnam and their use as input for modeling their distributions under climate change scenarios. The workshop also engaged relevant stakeholders to communicate recommendations to national and regional conservation and land-use planning agency staff based on climate change projection results. Additional field work is being led in Huong Khe - Giang Man near the border between Laos and Vietnam later this year, where there is a gap of data based on the consultation with different stakeholders.

### 1. THE SOUTHERN YELLOW-CHEEKED GIBBON *NOMASCUS GABRIELLAE*

- In Vietnam, two largest populations of *N. gabriellae* are found in Bu Gia Map and Cat Tien (Long et al. 2019; Nuttall et al. 2021).
- Significant gibbons groups also inhabit the region of Chu Yang Sin – Bidoup Nui Ba – Phuoc Binh (Thinh et al. 2016; Vinh et al. 2018; Nuttall et al. 2021).
- While Nam Nung, Ta Dung, and Hon Ba are quite isolated from other habitats, they still play an important role for the Southern yellow-cheeked gibbon (Duc et al. 2010; Hoang et al. 2016; Vinh et al. 2018).



Closer to home, this September Dr. Suzanne Macey and colleagues published the results of a four-year study on the nesting ecology of federally threatened bog turtles (*Glyptemys muhlenbergii*). Focusing on local populations in New York State, this work provides valuable natural history data on the smallest and one of the most endangered freshwater turtles in the U.S. and shows that predator-excluder cages can reduce predation but do not necessarily improve hatching success on their own, providing valuable guidance for managers of the species. Dr. Macey's coauthors on this publication included colleagues from academia, nonprofit conservation organizations, wildlife managers/consultants, and two former students from the Museum's Science Research Mentorship Program. The article will be included in a special issue on the biology and conservation of Emydine turtles in *Northeastern Naturalist*.



## The CBC has launched a new research collaboration based in New York City.

The CBC, along with local partners, including New York City Parks, New York State Sea Grant, United States Forest Service, and Princeton University, among others, will begin a study to understand harvest and use of aquatic wildlife in New York City (NYC). Throughout NYC waterways, fishing for fish, turtles, crustaceans, and mollusks is thought to be increasing, with potential risks to the health and well-being of people and wildlife. A more robust understanding of harvesting activities will advance understanding of how risks associated with these uses may change as the climate changes and NYC demographics evolve, and can inform restoration strategies, which are important, in turn, to mitigate climate change impacts. The CBC and partners recently submitted a proposal to the Hudson River Foundation to support this work. The research will be focused on understanding local residents' relationships with these ecosystems with a focus on the intersecting issues of food security, environmental health, social inequality, and sustainable harvests.



Photo: R. Madonna

## We continue to see important impact and uptake of our previous work

Our research and expertise are being applied to the conservation work of Bahamas National Trust, an organization that manages all of the protected areas in that country. Dr. Porzecanski, along with CBC Senior Software Programmer Peter Ersts, and Biodiversity Specialist Amanda Sigouin, have been invited to join a team that is guiding the design and implementation of a system-wide National Parks Monitoring and Reporting System. The CBC is contributing expertise in systems design, data management and biocultural indicators built through our work in Colombia, Vietnam, and the Pacific.

The multidisciplinary systems research framework to study wildlife trade (published in *BioScience* 2017) was used to inform a study about [orchid trade](#) in Vietnam and continues to influence studies in the region.

## The CBC's software tools are used daily to support the analysis of biodiversity data and have been cited in thousands of peer-reviewed articles as well as government reports.

Maxent, the CBC-hosted software for modeling species niches and distributions that is used worldwide, has been cited more than 22,500 times. Since Spring 2024, Maxent has supported numerous conservation studies, including a study in PNAS of how ectomycorrhizal fungi contribute to a [lag in North American tree range shifts](#) in response to climate change, a study forecasting [future fire patterns under climate change](#), and a study modeling rare plant habitat with public land managers in an iterative, coproduced process to inform [decision-making on multiple-use public lands](#). Maxent has also been used recently for studies of human-nature relationships including agricultural studies of the [future of wheat](#) under climate change.



Photo: A. Atanasov

The CBC's species distribution modeling software tool, Wallace, focuses on communicating best practices in modeling to practitioners, and has also been used recently in high-profile studies for conservation. For example, Wallace was used in a study of the distribution of the [Curaçaoan Long-nosed Bat](#), *Leptonycteris curasoae*, and implications for its conservation. Further, the nimble and modular architecture of Wallace has been used to develop and inspire new open source software relevant to biodiversity studies and monitoring such as an [application](#) for the analysis of vegetation survey data, and by researchers at the Indian Space Research Organization to build a [new web-based tool for national biodiversity monitoring](#).

# Capacity Development

## The CBC is creating resources and spaces to train and empower conservationists everywhere.

In everything we do, we continue to prioritize open education and resources and the creation of inclusive environments so citizens, students, and all professionals can pursue their careers and contribute solutions.

The CBC's annual conference for students and early-career professionals—the Marshall M. Weinberg Student Conference on Conservation Science-New York 2024—was held this year for the 15<sup>th</sup> time, in partnership with the Yale School of the Environment!

This year, we had almost 400 Conference applicants from 49 countries and 26 U.S. states. Over 250 participants joined us at the Museum and online during three days of workshops, presentations, and events. Nearly 90 advisors, reviewers, and mentors provided feedback to participants at various stages of their experience, from helping participants prepare Conference applications to offering advice during the Conference's dedicated networking sessions. Of our participants' 90 Talk, Speed Talk, and Poster presentations, 9 presenters received our Conference awards: one "Best of" and two "Honorable Mentions" in each presentation category.



Photos: D. Kim/AMNH



Nina-Marie Lister, professor at the School of Urban and Regional Planning at Toronto Metropolitan University and visiting professor at Harvard University's Graduate School of Design, gave an inspiring opening keynote talk about working at the intersection of ecology and design, and we closed with a panel about diverse paths in conservation career, which opened with remarks by the American Museum of Natural History's President, Dr. Sean M. Decatur. Approximately 40 high school students from the Science Research Mentoring Program also joined the conference for this panel discussion.

The Conference also offered leadership training, workshops, and networking opportunities for participants, whose enthusiasm and innovative work energized both peers and mentors.



Photos: D. Kim/AMNH

CBC staff also led capacity building events at the North American Congress for Conservation Biology 2024 at the University of British Columbia, Canada, in June. The first workshop brought together researchers, students, and conservation practitioners from various North American organizations and universities to review the fundamentals of species distribution modeling using Wallace. Participants explored key features of the modular software and learned about its applications in conservation science. A second workshop focused on approaches that faculty can use to engage with the emotional dimensions of biodiversity loss and climate change in conservation classrooms.

# Convening and Connecting

## The CBC catalyzes connections among key actors to innovate and gather strong evidence for action.

The CBC's five-year collaboration with the Integrated Natural Resource Management (INRM) Consortium, convened and funded by USAID, is in its final year. We continue to provide on-demand insight and expert advice for agency teams on evidence relevant to land and resource governance, natural resource management, and climate change. During the past six months, the CBC has supported the USAID Bureau of Humanitarian Assistance, and the Biodiversity Division:

- Under its new Biodiversity Policy, the Agency aims to support transformative change as part of its biodiversity programs. Since June 2024, Dr. Porzecanski, Ms. Betley, and Ms. Sigouin have conducted a rapid evidence review on transformative change and worked with the Agency to integrate these findings into guidance materials for Missions and other units.
- In the second project, USAID's Bureau for Humanitarian Assistance (BHA) aims to improve disaster risk reduction and increase resilience by managing at the watershed level. In the spring, Dr. Porzecanski and Ms. Betley helped this group develop a research and learning agenda, and this fall, along with Ms. Sigouin and Mr. Gazit have been conducting a review of evidence related to the human well-being outcomes of watershed management.

CBC staff have been invited to share expertise and explore collaborations around biocultural conservation in a number of fora. In Fall 2024, Dr. Porzecanski, Dr. Gawel, Ms. Betley, Ms. Sigouin, and the Museum's Research Scientist Dr. Caissa Reveilla-Minaya helped organize two gatherings of NYC-based researchers focused on biocultural conservation. Hosted by the New York Botanical Garden, these gatherings provided opportunities for exchange and discussions of potential future research collaborations. Similar convenings in the Spring, at Columbia University, have resulted in the publication of a comprehensive guide to Good Practices in the Co-Production of Knowledge, [published online](#) by Columbia University in October. The guide, which includes Dr. Porzecanski and Dr. Blair as co-authors along with several academic and Indigenous authors, compiles good relational practices to support researchers working to enhance shared understanding, strategies, and responses to climate change.



Dr. Ana Porzecanski continues to work with the Marine Protected Areas Think Tank of the Blue Nature Alliance, a global collaborative project that aims to unlock major support for local capacity and leadership in marine protected and conserved areas, given ambitious global targets such as protecting 30 percent of oceans by 2030. After work in the spring using systems approaches to identify current barriers to progress, the group is now focused on designing initial strategy and activities. A strategy design workshop was held in Maryland in August to advance this work.



Also in August, Dr. Porzecanski represented the Museum at the Regional Conservation Forum—a gathering of all U.S. members of the International Union for the Conservation of Nature (IUCN). The meeting, held at Conservation International’s Washington DC headquarters, provided an opportunity for Union members to comment on the IUCN’s 20-Year Strategic Vision and its program of work for 2026-2029. These global policy documents aim to encourage bolder action on the part of Union members, in the face of the current “polycrisis” of climate change, biodiversity loss, and social inequality. The meeting highlighted the urgent need to involve youth and pursue integrated, transformative work across all sectors of society.

# Exhibitions and Outreach

## Catch the CBC online or onsite!

The CBC worked closely with colleagues across the Museum to help bring to fruition an ambitious set of programs during Climate Week. Programs included a [people's art installation](#) by the Inside Out Project, highlighting scientists, Indigenous land stewards from across the globe, and everyday New Yorkers, exploring the impact of climate change on both ecosystems and the health of communities and presented in collaboration with the Wellcome Trust.

During Climate Week the Museum also hosted an extension of the Margaret Mead Film Festival with the New York premiere of The Wayfinders film series, a powerful collection of short documentaries that brings audiences closer to Indigenous communities worldwide and showcases their leadership in sustaining our planet during a time of global climate change. Dr. Porzecanski hosted the event and moderated a panel discussion with the films' creative teams.



Photo: D. Kim/AMNH

In alignment with our hosting of SCCS-NY, the CBC collaborated with the Museum's public programs team to produce a conservation-oriented SciCafe event, the first of the season. On October 9, 2024, Nina-Marie Lister presented "SciCafe: Wild in the City" to an at-capacity crowd and featured a discussion on how ecological design can help reconnect people living in cities to nature and enhance the bond between humans and nature to foster climate resilience in a rapidly changing world.



We continue to share our work through social media, you can find us on [LinkedIn](#), [X \(formerly Twitter\)](#), and [Facebook](#)!

Photo: D. Kim/AMNH

## Fall 2024

### Publications

**Blair, M.E.**, Noguera-Urbano, E.A., Ochoa-Quintero, J.M., Paz, A., Lopez-Gallego, C., Echeverry-Galvis, M.A., Zuloaga, J., Rodríguez, P., Lemus-Mejia, L., et al. (2024). Software co-design between end-users and developers enhances utility for biodiversity conservation. *BioScience* (In Press). <https://doi.org/10.1093/biosci/biae097>

Gutierrez-Velez, V.H., Rodriguez-Escobar, J., Mejia, A.M., Espejo, J., Anaya, J.A., **Blair, M.E.** (2024). Mapping forest cover and change as continuous rather than discrete variables is essential to advance consistency across forest monitoring products. *GIScience & Remote Sensing* (In Press). <https://doi.org/10.1080/15481603.2024.2427305>

Hull, V., **Rivera, C.J.**, Coleman, I.E. (2024). Telecoupling. In: Warf, B. (eds) *The Encyclopedia of Human Geography*. Springer, Cham. DOI: 10.1007/978-3-031-25900-5\_280-1

**Macey, S.K.**, Myers, A.T., Tesauro, J., Feil, A., Polanco, K., Clark, J.A., Shoemaker, K.T. (2024). Bog Turtle (*Glyptemys muhlenbergii*) nesting ecology and the efficacy of predator excluders in New York. *Northeastern Naturalist*, 31(sp12), G117-G137. <https://doi.org/10.1656/045.031.s1232>

Orkin, J.D., Kuderna, L., Hermosilla-Albala, N., Fontseré, C., Aylward, M., Janiak, M., Andriaholinirina, N., Balaesque, P., **Blair, M.E.**, et al. (2024). Ecological and anthropogenic effects on the genomic diversity of lemurs in Madagascar. *Nature Ecology and Evolution* (In Press). <https://doi.org/10.1038/s41559-024-02596-1>

Petriello, M.A., et al. (including **Blair, M.E.** & **Porzecanski, A.L.**) (2024). Good practices in the co-production of knowledge: Working well together in the climate sciences. Center for Science and Society & Lamont-Doherty Earth Observatory, Columbia University. October 2024. <https://doi.org/10.7916/1h4j-2204>

Saavedra, M.F., et al. (including **Porzecanski, A. L.**) (2024) An urgent call for academia to support Indigenous Science and Equitable Conservation. *Earth Stewardship* (In Review).

Souther, S.K., **Sandor, M. E.**, Sample, M., Gabrielson, S., Aslan, C.E. (2024) Bee and butterfly records indicate diversity losses in western and southern North America, but extensive knowledge gaps remain. *PLoS ONE* 19(5): e0289742. <https://doi.org/10.1371/journal.pone.0289742>

### Presentations & Workshops Led

**Blair, M. E.**, **López-Lozano, D.**, Goodman, A. GIS and Remote Sensing for Evolutionary and Conservation Biology. Fall semester course for PhD students at the Richard Gilder Graduate School (RGGS), American Museum of Natural History, New York, NY. October-December 2024.

Le, M.D., Nguyen, T.A., **Blair, M.E.**, **López-Lozano, D.** Developing capacity and informing priorities for ape conservation under climate change in Vietnam II: Dissemination, implementation, and training. Workshop. Da Nang University, Da Nang, Vietnam. 13-14 June 2024.

Orkin, J., Kuderna, L., Hermosilla-Albala, N., Fontsero, C., Aylward, M., Janiak, M., Andriaholinirina, N., Balaesque, P., **Blair, M.E.**, et al. Ecological and anthropogenic effects on the genomic diversity of lemurs in Madagascar. Podium Presentation. Joint Congress of Evolutionary Biology. Montreal, Canada. 26-30 July 2024.

**Sigouin, A.**, Cook, C., Ridley, C. Rapid Evidence Assessment Methods and Applications (REAMA) Community of Practice inaugural facilitated members meeting. 29 April 2024.

**Sigouin, A.**, Cook, C., Ridley, C. Rapid Evidence Assessment Methods and Applications (REAMA) Community of Practice members meeting workshop on the environmental evidence landscape. 29 July 2024.

Paz-Velez, A., **Blair, M.E.** Targeting needs in SDMs for conservation: Local capacity building and software co-creation. Podium Presentation. North American Congress on Conservation Biology. Vancouver, Canada. 27 June 2024.

Paz-Velez, A., **López-Lozano, D.** Interactive, Reproducible, and Accessible Species Distribution Modeling for Conservation with Wallace. Workshop. North American Congress on Conservation Biology. Vancouver, Canada. 24 June 2024.

**Porzecanski, A.L., Betley, E.** Building Emotional Resilience Among Conservation Students — Making space for the affective domain. Workshop co-organizers with J. Pratt, M. Groom. Celebrating Diversity in Conservation from Summit to Sea. North American Conference for Conservation Biology (NACCB); Society for Conservation Biology North America (SCBNA). Vancouver, Canada. 28 June 2024

## Media & Outreach

**Porzecanski, A.L.** Conservation Careers. Panel moderator for discussion with Melissa Abramson, Christian Rivera and Neha Savant. The Marshall M. Weinberg Student Conference on Conservation Science (SCCS), American Museum of Natural History. New York, NY. 11 October 2024.

**Porzecanski, A.L.** Mead Moment: Wayfinder's Circle. Film premiere and panel discussion with filmmakers. Host and panel moderator. A Margaret Mead Film Festival and NYC Climate Week event. Kaufmann Theater. American Museum of Natural History (AMNH). New York, NY. 23 September 2024.

**Porzecanski, A.L.** Difficult Decisions in Urban Natural Areas Management: Bridging Diverse Perspectives in Ecology, Ethics, Values, and History. Invited panel moderator. Forever Wild: Celebrating 40 Years of Caring for Nature in NYC. New York Botanical Gardens. Bronx, NY. 20 September 2024.

**Porzecanski, A.L.** Q & A With Dr. Ana Luz Porzecanski; Shaping the way we think about sustainability globally. Somos Informada. Blog interviewee, guest of Dr. Edith Bracho-Sanchez. (2024). 7 May 2024. <https://iaminformada.com/meet-dr-ana-luz-porzecanski/>