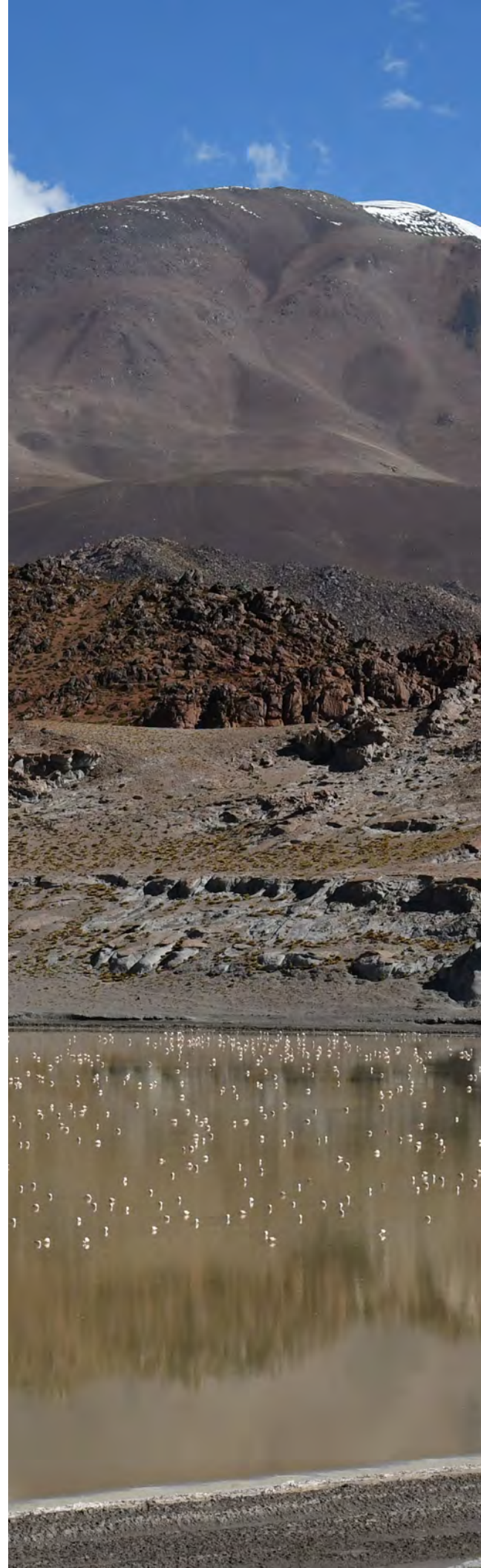


# Center for Biodiversity and Conservation

Progress Update  
Spring 2022

Dear CBC Friends and Colleagues,

Understanding life on Earth and how to sustain it for the future is the fundamental challenge of our time. The Center for Biodiversity and Conservation (CBC) has been advancing research, strengthening human capacity, and connecting people to knowledge—and to each other—to help the Museum meet this challenge for nearly 30 years. This past season we have continued to make advances in our core work while we look and plan ahead to seize new opportunities at a time of transition.



# The Year in Numbers

- 43** Publications
  - 39 Peer-reviewed
  - 36 Open access
  - 11 With local partners
  - 16 With students, interns, mentees
- 8** Awards, honors, or appointments
- 20** Presentations at professional meetings
- 18** Invited talks
- 12** Contributions to AMNH programs
- 21** Popular articles, media appearances or coverage
- 8** Funding proposals
  - 3 With DEIJ dimensions/objectives
  - 8 With external partners
- 38** Average number of interns, mentees, and trainees per semester
- 4** New software tools, modules and other resources produced (all open access)

# News, Awards, and Appointments

The Museum and the Alexander von Humboldt Biological Resources Research Institute in Colombia signed a Memorandum of Understanding at the end of March to launch activities for the CBC's new NASA-funded project to monitor and conserve biodiversity in the South American country. **Dr. Mary Blair**, Director of Biodiversity Informatics Research and Rizavi Conservation Innovation Fellow at the CBC is the principal investigator.



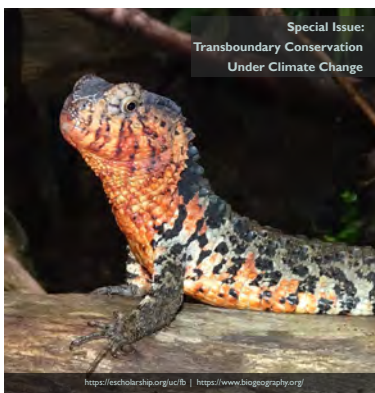
Dr. Blair has also received **new funding by the Arcus Foundation** for a research and capacity development project that will inform evidence-based management of endangered ape species under climate change, with a focus on endangered gibbons in Vietnam.

**Dr. Samantha Cheng**, CBC Biodiversity Scientist, departed the CBC at the end of April to take on a new role: Director of Conservation Evidence at the World Wildlife Fund. Dr. Porzecanski is leading the Evidence Initiative team that Dr. Cheng established at the CBC as we continue and grow wide-ranging collaborations with USAID, Conservation International, and other partners, as well our activities as part of the global Collaboration for Environmental Evidence.

**Dr. Manette Sandor**, postdoctoral fellow with Columbia University and the CBC, will start a new role as Postdoctoral Associate with the Cary Institute for Ecosystem Studies in Millbrook, working on projecting the interaction between climate change, forest dynamics, and fire in the western United States, including how to best manage for fires, taking into account socioecological factors. Dr. Sandor and collaborators recently completed a comprehensive analysis of trends in pollinator diversity in the United States over time.

The work of the Center for Biodiversity and Conservation brings strong evidence from multiple sources of knowledge and perspectives to bear on complex conservation problems and to foster collaboration on robust and equitable solutions. Below are selected updates on our work from the last few months.

## Our research provides tools and evidence to support biodiversity in a changing planet.



The Museum and Colombia's Alexander von Humboldt Biological Resources Research Institute signed a formal Memorandum of Understanding on March 30, 2022 to launch activities for the CBC's new NASA-funded project to monitor and conserve Colombia's biodiversity. The project, which will be led by Dr. Blair in collaboration with colleagues at Temple University, will incorporate a satellite data-based biodiversity monitoring system into Colombian conservation practices to meet ambitious conservation targets. The CBC also hosted an in-person strategic retreat with three Institute representatives from March 28–31, 2022 to plan the project's first phase. The project is now in its consultation phase, which includes bimonthly meetings with representatives from Colombia's National Parks System.

Dr. Blair and collaborators from Vietnam and China co-edited a special issue of the journal *Frontiers of Biogeography* on "[Transboundary Conservation under Climate Change](#)." The CBC has received additional funding from the Arcus Foundation to expand on this important work for gibbons in Vietnam—a key group of highly endangered species. The threat of climate change has not yet been assessed systematically for primates in Vietnam but is expected to be significant, especially to range-restricted species such as the gibbons. Through an research and capacity development program, the project will build upon decades-long partnerships with local scientists and state-of-the-art modeling methods to produce climate change forecasts via species distribution models (SDMs) to produce high-resolution, expert-informed climate change projections for all gibbons in Vietnam. These projections will directly inform conservation management plans, and be the basis for a series of workshops and trainings to strengthen the capacity of national and regional conservation and land-use planning agency staff to include climate change in species conservation plans. Importantly, the project will involve the stakeholders directly affected by climate change in each phase of the research and conservation process.

In recognition of her expertise in monitoring the impacts of climate change and the CBC's signature biocultural approach, as well as links to the Arctic, Dr. Blair was invited to join a new research collaboration, the Study of Environmental Arctic Change (SEARCH). Dr. Blair will travel to Nome, Alaska for project meetings to help synthesize knowledge of the causes and consequences of environmental change in the Arctic, especially for aspects of human well-being, such as safety, food security, coastal erosion, and community resilience.

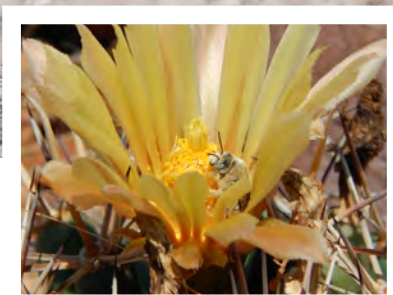


In her final season as the Jaffe Chief Conservation Scientist, [Dr. Eleanor Sterling](#) strengthened the CBC's profile as a national and international hub for conservation science, expertise, and collaboration—while advancing the CBC's biocultural research. As part of our continued collaboration with Dr. Sterling, now Chief Conservation Scientist Emerita and based at the Hawai'i Institute of Marine Biology, University of Hawai'i at Mānoa, we are working with the National Estuarine Research Reserve System (NERRS) network to foster the inclusion of cultural ecosystem services in estuary stewardship and management. This project was launched in collaboration with former CBC Biodiversity Scientist Pua'ala Pascua under a NERRS Catalyst Grant and engages the CBC, the He'eia National Estuarine Research Reserve (Hawai'i), and the Kachemak Bay National Estuarine Research Reserve (Alaska) in place-based explorations of cultural ecosystem services. The project supports opportunities for meaningful exchange with Indigenous and local community partners near both reserves. The team has published [several resources](#) for reserve managers, including a short introduction to cultural ecosystem services and a compilation of useful case studies, which will be mentioned and included in indicators for restoration in a forthcoming National Oceanic and Atmospheric Administration (NOAA) infrastructure funding program.

Well-being is at the core of public policy efforts to support just, equitable, and sustainable futures in a rapidly changing world. These changes include increasing frequency of climatic, environmental, and economic shocks. But what constitutes living a good life? In December 2021, the journal *People and Nature* published a study by Dr. Sterling, along with 16 co-authors—including several from CBC, titled "[Assessing human well-being constructs with environmental and equity aspects: A review of the landscape.](#)" The paper was in a special issue about how well-being is being measured and how equity and the environment are considered. The paper is unique in that it not only compiles published literature about measuring human well-being, equity, and interrelationships between humans and the environment, but also points to several pathways forward for development and implementation of well-being frameworks, and provides recommendations for equitable sustainability policy.

In her role as an advisor to Nia Tero, Dr. Sterling provided expertise on how to develop community-driven monitoring and evaluation approaches for community partners in the Amazon region, as the organization works to foster connections to place and culture and inter-generational transfer of knowledge. The goal is to develop a monitoring system that will integrate locally attuned measures of ecological, cultural, social, and economic well-being. This work draws on what has been learned from CBC collaborations with communities across the globe who have been working to share culturally-grounded indicators of success.

Lithium exploration and expansion has continued in the Andean region, and especially on the saline wetlands that support unique biodiversity. As electric car and other companies seek to provide assurance to customers regarding the environmental and social responsibility of their battery supply chains, governments and local companies are convening stakeholders to discuss best practices and engage local communities. In January, CBC Associate Director **Dr. Felicity Arengo** co-lead an expedition to the Andean wetlands of Catamarca Province, Argentina. The team surveyed more than 45 wetlands for flamingos and other waterbirds and documented the advance of lithium mining activity. While flamingo and waterbird numbers appear to be similar to previous counts, wetland habitat loss due to mining activity and the number of active projects operating in wetlands has increased. Lithium mining requires pumping of brines from the aquifers that are critical for maintaining a delicate water balance in these arid landscapes. The team recently published two papers including the first results from hydrology and climate change research that will inform environmental impact statements.



**Dr. Manette Sandor**, postdoctoral fellow with the CBC and Columbia University, recently completed a comprehensive analysis of trends in pollinator diversity in the United States over time with collaborators at Northern Arizona University. Using biodiversity metrics and species distribution models for over 900 species of pollinators across two bee and two butterfly families in North America, they found pollinator diversity hotspots in the southwestern United States and the Yucatán Peninsula. They additionally compared species distributions between past and current time periods and found that bee species' ranges are moving eastward, possibly in response to lower precipitation in western areas of North America. Results should be published this summer and will provide evidence relevant to pollinator conservation planning across the country.

## We are creating evidence, resources, and spaces to train and empower conservationists everywhere.

In everything we do, we continue to prioritize open education and tools and the creation of inclusive environments so citizens, students, and **all** professionals can pursue their careers and engage in contributing solutions. [Our software tools are used daily to support the analysis of biodiversity data and have been cited in hundreds of peer reviewed articles and government reports.](#) This winter, we released an update to the DotDotGoose application, which is being adopted by a broad community for monitoring diverse targets from corals in sunken warships to microplastics in water. Maxent software for species distribution modeling, co-developed and hosted by the CBC, also continues to be used for high-profile biodiversity research around the globe. The original publication for this software has been cited by 15,200 other studies, and our new release from 2017 has already been cited more than 1,100 times. Notable new uses of this software include a new dataset estimating native range for over 25,000 endangered vascular plants, models predicting the spread of invasive wetland plant species in the Southern Hemisphere, and a study of potential corridors linking leopard habitat in South Africa.



Photo: flowcomm (Flickr)

Our capacity development activities have spanned both training and research this season. On the research front, Dr. Porzecanski led a team of collaborators from around the globe in [an analysis](#) of how the new challenges of conservation in the 21<sup>st</sup> century—such as the need to engage more deeply with and empower local stakeholders—demand new approaches to capacity development. With a group of capacity development practitioners and researchers from around the globe, they discuss lessons learned, helpful practices from other sectors, and seven case studies from six regions, ranging from Asia to the Caribbean. The authors provide recommendations for moving forward, including a call for increased attention to less visible but vital elements of capacity at all levels, such as values and motivation, leadership and organizational culture, and governance. This March, colleagues from the Protected Areas Collaboration for Learning & Research applied these recommendations to the design and evaluation of a 6-month capacity building project with the Solomon Islands Ranger Association.

**Dr. Sterling, Ms. Amanda Sigouin, and Ms. Erin Betley**, both CBC Biodiversity Specialists, also concluded [a study](#) that applied evidence assessment methods to a key question: how to evaluate capacity development efforts. We know this work is hugely important for biodiversity conservation success, but how do we measure it? With a group of 23 co-authors from a range of institutions including Colorado State University and the University of Illinois, they assessed the who, where, what, and how of such evaluation efforts. Their analysis found that the majority of evaluations took place in North America, Asia or Africa, were conducted by academic institutions, and focused on programs aimed at local community members. The authors recommend practitioners use a broader set of evaluation tools, more transparency on methods used, and a stronger focus on external factors. Results from both studies were published in a special edition of the journal *Oryx* on capacity building for conservation in Fall 2021.

On the training front, in our continued efforts to strengthen capacity for conservation, the CBC's Network of Conservation Educators and Practitioners (NCEP) designed and led a two-week Educator Exchange for university conservation faculty in April 2022, focusing on centering equity in teaching conservation. Social justice and equity are fundamentally important dimensions of conservation practice, and educators are increasingly seeking to make them a central part of their teaching. During this Educator Exchange, fourteen participants exchanged their experiences, challenges, ideas, and lessons learned to advance this goal. To catalyze this work, we featured CBC colleagues and food systems educators who have been researching and practicing ways to center equity in their work: Dr. Sterling and Ms. Betley. Both were authors of "[Centering Equity in Sustainable Food Systems Education](#)," a key review of the topic with illustrative case studies that was published as part of a special issue on critical and equity-oriented pedagogical innovations in *Frontiers in Sustainable Food Systems* in October 2021.

Launched in October 2021 with support from the National Science Foundation, the OCELOTS (Online Content for Experiential Learning of Tropical Systems) Network brings together tropical ecology researchers, active learning pedagogy specialists, software developers, and media specialists to create an open-access online resource library of learning modules in tropical ecology. Led by [Dr. Suzanne Macey](#), NCEP Manager, and collaborators at Iowa State University, the project aims to increase the participation of underrepresented minorities and women in the quantitative STEM sciences—and especially tropical ecology—by training faculty in a diversity of backgrounds, career states, and institutions. This spring, NCEP staff contributed to shaping the network's activities and platforms for online learning, and will participate as mentors in faculty training events this summer.

The screenshot shows the OCELOTS Gala learning environment interface. On the left, a dark blue sidebar contains the text: "OCELOTS modules will be featured on the Gala learning environment". The main content area has a dark blue header with the "gala" logo and a search bar labeled "Search Cases...". Below the header, a "Welcome back" message is displayed, followed by instructions: "Find a case by browsing or searching from this page, check out the quick start guide and create your own case, or see what we're up to." The "FEATURED CASES" section contains two case cards. The first card, titled "Guns or GPS Units? How should African protected areas combat the ivory poaching crisis?", features an image of an elephant and lists authors Marlotte De Jong and Bilal Butt. The second card, titled "Profits vs. Preservation How can shepherds balance the social and ecological costs of livestock grazing on Naxos?", features an image of a shepherd with sheep and lists authors Chelsea Lisiecki and Johannes Foufopoulos.

OCELOTS modules will be featured on the Gala learning environment

[gala](#)

Search Cases...

**Welcome back**

Find a case by browsing or searching from this page, check out the **quick start guide** and create your own case, or **see what we're up to**.

**FEATURED CASES**

**Guns or GPS Units?**  
**How should African protected areas combat the ivory poaching crisis?**

US FISH & WILDLIFE SERVICE

Marlotte De Jong and Bilal Butt

**Profits vs. Preservation**  
**How can shepherds balance the social and ecological costs of livestock grazing on Naxos?**

CHELSEA LISIECKI

Chelsea Lisiecki and Johannes Foufopoulos



Our 12<sup>th</sup> annual conference for students and early-career professionals—the *Marshall M. Weinberg Student Conference on Conservation Science-New York 2021*—our second entirely virtual conference, was extremely successful. With the benefit of a custom conference website designed in-house, we engaged over 200 participants from 38 countries and 25 states, and close to 50 mentors. The plenary speaker, Dr. Kristina Douglass, spoke about our past and present relationship to the environment, drawing lessons from engaged archaeological research. As part of the Mack Lipkin Man and Nature series, the CBC partnered with the Museum’s public programs team to present Dr. Douglass as a speaker in the Museum’s popular SciCafé series. A new addition to the 2021 Student Conference was a panel of conference alumni who spoke about their career trajectories and the impact the conference had on their professional development.



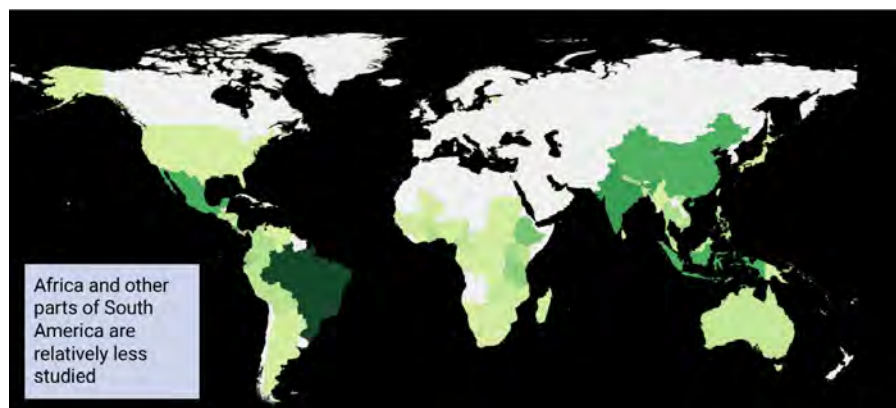
Planning for the 13<sup>th</sup> SCCS-NY scheduled for October 3-7, 2022, has been in full swing in the past six months. We are planning for a hybrid conference with four virtual days, an evening public program, and a half-day of workshops at the Museum. The plenary speaker, Dr. Jennifer Atkinson, will speak about climate anxiety and how to channel despair into action. As in prior years, the plenary speaker will also hold a mentoring session with high school students from the Museum’s Science Research Mentorship Program (SRMP).

During the 2021-2022 academic year, the CBC worked closely with 38 students, interns, and research assistants in a variety of projects including updating modules in the CBC’s teaching collection, monitoring shorebird response to disturbances on New York City beaches, and monitoring rattlesnake activity along a busy road in New York State. Mentoring efforts focused on promoting the recruitment, achievement, and success of students and early-career professionals from groups that are historically underrepresented in conservation continue to fuel success. Former mentees are advancing in their careers, with many notable accomplishments of former trainees and interns, including: Dr. Rae Wynn-Grant was awarded the 2021 Society for Conservation Biology Early Career Award; Dr. Christian Rivera defended his dissertation this spring at the University of Florida and received the award for Outstanding Graduate Student among 100 in the department, and was awarded a post-doctoral fellowship at Princeton University; Dr. Alex Moore will join the faculty of the University of British Columbia as an Assistant Professor this fall.

## We put high-quality, relevant evidence into the hands of managers and policy-makers.

The CBC continues to demonstrate leadership in evidence synthesis both regionally and globally. We are leading numerous high-impact research collaborations under the CBC's **Evidence Initiative**, which harnesses rigorous evidence assessment methods to support conservation planning and is led by Dr. Porzecanski, building on the work of Dr. Cheng. As part of our five-year collaboration with the United States Agency for International Development (USAID), now in its second year, we are providing on-demand insight and expert advice for agency teams engaged in applying evidence to a range of decisions concerning land and resource governance, natural resource management, climate change, and sustainable artisanal mining.

During fall 2021, we began work with Conservation International to conduct a systematic map of the evidence on the links between natural climate solutions and climate change mitigation outcomes. There is increasing awareness that how we mitigate and adapt to climate change can have significant consequences for biodiversity, both positive and negative; the project is investigating key questions around this topic to ascertain the evidence available on climate strategies and their impact, including on biodiversity and human well-being. Preliminary results illuminate key geographical and topical gaps in evidence; for example, most of the evidence base is focused on actions related to protecting and/or managing natural resources (vs. fewer focused on restoring) with outcomes mostly related to changes in land use/land cover. These initial findings also reveal that most studies focus on just one aspect of climate change mitigation and very few investigate the influence of enabling factors (e.g., incentives) or co-impacts on behavioral, social, and ecological co-impacts (e.g., biodiversity and human well-being outcomes.) Final results will be available in the coming month and submitted for publication shortly thereafter.



As part of our role in the global Collaboration for Environmental Evidence, we have also been engaged with the Rapid Evidence Assessment Methods and Applications working group, led by the United States Environmental Protection Agency. Dr. Cheng served on the original steering committee and Dr. Porzecanski will continue to steer collaborations with this group, as it aims to promote and improve the use of rapid evidence assessments in the environmental and conservation sector.

## We continued to take full advantage of the growth in virtual communications to disseminate our work. Catch us online!

Dr. Porzecanski was an invited keynote speaker at the 4<sup>th</sup> Naturally Latinos Conference in March, organized by the Audubon Naturalists Society online and in Silver Springs, Maryland. She shared lessons from her efforts to understand biodiversity, sustain it, and make lasting change, including through multiple CBC projects, and discussed her own identity as Latina and how that has influenced her work and choices. Dr. Porzecanski was also interviewed by Telemundo in Spanish on these topics, in the days preceding her presentation.

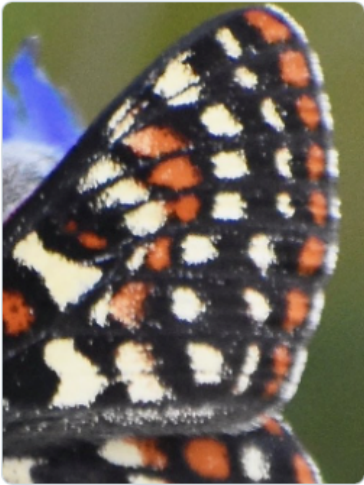
The CBC collaborated with the Museum's Public Programs team to feature Dr. Barbara Han from the Cary Institute for Ecosystem Studies as a SciCafe speaker in Winter 2021. Dr. Han shared a fascinating talk about her work finding the links between zoonoses, climate change, and carnivore ecology, and how data science can help us understand future risks of disease transmission. Dr. Porzecanski engaged with the online audience during the program to answer questions.

In March, Dr. Blair was one of five featured storytellers on The Moth's Mainstage in Tarrytown, New York. Her story, told to a live audience and filled to capacity, takes place on the tundra 200 miles north of the Arctic circle, where she traveled for the first time to the land of her Saami ancestors in Norway. The live recording will be produced as a podcast.

This winter, we launched two new social media campaigns highlighting biodiversity on [Twitter](#). The first, [#SpectrumOfLife](#), highlights species from the Museum's Hall of Biodiversity. For each species we highlight, we include a conservation fact and add an image and graphic to show where they are located in the Hall. We hope you will find them next time you're at the Museum! For our second campaign, [#GuessTheSpecies](#), we first post a close-up image of a species and ask: can you guess the species? We give our followers a day to venture a guess, and then post the full image and the species name. As social media sites reward user engagement, these campaigns are strategically tailored for social media algorithms, and should allow us to reach more people over time, including potential collaborators, donors, and SCCS applicants.

CBC at AMNH @CBC\_AMNH · Apr 8  
Here's another #GuessTheSpecies challenge! Can you identify the organism in this close-up photo? We'll reveal the answer tomorrow!

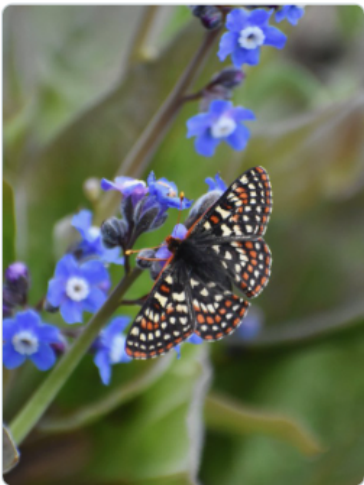
Submit your guess below



6 8 24

CBC at AMNH @CBC\_AMNH · Apr 12  
Great guesses... It's a checkerspot butterfly!

Pepper Trail



2



As the world faces the converging challenges of an evolving COVID-19 pandemic, rising biodiversity loss and climate change impacts, and social and political inequity and conflict, we find an increased sense of urgency to strengthen and grow the CBC's work in conservation. Stronger connections to nature and healthy, protected ecosystems along with robust evidence for decision-making can all help drive social, economic, and health resilience within and between our societies. As we look ahead, we are engaging in a careful consideration of how best to apply and scale our strengths and interdisciplinary work to catalyze urgent action—and how the Museum, including the CBC, can amplify its conservation impact.

We aim to enter our fourth decade with innovative plans for transformative work that moves the conservation field forward and reveals new approaches and solutions for the complex conservation challenges of the 21st century. We thank you deeply for your partnership in our work.

A handwritten signature in white ink, appearing to read 'Ana Porzecanski', is positioned above the printed name.

Ana Porzecanski, Ph.D.  
Director