150 YEARS | American Museum of Natural History

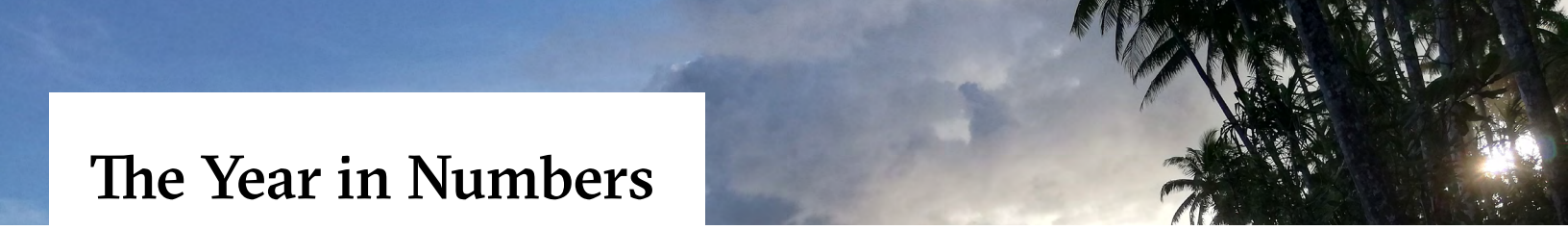
Center for Biodiversity and Conservation

Progress Update
Spring 2021

Dear CBC Friends & Colleagues,

Understanding life on Earth and how to sustain it for the future is the fundamental challenge of our time. For almost 30 years, the Center for Biodiversity and Conservation has been advancing research, strengthening human capacity, and creating connections to help the Museum meet this challenge.

This past year has brought an unprecedented crisis, yet I am extremely proud of what our small team at the Center has achieved.



The Year in Numbers

40 Publications

- 35 Peer-reviewed
- 29 Open access
- 6 With local partners
- 10 With students, interns, mentees

8 Awards, honors, or appointments

17 Presentations at professional meetings

27 Invited talks

28 Contributions to AMNH programs

12 Popular articles, media appearances or coverage

15 Funding proposals

- 8 With DEIJ dimensions/objectives
- 9 With external partners

23 Average number of interns, mentees, and trainees per semester

8 New software tools, modules and other resources produced (all open access)

Notable awards and appointments

CBC Director of Biodiversity Informatics Research Dr. Mary Blair and collaborators have been selected for new funding under NASA's Ecological Forecasting Program to deepen and expand our current NASA-funded collaboration with the Colombia Biodiversity Observation Network.

Dr. Blair and other scientists leading the CBC's Machine Learning for Conservation projects are looking forward to collaborating with the Museum's Department of Education on their new National Science Foundation (NSF) award focused on preparing high school students for careers in machine learning through mentored scientific research. The $1.48 million grant will span three years, and will expand opportunities for science-interested students to apply machine learning approaches to research in biology, including conservation biology. Dr. Blair is one of five mentors in the research group who will support this work

CBC Biodiversity Scientist Pua'ala Pascua and Jaffe Chief Conservation Scientist Dr. Eleanor Sterling have been awarded a Catalyst Grant through the National Estuarine Research Reserve System (NERRS) Science Collaborative Program. The project will engage the CBC and reserves in Hawai'i and Alaska in a place-based exploration of the cultural benefits provided by ecosystems and how understanding those links can support natural resource management. We are pleased to report Pascua has recently begun an influential new position at the Hawai'i Conservation Alliance Foundation. While we are very sad to see her leave the Museum, she is now a CBC Visiting Scientist and remains a close collaborator. The project is expected to begin in Summer 2021.

CBC Scientist and Evidence Initiative Lead Dr. Samantha Cheng was invited to join the Science Advisory Team of the National Ocean Protection Coalition, a coalition of over 50 organizations working towards marine protection and conservation in the United States, founded and led by Dr. Jane Lubchenco (Deputy Director for Climate and Environment, White House Office of Science and Technology Policy).

CBC Director Ana Porzecanski was selected by Common Purpose in the UK to be part of the inaugural cohort of global environmental leaders in the Sky Blue Leadership program.

As their current NSF-funded postdoc fellowship comes to a close, we are pleased to report that Dr. Alex Moore has been offered a prestigious postdoctoral fellow position at Princeton University.

In addition to our sustained productivity during the pandemic, the CBC continues to lead innovative, transformative work that moves the conservation field forward and reveals new approaches and solutions for the complex conservation challenges of the 21st century. To illustrate this, it is my pleasure to share selected examples of our work from the last few months.

How can cutting-edge research help us understand the interconnections between humans and the rest of biodiversity?

When the connections between humans, their wellbeing, and the rest of biodiversity—through food, health, culture and more—are understood and considered, communities can better manage their natural resources for resilience in the face of local and global change.

Last year marked the completion of a major NSF grant supporting a centerpiece of CBC research: the initiative to foster natural resource management in Solomon Islands and advance scientific understanding of the connections between people and place. Over six years, a team led by Dr. Sterling published twelve journal articles and one book chapter based on this work, including a comprehensive description of the process of co-producing indicators of wellbeing for other practitioners, a case study showing good practice in developing culturally grounded indicators, and resource guides for practitioners aiming to track sustainability progress. Moving forward, Dr. Sterling and her team will continue to support local Solomon Islands partners as they lead ongoing resource management planning in their communities, directly informed by this project's data.

The data and shifts in thinking generated by this project have been widely influential. The biocultural approach was highlighted in best practice guidelines for the management of conserved areas being published by the International Union for Conservation of Nature (IUCN), and is being considered by global policy-makers drafting the post-2020 plan of work of the United Nations Convention on Biological Diversity. Results from this work have fed into numerous reports of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), an international body of experts that assesses the available information about the state of the planet's biodiversity to guide decision-making.

One extension of this work was a virtual exchange to discuss wellbeing and evidence-based decision making via the New Zealand Environmental Protection Authority's Mātauranga Framework, which the CBC hosted in January. In another extension that builds on successful work in the Pacific, Dr. Sterling and collaborators including colleagues from the Center for Functional and Evolutive Ecology in Montpellier, France; colleagues from the University of Toronto; and vintners from Southern France are working to understand how biocultural approaches might be applied in European landscapes.

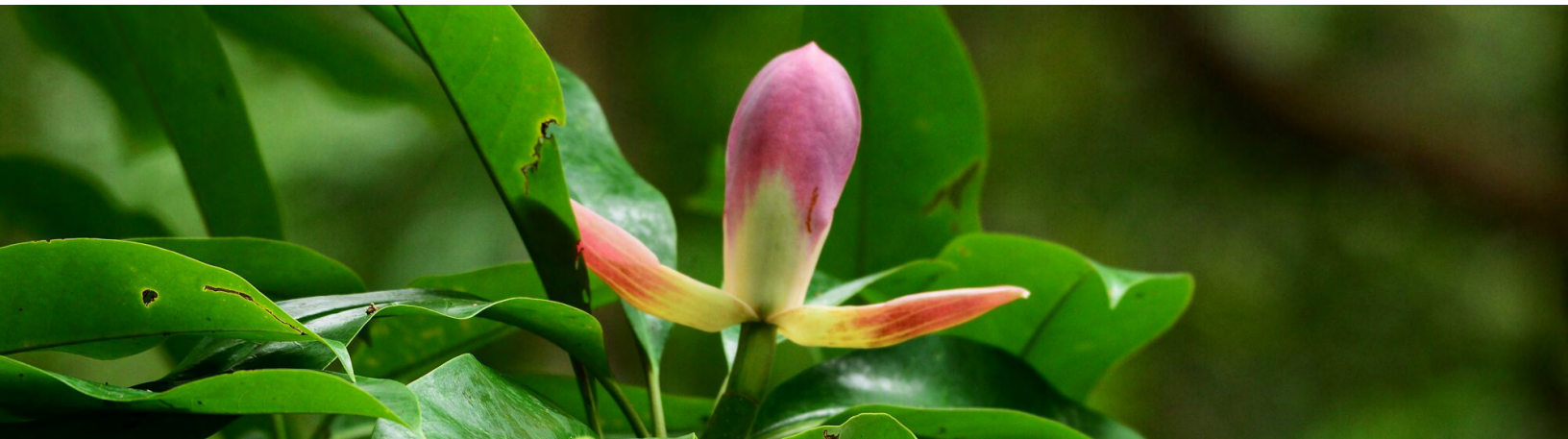
Dr. Blair and collaborators have published important results on how climate change threatens the conservation of one of the world's most endangered transboundary tree species: Magnolia grandis. They are conducting similar analyses for species of primates, including the François langur and the Cao Vit gibbon. As an example of the enduring influence of our work, Dr. Minh Le (Researcher, Vietnam National University), long-time CBC mentee and collaborator on our slow loris conservation research, has contributed data to a global study predicting COVID-19 risk to lemurs and lorises. While slow lorises are at low risk of contracting infection, some lemurs including aye-ayes and sifakas are predicted to be at high risk. This important study has implications for loris and lemur conservation and captive care.

The work will inform key decisions about protected area design and monitoring plan strategies in Colombia, contributing to meeting Colombia's 2030 biodiversity targets.

Dr. Blair also leads our current NASA-funded project with the Colombia Biodiversity Observation Network (BON). This project is developing tools for modeling and mapping species distributions; her second, NASA-funded project awarded this spring will advance tools to support and test an integrated biodiversity monitoring system for Colombia's Protected Areas.

For the third year in a row, CBC Biodiversity Scientist and Network of Conservation Educators and Practitioners (NCEP) Manager Dr. Suzanne Macey and collaborators have received funding from the David Redden Conservation Science Research Grant, affiliated with the Black Rock Forest Consortium. Through these grants, Dr. Macey has led a team of scientists, engineers, practitioners, undergraduates, and high school students in a project studying native turtles in southeastern New York State. Affectionately calling themselves "Team Turtle," this group of researchers has worked with local organizations and landowners to not only advance our understanding of multiple turtle species within this exurban/managed landscape, but also advance low-cost, open-source hardware and software to create similar opportunities for others passionate about studying wildlife.

Photograph of *Magnolia grandis* in northern Vietnam showing the characteristic dark red flower and large leaves (photo provided courtesy of Chu Xuan Canh, Fauna and Flora International – Vietnam).



How do we create resources and spaces to train and empower conservationists everywhere?

NCEP has published several new exercises and class materials and a new issue of our online journal, *Lessons in Conservation*: the Systems Thinking issue. This issue features a collection of materials designed to introduce students to systems thinking, both as a way of seeing the world and as a specific set of tools, with illustrative examples. The materials promote a "systems view"—the ability to recognize interconnections and patterns of change over time, an important first step towards more deeply understanding the linked social and environmental challenges in complex biodiversity conservation problems. CBC experts also contributed to the development of a new course on marine biology for the Museum's *Seminars on Science* online teacher professional development program, which launched in Fall 2020. This course introduces educators to life in the oceans—from marine species interactions to the effects of climate change on coral reef ecosystems.

We recently released a new version of Maxent software for mapping and predicting species' distributions. This software continues to be used in various contexts for high-profile biodiversity research; it has been used by 13,500 studies to date, including to study the implications of Australian mega-fires for biodiversity, the feasibility of reintroducing rhinoceros and swamp buffalo to their historic global range, and the need for conservation action for wild relatives of crops in the United States.

"So happy to have been a part of this! Such an amazing group of people doing incredible work. Left inspired and even more determined to continue my work in conservation."
- Undergraduate participant.

Our 11th annual conference for students and early-career professionals—the *Marshall M. Weinberg Student Conference on Conservation Science-New York*—was extremely successful despite the constraints imposed by the pandemic. The CBC's SCCS-NY team was able to adapt all aspects of the conference to an online virtual format, including presentations and dedicated mentoring and mentoring cafés, and convene a vibrant conference. Compared to last year, we saw a significant increase in participation of students and early-career professionals. With the benefit of a custom conference website designed in-house, we engaged over 300 participants from 34 countries and 27 states, and over 60 mentors. We received excellent feedback from the participants.

How can we get high-quality, relevant evidence into the hands of managers and policy-makers?

As part of the CBC's Evidence Initiative, work has begun under a five-year collaboration with the United States Agency for International Development (USAID). As part of this project the CBC will advise Missions around the world and strengthen their capacity to better gather and use evidence as part of their integrated natural resource management programming, which connects biodiversity, sustainable development, and human health. The CBC has been leading syntheses of evidence and biodiversity research work on a number of topics with USAID's Washington, D.C. offices and the Colombia USAID Mission.

In our new role as the United States-based center in the global Collaboration for Environmental Evidence (CEE), the CBC has joined forces with the CEE-Canada and CEE-UK centers and the global COVID-END Network, and is leading initial work for mapping the links between environmental factors and the emergence of zoonotic viruses—particularly relevant work considering the ongoing pandemic and the need for evidence to prevent future ones.

As the government of Argentina considers new wetland legislation and policies, CBC experts and collaborators were invited to participate in several consultations, reaching a wide audience through live broadcasts and archived recordings.

Results from our 2020 International Flamingo Census, carried out at the beginning of the year, show that flamingo populations in South America have slightly increased. While field work—and mining activity—in the Andean region has been slowed because of the COVID-19 pandemic, local project partners were able to travel to the field on two occasions in 2021, including a multi-stakeholder meeting with communities, mining and environmental authorities, and multilateral funding agencies.

Dr. Sterling, CBC Biodiversity Specialist and Programs Coordinator Erin Betley, and I have led preparatory work for representing the Museum at the upcoming IUCN World Conservation Congress. The CBC co-sponsored three policy motions for the Congress, on valuing and protecting inland fisheries; behavior-centered solutions for conservation; and recognizing, reporting, and supporting broader categories of areas as protected areas.

We continued to take full advantage of the growth in virtual communications to disseminate our work.

The CBC has conducted a great deal of outreach, giving over 56 presentations, invited talks or media contributions this spring. Within the Museum's own slate of online programming, we hosted an insightful and timely discussion in the late fall: the Mack Lipkin Man and Nature Series Panel Discussion on emerging diseases, biodiversity, and human wellbeing. Together with Dr. Kevin Olival from EcoHealth Alliance, Dr. Liliana Dávalos from Stony Brook University, and Dr. Sterling, we explored questions ranging from how the COVID-19 pandemic arose to the ecological drivers of disease emergence, and how studying bat evolution can help us be better prepared. It was an illuminating conversation of how the conservation of biodiversity can create opportunities to support human wellbeing.

Catch us online!

Dr. Sterling was featured on a special virtual event on climate change and the anniversary of the Paris Agreement and several CBC scientists have also been featured in the Museum's "The Scientist is In" series. For this series, Dr. Sterling was joined by CBC Biodiversity Specialist Amanda Sigouin and spoke on the pandemic and its effects on biodiversity conservation. As part of this same series, Dr. Cheng presented on her squid research, and Dr. Blair presented a Reindeer Special. To date, these two presentations have received over 8,500 and 7,300 views respectively across multiple platforms. In another virtual event last month, Dr. Blair's March Mammal Madness Museum Tour garnered 1,300 live views—the most highly attended virtual hall tour to date!

As this past year has sadly demonstrated, the degradation of natural systems has led to suffering, displacement, food insecurity, and increased disease risk. As we reflect on the recent anniversary of New York City's shutdown last spring, it is important to both celebrate our resilience as well as take to heart a key lesson from this crisis: our interdependence—with each other and with biodiversity.

We thank you deeply for your partnership in our important work. At this moment of global challenge and uncertainty, it is your support and generosity that enables the Museum to continue its important and far-reaching conservation efforts.

Ana Porzecanski, Ph.D.
Director