Half-Earth Project:
Impact Report 2022

Introduction

Having sparked a global movement to protect 30% of Earth's land and sea by 2030, our programs are capitalizing on a window of opportunity to ensure we leave no species behind. We are expanding our one-of-a-kind global conservation information resource, working with people in places from Alabama to Africa, and engaging more constituencies on the path to half.

We are carrying E.O. Wilson's legacy forward and remembering all he inspired in us. He said, "The biosphere does not belong to us; we belong to it. The organisms that surround us in such beautiful profusion are the product of 3.8 billion years of evolution by natural selection."

Now it is up to us. We are on our way and making great strides towards the essential goal Dr. Wilson identified. In 2022, a major milestone was achieved when nations from across the globe agreed to protect 30% of lands and seas by 2030. The Half-Earth Project was honored to be able to contribute its science and voice to help ensure future progress towards these goals.

We are excited about the momentum building around protecting important ecosystems around the world. But we know that we could not make this happen without people like you. Thank you for being a catalyst in this effort. Thank you for being a generous and dependable leader in our work to conserve half the planet's land and sea to safeguard the bulk of biodiversity.

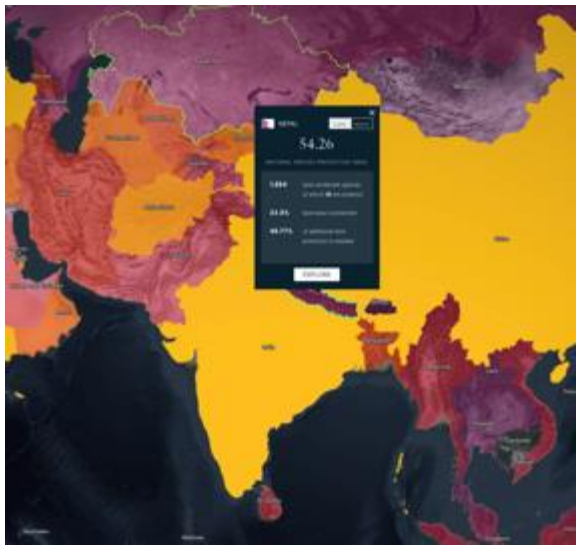
Half-Earth's Species Protection Index Adopted in Global Biodiversity Framework

The science of the Half-Earth Project is contributing to important conservation decisions in countries around the world. In December, the Half-Earth Project team joined leaders of governments and corporations, world-class scientists, and nonprofit groups at the 15th meeting of the Conference of the Parties Convention on Biological Diversity (CBD COP15) in Montreal. There, nations from around the world agreed to a new set of goals for nature over the next decade. The goals include protecting a minimum of 30% of the world's oceans and land by 2030 to halt biodiversity loss — a goal inspired by Dr. Wilson's groundbreaking research and tireless calls to action.

To equitably measure progress towards these goals, indicators had to be identified. One primary indicator was selected — the percent of area protected within a country — and two secondary indicators, including the Species Protection Index (SPI), developed by Scientific Chair Dr. Walter Jetz and his team for the Half-Earth Project Map. The SPI measures not only land protected, but also the species residing within that land, facilitating a better understanding of how conserving a specific area will help protect certain species. This is a significant victory for protecting the diversity of life found in unique ecosystems, and we are thrilled to lend our team's science to enhance the effective execution of these goals.

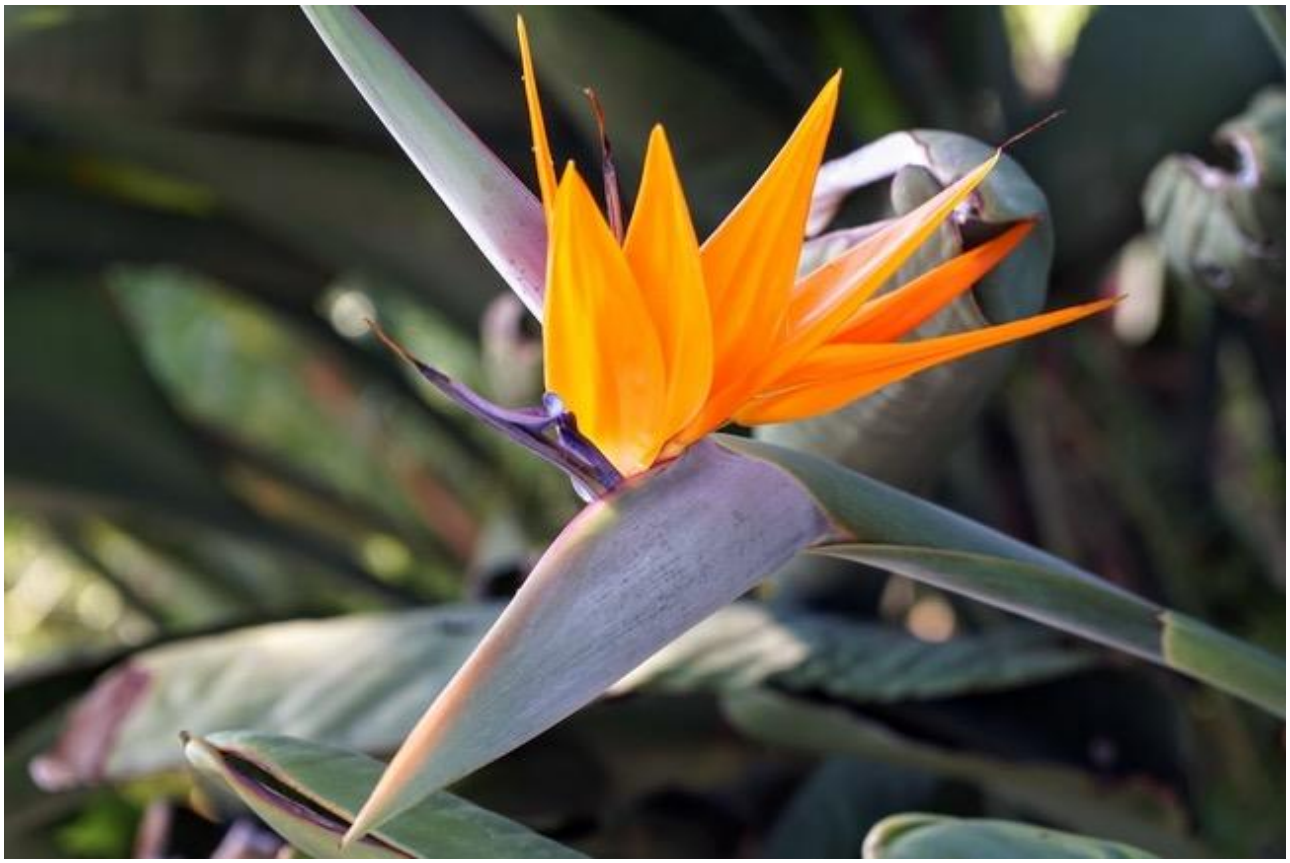
Deepening the Scientific Understanding of Life on Earth

The Half-Earth Project Map is a global assessment of biodiversity richness and rarity at 1–50 km scale for all terrestrial and marine vertebrates and at 1 km to country scale for hundreds of thousands of invertebrates and plant species. ***No other public tool contains this level of global species data***. Out team continues to advance and develop it, providing even more crucial information to scientists, governments, and citizens so we can best preserve our biological heritage. In 2022, new tools and features were added to better reveal patterns of biodiversity, human impacts, and protected areas to identify conservation opportunities.



- **Irrecoverable Terrestrial Carbon Layer:**
  Irrecoverable carbon refers to the vast stores of carbon in nature that are vulnerable to release from human activity and, if lost, could not be restored by 2050 — when the world must reach net-zero emissions to avoid the worst impacts of climate change. This new map layer, showing irrecoverable carbon by tons per hectare in both biomass and soils, is important for highlighting areas that can achieve both carbon and biodiversity goals. "This is reimagining the way species conservation is done. Finding opportunities where we can partner with other global efforts will improve our ability to protect species now and combat climate change that threatens the quality of habitat," said Dr. Jetz.

- **Developing New Human Pressures Layers:** We are developing new layers assessing human pressures over time, starting from 1990 at a high resolution of 300 m. They will include agriculture, transportation, human intrusion, energy production/extraction, and urban areas. These will help identify the sources of habitat loss in areas of interest over time and aid in the identification of effective conservation areas.
- **New Rarity and Richness Layers:** In the U.S. and Canada, the Half-Earth Project Map now offers 1 km species richness and rarity layers at an unprecedented level of detail for six species groups: mammals, amphibians, butterflies, reptiles, summer bird ranges, and winter bird ranges. Additionally, richness and rarity maps for more than 1,400 tree species in North America are nearly final. This information is contributing to conservation planning at actionable scales.
- **Finalizing First Global Ant Richness Dataset:** We are currently working towards a new global ant richness layer that will soon be featured on the Half-Earth Project Map. This is the first time that the global distribution of ants has been mapped.
- **Flexible Selection Tool:** Conservation managers, planners, and educators can now use a drawing feature to select the area they would like to analyze on the map. Previously, the map analyzed areas by national boundaries. However, many conservation challenges and solutions are not limited by these artificial area markers.



Select Presentations: The Half-Earth Project Connects with Thinkers and Educators

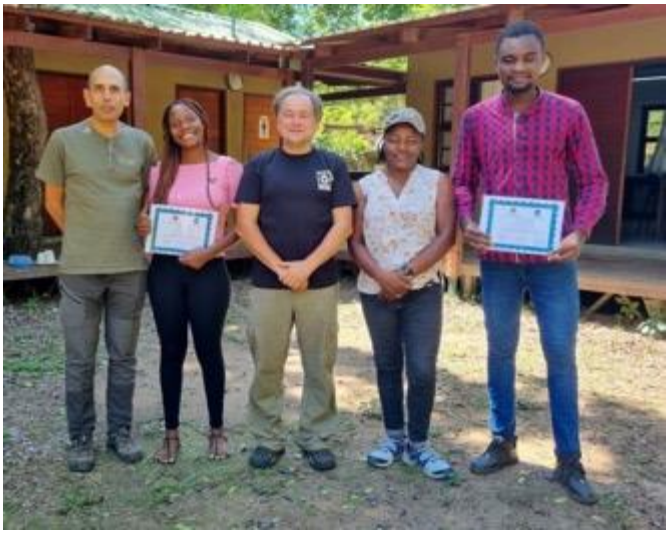
- Dr. Paula J. Ehrlich, President & CEO of the E.O. Wilson Biodiversity Foundation and co-founder of the Half-Earth Project, joined the virtual panel "Shemá: Biodiversity, Franciscans, and the Season of Creation," which featured a discussion with Rosa María Ruiz, a prominent Indigenous environmentalist and defender of Madidi National Park in Bolivia, and Brother Erlison Campos, a Franciscan friar of the Custody of Saint Benedict of the Amazon, Brazil. The panel, moderated by Nora Pfieffer, Director of Franciscan Justice Circles at Franciscan Action, was broadcast across Catholic media networks.

- At the Ecological Society of America and Canadian Society for Ecology and Evolution in Montreal, Dr. Dennis Liu, Vice President of Education, and Dr. Jetz presented papers and participated in panels on scientific topics. Subject matter covered developments in conservation biology and ecology studies. Dr. Liu shared lesson plans and results from the Half-Earth Project Map engagement with educators as part of the Half-Earth Project Educator Ambassador program.

- Joel Johnson, Chief Marketing and Communications Officer, moderated an in-person and virtual panel entitled *Can Purpose Do More Than It's Supposed to Do?* at 3BL Forum: Brands Taking Stands. The event featured Jonah Smith, Global Head of Environmental, Social, and Governance at The Kraft Heinz Company; Leigh Horner, Vice President of Corporate Communications and Corporate Social Responsibility at Hershey's; and Alison DaSilva, Managing Director of Purpose and Impact at Zeno Group. The event had over 2,000 attendees.

Working Alongside People and Communities to Reimagine our Relationship with Nature

Half-Earth Chairs and Scholars at Gorongosa National Park in Mozambique



The Half-Earth Chairs and Scholars program enhances the best of biodiversity scholarship by supporting students and researchers around the world who are advancing biodiversity science, teaching, and leadership in their particular region of the globe. A principal goal of the Half-Earth Project in Mozambique is to train a new generation of local taxonomists and conservationists, each specializing in a different taxonomic group, and to collect new data on the distribution of various taxa to fill in gaps in the Half-Earth Project Map.

The Half-Earth Fellowships in Taxonomy and Biodiversity Exploration graduated its second class in late 2022. From over 50 applicants, two scholars were selected by Dr. Piotr Naskrecki, Scientific Chair of the Half-Earth Project and Associate Director of the E.O. Wilson Lab in Gorongosa National Park, to participate in a taxonomy research intensive. The latest Half-Earth Fellowships in Taxonomy and Biodiversity Exploration in Gorongosa were awarded to Arcenia da Piedade Chivale, an

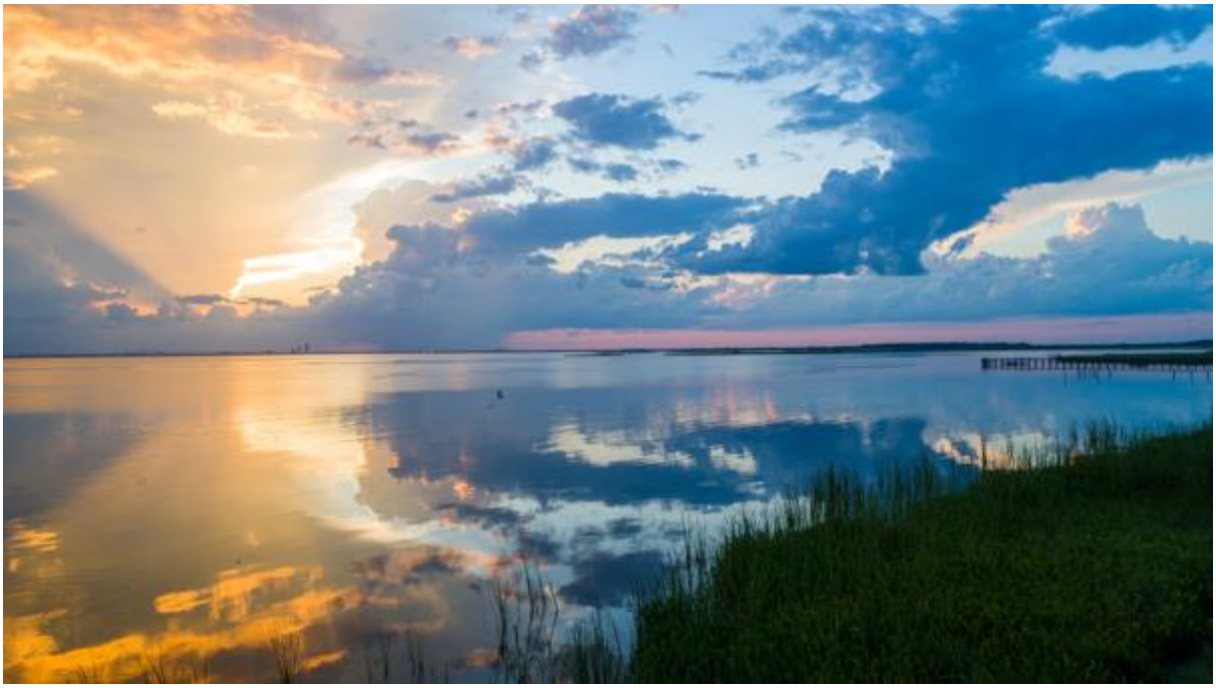
ichthyologist at the School of Marine and Coastal Sciences of Eduardo Mondlane University, and Raul Santacruz Chomela, an ornithologist from the Faculty of Natural Sciences at Lúrio University. After training in entomology last fall with Dr. Naskrecki, they were joined by Dr. Albert Chakona, a South African ichthyologist, who provided advanced training in fish taxonomy; Dr. Mark-Oliver Roedel, who offered training in aquatic amphibians; Dr. Ara Monadjem, a mammologist, who taught the scholars small mammal taxonomy; and Dr. Josphine Mundava, an ornithologist, who led training in bird identification. The fellows completed the multi-week program in December.

After graduating with a Master of Science in conservation biology, inaugural Half-Earth Fellow Ana Gledis da Conceição, accepted the position of biodiversity offset officer at ANAC, the Mozambican governmental body responsible for all protected areas in the country. Dr. Naskrecki commented, “It is a great opportunity for her to use her knowledge of biodiversity mapping to identify priority areas for conservation.” Ana continues to pursue her passion for bat biology and taxonomy and is working with Dr. Naskrecki on a paper that examines the correlation between the inner ear morphology and the bats’ hunting behavior.

Half-Earth Project Educator Ambassador Network and Institutes

The Half-Earth Project Educator Ambassadors program continues to grow into a robust network of teachers engaging youth in biodiversity science and conservation. The network has more than 900 official ambassadors and four times that number of educators engaged in the broader community. Ambassadors are in 39 states and Washington, D.C., with access to more than 100 different lesson plans to use in the classroom.

This year, Dr. Liu and Master Ambassadors had the opportunity to participate in the Knowles Summer Institute in Philadelphia and to interact with over 200 Knowles Fellows. Knowles focuses on science and math teachers from their pre-service training to their first job as high school teachers. Its aim is to develop teacher leaders. The Half-Earth Project enjoyed great success, for example, working with these teacher leaders across the U.S. to develop the Guided Inquiry focused on the richness and rarity of hummingbirds.



For the first time, the Half-Earth Project participated in the annual conference of the Ecological Society of America (ESA). The membership of the ESA is predominantly composed of academic research ecologists and conservation practitioners, but in recent years, the social and educational dimensions of their work have gained emphasis. Dr. Liu presented "Biodiversity, Ecology and Conservation Education Using the Half-Earth Project Concept" at a session focused on community-based learning. The room was overflowing, with discussion on how to reach particular audiences, including members of religious communities. Dr. Liu has been recruited to serve as a member of the educational standards committee of the ESA and took part in a discussion of new standards called Four-Dimensional Ecology Education (4DEE).

Finally, Half-Earth Day provided an opportunity to engage teachers in the greater Washington, D.C., region. The National Museum of Natural History co-hosted an intensive three-hour workshop that included middle school, high school, and college educators from the region. Museum educators from Smithsonian Air and Space, Natural History, and American History also attended. Smithsonian Natural History education leaders Carla Easter and Robert Costello addressed the group, and Jill Deppe, Senior Director of Audubon's Migratory Bird Initiative, gave a brief guest presentation. The Smithsonian team is eager to work with us on future workshops and institutes for educators.

A Catalyst to Leave No Species Behind

The challenges facing the future of our planet cannot be solved by one person, one organization, or even one country. The future is our shared responsibility. That is why the Half-Earth Project brings together people, communities, leaders, companies, organizations, and governments to build a collaborative, expansive approach to saving biodiversity.

Half-Earth Day 2022

This year, to celebrate Half-Earth Day 2022, we gathered leaders in Washington, D.C., at the Smithsonian National Museum of Natural History and U.S. Capitol Visitors Center for two days of events that offered hopeful solutions to the global biodiversity extinction threat. With the theme Our Shared Future, a Celebration of Half-Earth Day, attendees had the opportunity to hear from leading thinkers, CEOs, scientists, and conservationists on a wide range of strategies,

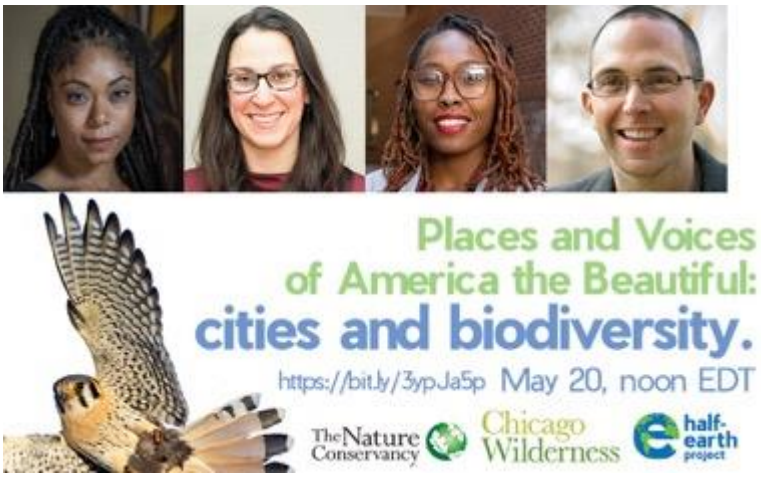
partnerships, and science that could aid the world in protecting biodiversity. The event, emceed by renowned wildlife biologist and TV host Jeff Corwin, featured four panel discussions, films, and keynote sessions, including:

- *Safeguarding the Planet for Biodiversity and People*, with Dr. Jetz; Elizabeth Gray, CEO of Audubon; Jennifer Morris, CEO of The Nature Conservancy; and Cristián Samper, Managing Director and Leader of Climate Solutions for Bezos Earth Fund, which was moderated by Ellen Stofan, Under Secretary for Science and Research for the Smithsonian Institution.
- *Achieving Conservation Outcomes Nationally*, with Alison Fox, CEO, of American Prairie; Heather Tallis, Assistant Director for Biodiversity and Conservation Science in the White House Office of Science and Technology Policy; Kate Kelly, Deputy Chief of Staff for Policy at the U.S. Department of Interior; Sean Breyer, ArcGIS Living Atlas of the World Program Manager; Alex Killion, Managing Director for the Yale Center for Biodiversity and Global Change; and Kameran Onley, Director of North American Policy and Government Relations for The Nature Conservancy, which was moderated by Dr. Jetz.
- *People in Nature and Local Solutions*, presented by Burt's Bees, with Queen Quet, Chieftess of the Gullah/Geechee Nation; Norina Vicente, Half-Earth Project Chairs & Scholars; Lucas St. Clair, President of the Elliotsville Foundation; Adams Cassinga, National Geographic Explorer; Alyssa Ravasio, Founder and CEO of Hipcamp, which was moderated by Melanie A. Adams, Director of the Smithsonian Institution Anacostia Community Museum.
- *Earth Optimism*, with Jeff Corwin, wildlife biologist and TV host; Sean B. Carroll, Head of Studio for the HHMI Tangled Bank Studios; Dawn Wright, Chief Scientist for Esri; and Mamie Parker, Trustee of the Chesapeake Bay Foundation, which was moderated by Kirk Johnson, Director of the Smithsonian National Museum of Natural History.
- Ani Dasgupta, President and CEO of the World Resources Institute, gave the James M. and Cathleen D. Stone Foundation Distinguished Lectureship in Biodiversity entitled "Bringing Climate, Nature and People Together."

Places and Voices of America the Beautiful

Last year, the Half-Earth Project continued our *Places and Voices of America the Beautiful* discussion series that is focused on areas of great biodiversity in the U.S. and the pathways and people essential to protecting them, with the goal of bringing new and diverse voices into the 30x30 dialogue. In March, the discussion featured groups working to preserve the Chesapeake Bay, where freshwater meets saltwater, wilderness meets rural farmland meets urban communities. Guests included Mamie Parker, Trustee of the Chesapeake Bay Foundation; Darius

Johnson, Executive Director of the Kent Attainable Housing; Joel Dunn, President and CEO of Chesapeake Conservancy; and Crystal Jordan, Chesapeake Bay waterwoman.



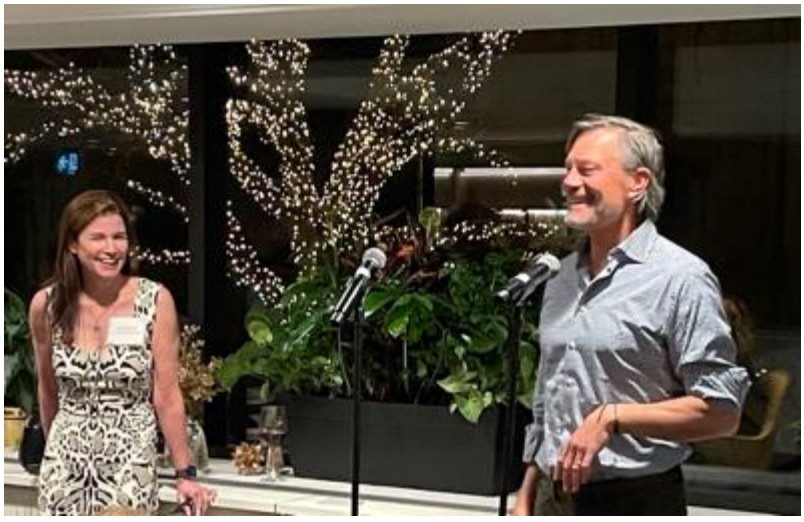
In May, we released the installment "Cities and Biodiversity." The discussion focused on the opportunities and challenges in trying to help nature and people thrive together with equity and inclusion in urban spaces. Myriam Dondzina, Deputy Director of The Nature Conservancy Cities Network, discussed her work developing the Atlanta Cities program in Georgia, which has expanded into a network that spans 20-plus cities across the U.S., while Deja Perkins, currently a PhD candidate at North Carolina State University, explored connections between citizen science and environmental injustice.

In July, the episode focused on "Reflections of Faith on 30×30," with an exploration of the voices of conservationists engaging from their faith and tapping into indigenous knowledge and native wisdom. Panelists included Gary Nabhan, poet, author, and ethnobotanist; James Lockman, Senior Restoration Ecologist at Tierra Data and a member of the Jesuit priesthood; and Ruah Swennerfelt, activist in the Transition Movement and former Quaker EarthCare Witness leader. You can view the discussions and other Half-Earth Project videos here.

Inspiring Policy Action

The E.O. Wilson Biodiversity Foundation and the Half-Earth Project are also inspiring policy action. At COP15, we were honored that the Species Protection Index (SPI), created for the Half-Earth Project Map, was formally adopted as one of three measurement indicators for the Global Biodiversity Framework. These indicators will provide robust measures for policy makers across the world as they work towards achieving biodiversity conservation targets.

The E.O. Wilson Biodiversity Foundation also held a dinner and discussion at COP15 entitled *This is Our Moment: How do we make better decisions for species and people?* This invitation-only event, hosted by our board members Jeffrey Ubben and Keith Tuffley, featured indigenous, business, and conservation leaders, as well as distinguished scientists and philanthropists. The group gathered to discuss and explore the role of the private sector in supporting 30x30



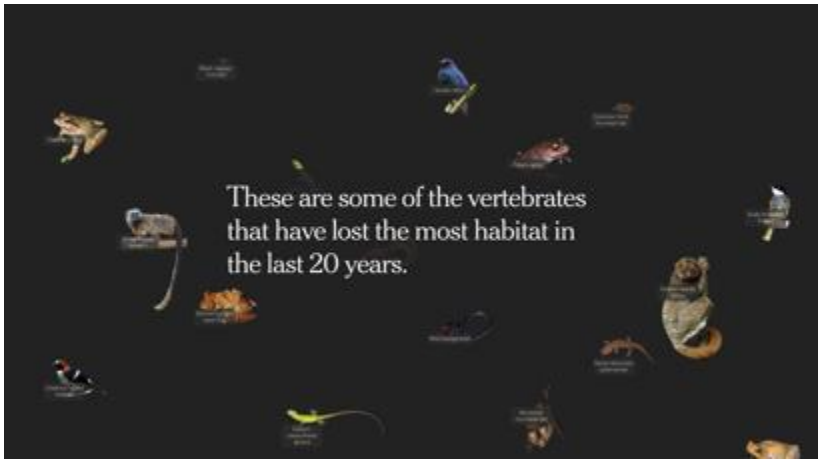
globally. Leaders from World Wildlife Fund, Bezos Earth Fund, Business for Nature, and the International Indigenous Forum on Biodiversity were in attendance.

Additionally, we held Saving America's Biodiversity, a congressional briefing, as a Half-Earth Day companion event. It covered the Wildlife Corridors Conservation Act, challenges facing biodiversity, finding solutions, and building partnerships to achieve conservation gains from connectivity. It was hosted alongside several conservation organizations in cooperation with the offices of Representative Don Beyer (D-VA), and Senator Ben Ray Luján (D-NM).

Finally, Representative Don Beyer (D-VA), author of the Wildlife Corridors Conservation Act, introduced a resolution to Congress in support of Half-Earth in June 2022. Beyer shared, "My friend E.O. Wilson sadly passed away last year, but his life's work—the protection of our planet's biodiversity—lives on. This legislation honors and supports one of E.O.'s last great dreams: the protection of half of Earth's lands and waters for the conservation of species. The global extinction crisis makes that work all the more important, and I will continue to work with colleagues and individuals and organizations committed to protecting our environment to advance this vital cause."

In the Media

We robustly sought to seize the moment for biodiversity in 2022 by securing earned media that communicated the crisis and solutions to key audiences through an array of media outlets. Select highlights are listed below.



- In the article, "Animals are Running Out of Places to Live" in the *New York Times,* Dr. Jetz was featured. In advance of COP15, the article put a spotlight on why protecting sufficient land and water to save species is so important and how maps can help identify priority places.
- Dr. Ehrlich was featured in the article "Extinction Crisis Puts 1 Million Species on the Brink" in Reuters. She said, "Understanding everything that an animal is and does for the world helps us understand that we, too, are a part of nature and we need nature to survive."
- In a *Mongabay* article, Dr. Naskręcki shared insights on how the pandemic hit the pause button on species discovery, noting, "I'm a strong proponent of reducing what is called 'helicopter science' … I would love it if every country had centers like ours, which are dedicated specifically to biodiversity, documentation, and exploration."
- In another *New York Times* article, Dr. Jetz offered background on important maps showing where biodiversity is most at risk in the U.S. Dr. Jetz made the critical point that it's essential that policy makers make data-driven decisions about which areas to protect. Otherwise, "you might gain a large percentage of area protected but you have done very little in actually safeguarding species," he said.
- In a *Vox* article about the definition of conservation, Dr. Ehrlich was quoted, saying, "When we talk about

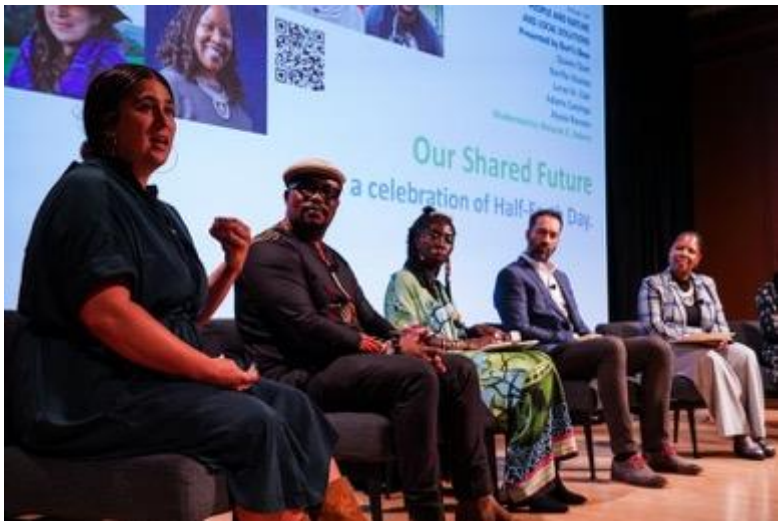
30 by 30, we're talking about a certain amount of habitat, but which places we pick are critically important."

- In a study published in Oryx, the theory of Half-Earth was tested using the critically endangered orangutan in Borneo as a case study. The authors, speaking with 33 experts, mostly scientists with a specific track record of estimating orangutan population sizes, found that Half-Earth was predicted to strongly reduce orangutan declines. The experts concluded that it would be comparatively easy to achieve and would reduce population decline by at least half compared to current management.

Building a Strong Organization with a Focus on Diversity, Equity, and Inclusion

The E.O. Wilson Biodiversity Foundation is committed to being an organization that exhibits the same balance we are asking for between people and nature. We are building staff and volunteer leadership, partnerships, and a supporter base that reflect the complex world that is our shared home. We are deeply cognizant that the path to Half-Earth must be an equitable and inclusive one and that ultimately it will be people internally and externally who will determine how we move forward to that end together.

To that end, we are working with intention to ensure diverse representation at Half-Earth events, discussions, forums, and within programmatic activities. For example, the *Places & Voices of America the Beautiful* discussion series has the expressed purpose of brining diverse individuals into the 30x30 conversation. We have engaged more than 20 diverse panelists on topics ranging from place-based conservation and addressing inequities in conservation to engaging faith-based communities and preserving cultural heritage. As one of our *Places & Voices* panelists, Myriam Dondzina, said in the discussion on "Cities and Biodiversity," "It's the lives of the people in these places that are the true 'maps of meaning' and that empower conservation success."

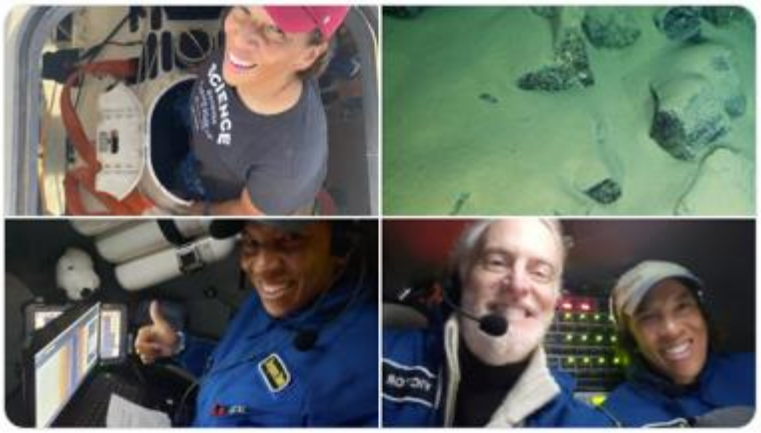


Our theory of change is that in being willing to engage with communities on their full relationship and history with land, water, and biodiversity, we stand to achieve more meaningful and durable outcomes for both nature and people. This focus was embodied in the session *People and Nature and Local Solutions* on Half-Earth Day, which focused on the insights and knowledge of local communities and the legal structures that help support equitable and trust-based relationships. Queen Quet, Chieftess of the Gullah/Geechee Nation, was part of that discussion, and her presence created the opportunity for attendees and other panelists to hear from a scientist and local-community leader about how local knowledge and traditions were essential elements in the development of a major saltwater marsh and coastal biodiversity plan impacting millions along the sea island coasts of Florida, Georgia, North Carolina, and South Carolina. Queen Quet reminded us that conservation of a place is done by the people who live in and need that place. That example was further accentuated by the presence of Lucas St. Clair, instrumental in developing the Katahdin Woods and Waters National Monument, who

discussed his strategies for centering the Wabanaki and other Native American nations' cultural heritage in the conservation of thousands of acres in Maine.

Additionally, the Half-Earth Project continues to provide staff, board members, and contract partners with training opportunities to learn about approaching conservation through a lens of justice, equity, diversity, and inclusion. Our classes include *Building and Sustaining Trust with Diverse Communities,* under the direction of social scientist Leander Lacy.

Board Member Spotlight



In July, board member Dr. Dawn Wright and an expedition team descended to the deepest point on Earth: the Challenger Deep in the Pacific Ocean. The crew was on a mission to map a part of the ocean floor using advanced sonar imaging technology. As chief scientist of Esri, the global leader in location intelligence and geographic information system (GIS) technology, Dr. Wright supported the dive with her expertise in marine geology and geospatial technology. She was the first person of African descent to dive to the world's deepest point. Dr. Wright plans to release a series of maps and data from the dive on Esri's ArcGIS Living Atlas of the World, the foremost collection of geographic information—including maps, applications, and data layers—from around the world. We are so proud of Dr. Wright and Esri, which is the technology partner behind The Half-Earth Project Map.

Grateful for the Leadership Support of Don Henley and You!

Last year, our supporters demonstrated tremendous commitment to ensuring no species is left behind. Legendary songwriter, musician, and co-founder of the Eagles Don Henley made an extraordinary contribution to the Half-Earth Project, paying tribute to the late E.O. Wilson as well as to the next generation of amazing scientists, policy makers, and Indigenous, community, and corporate leaders who are helping realize the goals of Half-Earth. Additionally, we are pleased to recognize the generosity of CBRE, Marcia Angle, Charles Smith, Stephen Lockhart, and the David and Lucile Packard Foundation, as well as the many other Half-Earthers, who are heeding the call to protect the very fabric of life. Thank you for doing your part to help us reimagine how we care for our planet.

Thank You!

With the extinction crisis worsening and nearly 1 million species on Earth under threat, we must come together, across every sector, nation, and community, with the best available science and the inspiration to act. Thank you for helping us do so and standing beside us as we work to galvanize people and communities and leverage science to protect nature. Thank you for being a part of our effort to reach Half-Earth.