



CONSERVING BIODIVERSITY: THE FOUNDATION FOR A SUSTAINABLE PLANET

The Smithsonian is driving an initiative to leverage the best science toward conserving Earth's biodiversity for a sustainable future. This involves deploying advanced science and technology to measure and quantify biodiversity accurately. Based on this information, we develop tools and strategies to protect the diversity of genes, species, and ecosystems. As a pioneer in biodiversity research and conservation, the Smithsonian has harnessed cutting-edge genomics, geospatial analysis, acoustics, and other innovative tools to measure, understand, and safeguard our planet's diverse life forms.

HOW THE SMITHSONIAN IS TAKING ACTION

Putting Collections to Work for a Sustainable Planet:

- The Smithsonian's unparalleled collection of specimens, artifacts, live creatures, and genomic sequences is the foundation for understanding the evolution and the current state of biodiversity. Expanding access to these collections, the Smithsonian can crowd-source informed decision-making for sustainable conservation, including climate mitigation.
- Completing the first quantitative assessment of marine biodiversity in protected and unprotected U.S. waters
- Partnering with NOAA on a genomic library of all fishes in U.S. waters.

Convening the World Toward a Sustainable Planet:

- The Smithsonian's [ForestGEO](#) & [MarineGEO](#) coordinate partners worldwide for tracking long-term change in terrestrial and marine ecosystems. Their findings are pivotal in understanding how biodiversity and its services to people are changing, especially in the face of altered climate, guiding conservation and environmental management decisions.
- ForestGEO coordinates 77 sites in 29 countries where the growth and survival of more than 7 million trees representing 13,000 species are monitored using standardized methods to create a global record of forest ecology. Recognizing the global need for strengthening capacity in forest science, ForestGEO is deeply committed to training local scientists in new skills and providing access to a network of data and shared expertise.
- MarineGEO is co-leading with NOAA a national strategy for ocean biodiversity science and stewardship.
- Engaging in community science initiatives like [Neighborhood Nest Watch](#). The Smithsonian has seamlessly translated its research into actionable conservation strategies, such as promoting [Bird-Friendly Coffee and Cocoa](#) in Latin America and championing [Bee-Friendly Beef](#) in the eastern United States.

Tracking Wildlife and Migrations:

- [Snapshot USA](#) is a groundbreaking platform that empowers various organizations to monitor wildlife across the United States using the Smithsonian's established protocols. At its core lies [Wildlife Insights](#), an AI-driven tool developed in collaboration with conservation NGOs and Google, which identifies wildlife species from user-uploaded photos.
- [Movement of Life](#) (MoL): MoL promotes biodiversity conservation by tracking animal movement, such as long-distance migrations from wildebeest to whales.
- Recognizing the importance of migrations for biodiversity, MoL, through the [Smithsonian Migratory Connectivity Project](#), delves into the full life-cycle biology of migratory birds. This approach ensures their conservation across different habitats.

Developing Conservation Technologies

- The Smithsonian is at the forefront of pioneering technologies like non-invasive DNA sampling, environmental DNA detection, and advanced movement data analysis.
- With the [Continuous-Time Movement Models](#) (CTMM), it's now possible to statistically estimate animal movement speeds and habitat use. Moreover, AI is being leveraged for biodiversity surveys, aiming at an open-source framework to process

BEYOND MEASUREMENT

The future of our planet hinges on our understanding and conservation of biodiversity. The Smithsonian is a beacon of hope and a leader in this mission, ensuring that future generations inherit a world abundant in diversity.

LEARN MORE

Mapping a conservation research network to the Sustainable Development Goals, <https://doi.org/10.1111/csp2.12731>

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