



Reimagining the way we care for our Planet: advancing biodiversity conservation through the hopeful vision of *Laudato si'* and *Half-Earth*

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Abstract: To be responsible stewards of our planet, we must urgently explore, discover, and learn as much as possible about biodiversity, and identify the network of places where we have the greatest opportunity to safeguard the most species. This paper explores how the complementary visions of Pope Francis's *Laudato si'* and E.O. Wilson's *Half-Earth* call for a transformative shift in humanity's relationship with the natural world, offering a hopeful, unifying framework that combines scientific rigor with moral urgency. Drawing on the work of the E.O. Wilson Biodiversity Foundation's Half-Earth Project, the paper examines tools such as the Half-Earth Project Map and the Species Protection Index (SPI), which enable data-driven identification of high-priority conservation areas. Case studies from Italy's Pollino National Park and Alabama's Mobile-Tensaw Delta illustrate how keystone trees and intact habitats serve as ecological anchors for underprotected biodiversity. As E.O. Wilson said, biodiversity holds the world steady. By deepening human understanding of and connection with nature, the Half-Earth Project helps reimagine how conservation is practiced, empowering decision-makers, scientists, and citizens alike to protect the web of life and ensure that no species is left behind.

Key words: biodiversity conservation; *Half-Earth*; *Laudato si'*; Species Protection Index; integral ecology.

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1. INTRODUCTION

The accelerating biodiversity crisis demands not only scientific precision and policy innovation, but also a profound reimagining of humanity's relationship with the living world. Two landmark works published nearly simultaneously - *Laudato si': On Care*

for Our Common Home by Pope Francis and *Half-Earth: Our Planet's Fight for Life* by E.O. Wilson - offer a complementary moral and scientific framework for addressing this challenge. Though emerging from distinct intellectual traditions, they converge on a shared imperative: humanity must transform how it understands, values, and safeguards the bio-

sphere. Together, they articulate a hopeful and actionable vision for biodiversity conservation grounded in connection, responsibility and knowledge.

For those dedicated to the study, protection, and restoration of old-growth forests and ancient trees, this vision offers both a scientific foundation and a moral orientation. Ancient forests are not relics of the past; they are living archives of evolutionary history, reservoirs of biodiversity, and anchors of ecological stability. Their preservation embodies the integrative ecological ethic that E.O. Wilson advanced throughout his life.

This contribution explores the synthesis of these perspectives and highlights how the E.O. Wilson Biodiversity Foundation has operationalized this vision through the Half-Earth Project, particularly via the Half-Earth Project Map and the Species Protection Index (SPI) (E.O. Wilson Biodiversity Foundation, 2025; 2026). Case studies from southern Italy and the southeastern United States, demonstrate how integrating moral clarity with geospatial biodiversity science can guide more effective and globally coherent conservation outcomes.

2. A SHARED CALL TO REIMAGINE OUR RELATIONSHIP WITH NATURE

At the heart of both *Laudato si'* and *Half-Earth* lies a call for a fundamental shift in how humanity perceives its place within the web of life.

In *Laudato si'*, Pope Francis frames environmental degradation as both a moral crisis rooted in fractured relationships - with nature, with one another, and with future generations (Francis, 2015). He emphasizes the intrinsic value of all creatures and insists that ecological responsibility is inseparable from social

justice. "Because all creatures are connected," he writes, "each must be cherished with love and respect."

Similarly, E.O. Wilson argues from evolutionary biology and conservation science that, "The biosphere does not belong to us; we belong to it." (Wilson, 2016) His *Half-Earth* call to action - protecting half the planet's land and seas to safeguard the bulk of biodiversity - rests on the species-area relationship and decades of empirical ecological research (MacArthur & Wilson, 1967). Yet Wilson's appeal is not purely technical. He frames biodiversity conservation as "humanity at its most noble" (Wilson, 2016), linking scientific insight to moral imperative.

The convergence of these two voices - one pastoral, one scientific - implore us to consider biodiversity conservation as not merely an exercise in land allocation but as a civilizational undertaking. Ultimately, this requires a shift in our relationship with nature that combines humility with knowledge, and foresight with ambition, to sustain the web of life.

3. KNOWLEDGE AS STEWARDSHIP: THE SCIENTIFIC FOUNDATION OF HALF-EARTH

Central to the Half-Earth vision is the principle that effective stewardship requires comprehensive knowledge of the living world. Just as a surgeon must understand anatomy before performing an operation, conservation planning requires detailed understanding of where species occur geographically, along with their interactions within ecosystems. Protecting only iconic vistas or charismatic megafauna risks perversely increasing extinction in poorly understood regions. Instead, conservation must be guided by systematic biodiversity inventories and geospatial species mapping to identify the network of places that should be



Figure 1 - The Half-Earth Project Map, showing conservation priority, species richness, and rarity patterns for over 200,000 terrestrial and marine species at 1–50 km resolution, created in collaboration with Esri, Vizuality, and the Map of Life. The Species Protection Index (SPI) - a core indicator of the Kunming-Montreal Global Biodiversity Framework - benchmarks how effectively each country's protected areas represent the species within its borders; National Report Cards are freely accessible at map.half-earthproject.org. (E.O. Wilson Biodiversity Foundation, 2025.)

prioritized for conservation to most effectively safeguard species (Figure 1).

The Half-Earth Project addresses this need by integrating global species distribution data into a high-resolution geospatial map platform. The Half-Earth Project Map identifies areas of exceptional species richness, rarity, and endemism, while overlaying existing protected areas, human pressures, and carbon storage potential (E.O. Wilson Biodiversity Foundation, 2025).

To operationalize this approach, the Half-Earth Project Map utilizes the Species Protection Index (SPI), an indicator that has been adopted by the Convention on Biological Diversity (Convention on Biological Diversity, 2022) to evaluate how effectively a country's protected areas represent the species occurring within its borders relative to their global dis-

tributions (E.O. Wilson Biodiversity Foundation, 2026). Scored from 0 to 100, SPI moves beyond percentage-area targets to assess biodiversity outcomes.

For example, while Chile and Mongolia have each protected approximately 20% of their national territory (Protected Planet, 2023), Mongolia's geospatially optimized approach yields a substantially higher SPI score (81) compared to Chile's (39), demonstrating significantly higher biodiversity representation without proportionally greater land allocation (E.O. Wilson Biodiversity Foundation, 2026). This case underscores a crucial lesson: conservation effectiveness depends not only on how much land is protected, but on where protection occurs.

4. PLACE-BASED CONSERVATION: CASE STUDIES IN ITALY AND ALABAMA

While global frameworks are essential, conservation ultimately unfolds in specific landscapes shaped by ecological history and cultural identity. Two case studies - one in southern Italy and one in the southeastern United States - illustrate how data-driven tools illuminate the ecological significance of place.

4.1 Pollino National Park, Italy

Pollino National Park is home to one of Europe's oldest known trees - a 1,300-year-old Heldreich's pine (*Pinus heldreichii*), documented through dendrochronological analysis conducted by the Italian National Research Council in 2018. Yet beyond this iconic organism lies a network of endemic and underprotected species dependent on its primary forests.

The Spectacled Salamander (*Salamandrina perspicillata*) and the Italian Aesculapian Snake (*Zamenis lineatus*) have restricted distributions in southern Italy. Spatial analysis via the Half-Earth Project Map reveals that while not fully secured across their global ranges, Pollino provides critical habitat contributing disproportionately to their survival (E.O. Wilson Biodiversity Foundation, 2026). The park's value thus extends beyond scenic grandeur; it is a node in a larger biogeographic network essential to safeguarding evolutionary heritage.

The ecological significance of Pollino cannot be read from any single organism, however ancient. The park's primary forests - characterized by old-growth stands of Heldreich's pine, multilayered canopy structure, and complex deadwood habitat - are themselves a biodiversity substrate, supporting communities of lichens, invertebrates, and forest interior species that depend on continuity and structural complexity unavailable in younger or managed stands. Old-growth forests of this

kind also perform critical functions in climate mitigation and adaptation: they act as disproportionately large carbon stores (Pascual et al., 2026), moderate local microclimates, and provide refugia as species respond to warming-driven range shifts (Solano et al., 2025). The protection of such sites thus advances twin imperatives - biodiversity representation and climate resilience - that are increasingly understood as inseparable at the landscape scale.

The European and Mediterranean context adds further dimension to this picture. Much of the continent's biodiversity is not wilderness biodiversity in the conventional sense, but the product of centuries of co-evolution between ecological processes and human land use - pastoral systems, managed woodlands, traditional orcharding, and agro-pastoral mosaics that have structured landscapes over generations. These cultural landscapes harbor distinctive species assemblages and embody long traditions of active stewardship. The geospatial tools developed by the Half-Earth Project are precisely suited to reveal which among these culturally shaped landscapes carry disproportionate global biodiversity significance. In doing so, they can help honor and support the communities whose inherited practices have sustained them - recognizing, as Wilson insisted, that Indigenous peoples and traditional land stewards are de facto the original conservationists, whose knowledge and continued engagement are essential to lasting conservation success (Wilson, 2018).

Representation-based conservation highlights such places not for their aesthetic prominence alone, but for their irreplaceable biodiversity - precisely the imperative *Laudato si'* captures in insisting that "certain places need greater protection because of their immense importance for the global ecosystem" (Francis, 2015).

4.2 The Mobile-Tensaw Delta, Alabama

In the southeastern United States, the Mobile-Tensaw Delta - often called “America’s Amazon” - is among North America’s most biodiverse regions (Stein et al., 2000). The recently dedicated *E.O. Wilson Land Between the Rivers Preserve* protects nearly 8,000 acres of wetlands and floodplain forest in a landscape that inspired E.O. Wilson himself.

The preserve contains over 370 terrestrial vertebrate species and extraordinary freshwater diversity, including numerous endemic fishes, mollusks, and reptiles (Boschung & Mayden, 2004). The federally endangered Alabama Red-Bellied Turtle (*Pseudemys alabamensis*), designated the state reptile in 1990, occurs nowhere else on Earth. Mature Bald Cypress (*Taxodium distichum*) trees - among them an Alabama Champion Tree measuring 430 inches in circumference - serve as ecological anchors for migratory birds such as the Swallow-tailed Kite (*Elanoides forficatus*).

The park’s value as an ecological anchor extends well beyond any single species. The delta is a place where freshwater systems, floodplain forest, migratory pathways, and endemic life intersect, sustaining webs of interaction - among tree, insect, bird, and seasonal cycle - that depend on the continuity and structural integrity of an intact system. The Swallow-tailed Kite’s return to the Champion Cypress each spring is one expression of this: a relationship between nesting habitat, insect abundance, migration timing, and forest structure that, once disrupted, cannot readily be reassembled. It is above all the endemic species here - found nowhere else on Earth - that give this place its global significance: their continued existence depends entirely on the persistence of the habitat they inhabit, making the protection of this landscape consequential far beyond its boundaries.

Half-Earth Project Map geospatial analyses show that many species in the delta have low

Species Protection Scores, indicating global vulnerability (E.O. Wilson Biodiversity Foundation, 2026). Protecting and expanding habitat in this region would therefore yield disproportionate conservation gains. The delta exemplifies how local stewardship, informed by global biodiversity indicators, contributes meaningfully to robust planetary stewardship.

5. INTEGRATING MORAL VISION AND SCIENTIFIC TOOLS

The synthesis of *Laudato si’* and *Half-Earth* underscores a key proposition: biodiversity conservation must unite ethical motivation with empirical rigor (Francis, 2015; Wilson, 2016). Scientific tools alone cannot inspire collective action, and moral appeals alone cannot optimize geospatial outcomes. Their integration offers a pathway forward.

From the theological perspective, humanity’s kinship with other creatures demands reverence and restraint. From the biological perspective, evolutionary history and ecological interdependence demand strategic protection of intact habitats. Both converge on relationality: humans are embedded within, not apart from, the biosphere.

Operationally, this convergence manifests in three principles:

1. *Comprehensive Knowledge* - Systematic species inventories and high-resolution mapping are prerequisites for effective conservation.
2. *Representational Equity* - Protected areas must safeguard the full spectrum of biodiversity, not only charismatic or economically valuable species.
3. *Democratized Access to Data* - Open, multilingual platforms enable inclusive participation in conservation planning.

The Half-Earth Project Map embodies these principles by making complex biodiversity metrics accessible to diverse stakeholders. In doing so, it extends stewardship beyond experts to civil society, echoing *Laudato si's* call for integral ecology that engages communities at every level.

6. TOWARD A TRANSDISCIPLINARY CONSERVATION ETHIC

The biodiversity crisis transcends disciplinary, national, and ideological boundaries. It demands a transdisciplinary coalition of scientists, policymakers, faith leaders, educators, and citizens. Both Pope Francis and E.O. Wilson recognized that durable conservation depends on shared narratives as much as on datasets.

Writing in *The Diversity of Life*, Wilson described the assembly of life as that which “created the world that created us” and holds it steady (Wilson, 1992). Pope Francis urged humanity to act with hope, insisting that “hope would have us recognize that there is always a way out, that we can always redirect our steps, that we can always do something to solve our problems” (Francis, 2015, §61). Together, these perspectives affirm that planetary stewardship is not an unattainable ideal but an achievable moral and scientific imperative.

As global conservation targets expand toward protecting 30% or more of the planet by 2030, the Half-Earth framework challenges us to look beyond numerical thresholds toward biodiversity outcomes and ecological integrity that ensures we leave no species behind.

The Half-Earth vision has also stimulated important and productive critical engagement in the scientific literature. Scholars have rightly raised questions about the feasibility of large-scale conservation targets, about eq-

uity in the distribution of conservation costs and benefits, and about how area-based protection can best account for the socio-ecological systems within which most of the world's biodiversity actually resides (Ellis, 2019; Schleicher et al., 2019; de Bruin et al., 2023). These questions help inform a fuller understanding of how we can, together, best achieve conservation success. Wilson's own intent was clear: conservation areas should be chosen in ways that are supported by the people living within and around them, with property rights respected and the cultures and economies of Indigenous peoples - de facto the original conservationists - honored, protected, and supported (Wilson, 2018). This aspiration is entirely consonant with *Laudato si's* principle of integral ecology: the recognition that ecological responsibility cannot be separated from social justice, and that the right of every human being to benefit from the living world must be honored even as we act to protect it. Together, these commitments define the ethical foundation on which durable conservation must be built.

7. CONCLUSION

Reimagining the way we care for our planet requires more than incremental reform. It calls for a transformation in consciousness - one that recognizes humanity's embeddedness within the biosphere and our responsibility to sustain it. The complementary visions of *Laudato si'* and *Half-Earth* provide both ethical grounding and scientific direction for this transformation.

By integrating moral urgency with geospatial precision, the Half-Earth Project equips humanity with unprecedented capacity to identify, prioritize, and protect the places that matter most for biodiversity. In doing so, it

embodies a hopeful vision: that informed stewardship, guided by humility and knowledge, can secure a flourishing future for life on Earth.

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