# Mapping for Environmental Justice and Conservation: *Shared Principles*

Today, approximately one million species are at risk of extinction globally, climate change is widespread, rapid and intensifying, and historically marginalized communities are disproportionately impacted by the outcomes of these trends. The inseparable crises of biodiversity loss, climate change, and inequitable access to nature and its benefits require transformative action. Ongoing efforts to support global and national conservation initiatives to conserve at least 30% of Earth's land and waters by 2030 ("30×30") provide opportunities for addressing the crises together. The questions of "where?" and "how?" are critical for conservationists and planners working at all scales. However, experts in environmental conservation and environmental justice have generally worked in silos, addressing the crises separately. Maps are an important tool for starting conversations, exploring alternatives, and supporting decisions regarding where and how to take action together. As such, government agencies and NGOs in the U.S. are turning to available spatial data and decision support maps to help measure and track conservation in the U.S. (e.g., conservation.gov), identify management action and direction (e.g., U.S. Forest Service, Secretarial Memo 1077-004), strategically allocate limited funds (e.g., U.S. Fish and Wildlife Service, National Wildlife Refuge Strategic Growth Policy).

The result of any map, and therefore the decisions based on that map are driven by the data and methods underpinning it. The decision to include or exclude particular information can drive resources and investments to certain places over others, making map selection and development particularly integral. However, a growing number of maps representing important locations for taking action to address the crises separately create perceptions of confusion, competition and uncertainty. A set of shared principles across biodiversity and human equity-focused efforts can offer a framework to address the intertwined challenges that society faces by guiding purposeful selection and application of maps and advancing equitable conservation planning. Doing so may allow planners to be more explicit in investing limited resources in places that serve to generate positive outcomes at the intersection of biodiversity conservation and equity.

We represent a community of scientists with expertise in creating, analyzing and/or using spatial data. We believe spatial data analysis can play an important role in ensuring that prioritization of future conservation efforts improves biodiversity, addresses climate change, and advances the well-being of people, particularly overburdened and disproportionately impacted communities. For some in the working group, our mission is conservation, but we value equity. For others, it is vice versa. Here we identify a set of shared principles that underlie spatial prioritizations for biodiversity conservation, climate adaptation, and environmental justice. You can find a more comprehensive resources for principle and their use at mapmatch.org.

**DURABILITY** the ability to sustain or adapt in face of a stressor, especially those caused by climate change, globalization, and urbanization.

- Biodiversity: Key protections and a network of healthy, connected lands and waters allow communities to persist over the longer-term. The result may be greater capacity to resist disturbances.
- Equity: Resources to withstand financial, climate, and other stressors strengthen communities and enhance their health in a way that will reduce the negative impacts of present and future challenges.

**ACCESS TO RESOURCES** the availability and attainability of resources and suitable climates without undue burden.

- Biodiversity: Supporting wildlife to move freely across landscapes ensures access to suitable habitat and resources and allows them to avoid areas at risk of change due to climate or environmental catastrophes.
- Equity: Providing people access to resources, money, and nature supports their livelihoods, health and well-being.

**ENVIRONMENTAL HEALTH** the state of well-being that leads to clean air, water, soil, and suitable climate.

- Biodiversity: Provides for robust ecosystems, thriving wildlife populations, lower risk of disease, and more. It enables biodiversity to provide abundant and beneficial services to people.
- Equity: Leads to lower incidence of serious health conditions. Historically marginalized communities are disproportionately burdened by environmental health hazards and deserve greater access to clean air, water, and soil and suitable climate.

**FUNDAMENTAL NEEDS** the conditions necessary for individuals and communities to fulfill needs related to safety and respect and to avoid serious harm. Many needs can only come from human interactions with each other and their environment.

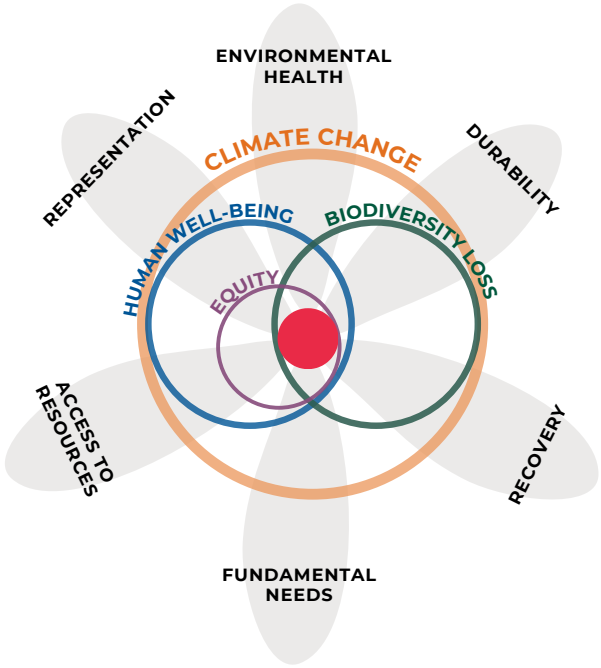
- Biodiversity: Providing safe haven for plants and wildlife and treating biodiversity with respect can help promote health and adaptation.
- Equity: Equitable allocation of and access to communal safe spaces and respect increases the ability to cope with uncertainty, participate in decision-making, and prepare for the future.

**RECOVERY** the process of reducing or reversing the negative impacts of natural or manmade risks on communities to allow for restoration to a former or better state.

- Biodiversity: Allows communities to recover to a point where they no longer need protection, and provide a sustainable future for irreplaceable wildlife and ecosystems.
- Equity: Incorporating historic complexities to reduce vulnerabilities ensures that recovery of communities doesn't become just a return to the previous state of inequity.

**REPRESENTATION** the opportunity and ability to act on behalf of a community. It may ensure the inclusion of appropriate communities and their components.

- Biodiversity: Representing the complete variety of life ensures a diverse set of evolutionary history, niches and environments/climates to help species and communities adapt and persist.
- Equity: Meaningful involvement of marginalized communities in decision-making ensures that outcomes reflec t the needs and priorities of those historically and systemically excluded from place-based investments.




The area of focus (center most circle) for this work given the current challenges and opportunities facing people and biodiversity.

We recognize some key assumptions that are not mappable, but important to take into consideration:

- "All models are wrong, but some are useful" (G.E.P. Box, 1976). The data and maps oversimplify our world and therefore have inherent errors. We are not trying to correct these, but work within their bounds and make their limitations clear to the user. Importantly, we recognize that these maps are based on our current reality and reflect the systems that we are trying to change (see decolonization). They are often created by historically privileged people and organizations.

- Communities have the right to define, collect, protect, interpret, manage, and apply data in a way that respects their ethics, values, and/or relational responsibilities. Inclusion of these data should be voluntary and must genuinely make space for the needs of communities. Indigenous communities in particular, have unique governance structures, histories, and practices that should be respected.

- We aim to maximize benefits and minimize harm. Though the principles are shared among us, specific actions that may be beneficial for one - people or wildlife communities - may not benefit the other. It is important to recognize potential harms and unintended consequences.

- We may have some data, but we do not have all the information. Local groups hold knowledge critical to prioritizing action and allocating resources in their communities. Understanding values and needs and facilitating meaningful involvement in mapping and decision-making are paramount to achieving better outcomes for people and nature.

- Colonialism has affected marginalized groups in different ways, resulting in different inequities and requiring different approaches and solutions. Forcibly displaced Indigenous peoples have different circumstances and needs than people that endured forced migration from the Global South or minorities that willingly migrated. As a result, inequity can look different for different communities.

- This work and its context are ever-changing. We cannot assume that because something was right for the past or present, that it will be right for the future. Quantitative and holistic metrics of success will also need to keep pace with the ever-evolving paradigm.

There is not one map to rule them all. To the contrary, new maps will be created to answer new questions that arise from changing conditions and our understanding of them. These shared principles should guide effective application of knowledge to the map-making and spatial analysis that often informs decision-making. Intentional map selection and use will be important to addressing biodiversity loss, climate change, and inequitable access to nature and its benefits together.