

## **Enablers and Barriers to Community-Based Conservation**

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### **Abstract**

In the United States, conservation has long been rooted in the belief that wilderness is separate from humans. The most common form of conservation in the US is the National Park System, which has a darker history of taking land from the indigenous peoples who resided on them. Community-based conservation (CBC), on the other hand, is a mode of environmental conservation rooted in engaging and supporting community members (i.e., the people directly affected by conservation measures), which allows for the alignment of environmental protection, resource conservation, and community development. This research project analyzes the barriers and enablers for CBC with the goal of suggesting a customized plan to shift conservation in the United States toward a more community-based framework. By studying successful CBC projects in other countries and the current state of CBC in the US, we make recommendations for expanding effective CBC efforts in the United States.

### **Plain Language**

Conservation practices in the United States often separate people and nature. National Parks are the most common perceptions of conservation, but there are also local, community-based efforts. Community-based conservation includes local neighborhoods and residents when in conservation efforts. This research project examines what supports and what harms community-based conservation. Knowing what makes community-based conservation successful will contribute to implementation efforts in the United States.

## **Introduction**

The Western perspective of nature being separate from people has driven the field of conservation since its inception. In the United States, the establishment of Yellowstone National Park marked the first great success of the conservation movement (Treuer 2021). However, this milestone was marked by indigenous tribes' being written out of history after calling the parklands their home for centuries. Community-Based Conservation (CBC) presents a different mode of conservation based on consistent connection and interaction between multiple levels of governance. Rather than a top-down approach, CBC empowers and involves local people in the decision-making process, recognizing their rights and responsibilities, and providing them with the necessary support and resources to conserve their natural resources. Because local populations possess a closer relationship and dependence on natural resources within an area of interest, CBC management can be more effective than enforced governmental regulations (Porter-Bolland et al. 2012). CBC is an approach to environmental conservation rooted in engaging and supporting the people directly affected by the conservation measures (community members), which allows for the alignment of environmental protection, resource conservation, and community development.

Whether in the United States or other countries, community takes various forms but always consists of a variety of stakeholders. A community can refer to a group of people who: (a) live together or in the same place, (b) are considered together with a particular geographic area, (c) practice common ownership, (d) share common characteristics, beliefs, attitudes, and/or interests. Community, in an ecological sense, refers to “a group of interdependent plants or animals growing or living together in natural conditions or occupying a specified habitat” (Oxford Dictionary). In this text, we will refer to communities that fit within different

combinations of the above definitions. The American rock climbing community, for example, is comprised of people who (d) share the common interest of rock climbing. The climbing community of Movement (a national franchise), on the other hand, is made up of members who are (b) associated with a geographic area (i.e., the US) (d) who share the common interest of rock climbing. Finally, the climbing community of a local gym would comprise people who (a) live in the same geographical area (b) are associated with the same geographic area, and (d) share an interest in rock climbing. As illustrated by this example, the term community takes many forms.

The researchers define “conservation” using a definition provided by Rebecca Kelly, the previous chair of Johns Hopkins University’s Environmental Science & Studies program: “conservation means using land and other natural resources wisely and efficiently, being a good steward, yet recognizing that some change and loss will inevitably occur with human use,” and it differs from preservation in that “preservation means attempting to prevent a natural area or a natural resource from being changed or diminished by human use.” In this research project, we analyze the barriers and enablers for CBC with the goal of suggesting a customized plan to shift conservation in the United States toward a more community-based framework. By studying successful CBC projects in other countries and the current state of CBC in the US, we make recommendations for expanding effective CBC efforts in the United States.

### *History of Conservation*

An understanding of why conservation efforts arise in the first place (e.g., religious traditions; Ruelle et al. 2017), and what players drive those efforts (i.e., internal vs external motivators) provides key insight into the implementation of future CBC efforts (Souto et al. 2014). Two major strands of conservation ideology dominated 19th-century conservation

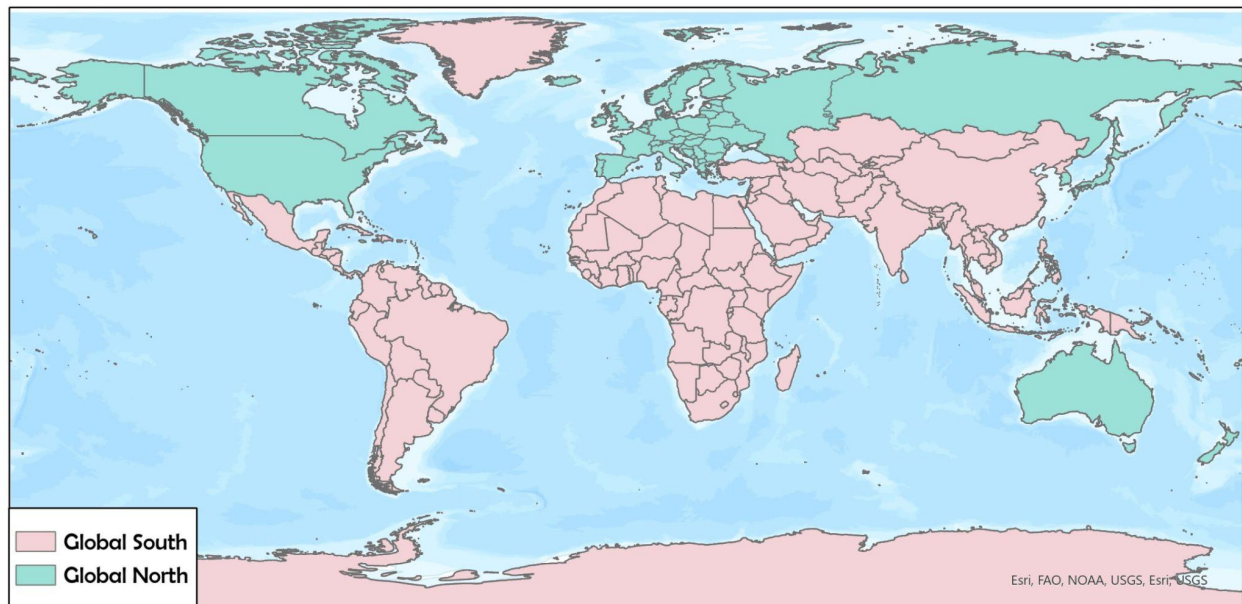
initiatives: preservationist conservation (preserving scenic nature) and wildlife habitat protection. Preservationist conservation, popularized by John Muir, advocates for the preservation of scenic wilderness areas. The Woodrow Wilson administration established the National Park Service in 1916 with the aim of managing national parks, monuments, and reservations that had been set aside for their natural, scenic, and historic value to leave the areas unimpaired for future generations. This system remains key to American conservation measures (Chapman 2020). The importance of national parks to American conservation displays the belief that natural, pristine places have a spiritual or even magical grandeur, and humans should respect them out of childlike wonder (Olival et al. 2013). However, as marine scientist and conservation policy specialist Dr. David Guggenheim states, “the national park is not an island that can sustain itself. It relies on the whole natural system.” The view that nature is separate from humanity disregards the fact that everything is interconnected within an ecosystem, and no impact is isolated to one specific area.

Moving into the 20th century, the federal government became more involved in habitat protection, as migratory bird protection became increasingly important to the public (Chapman 2020). Effective protection therefore required national and international protection. Since then, the Federal Wilderness Act (1964) established the National Wilderness Preservation System, which now covers more than 95 million acres of protected land. In the second half of the 20th century, grassroots environmental initiatives expanded dramatically (Chapman 2020). The global conservation movement began to adopt a more community-inclusive approach to natural resource management (Kaeser et al. 2016). Watershed associations, local and regional land trusts, and local conservation commissions continue to work on conservation measures alongside state and federal agencies (Chapman 2020). Now, different stakeholders face challenges in

aligning values and outcomes. It is crucial for these entities to work together to implement effective CBC measures.

## **Purpose Statement**

Environmental issues must be tackled interdisciplinarily with social, political, behavioral, and scientific means. Because environmental degradation is caused by social phenomena, it must be addressed through systemic social (e.g. political, behavioral, etc.) change. CBC takes equity and people into account, making it a crucial mode of conservation.



This research project analyzes previous studies from all over the world, while formulating a novel plan for implementing CBC specifically within the United States. Studying the barriers to CBC implementation will help shift conservation practices toward equitable longevity and away from its history of Western-driven imperialism and colonization.

Though there is an abundance of research on CBC globally, there has yet to be a general implementation plan tailored specifically to the United States. This research explores global barriers and enablers to CBC, then applies the findings to recommendations for overcoming

impediments to CBC efforts in the US. Because Western cultures drive a homocentric narrative of conservation, this research project studies CBC barriers and enablers to help shift the standard conception of conservation to one that is rooted in community and collaboration. The goal is to shift away from the paradigm of humans being separate from nature, and CBC aids this shift by supporting a more equitable future where communities and the ecosystem *of which they are a part* mutually benefit from each other.

## **Methods**

The researchers conducted a literature review on articles related to CBC. The articles selected contain clear background research, valid methods, and well-founded conclusions. Each academic article included has been peer-reviewed and evaluated for potential bias. We adopted qualitative and empirical approaches as primary research methods to answer our research question. We conducted interviews with conservation experts to gain unique, localized insight into current CBC practices. Our secondary evidence included existing research that is well-supported by data and observations. We analyzed multiple studies that revolved around interviews and focus group discussions with different stakeholders involved in CBC, such as government, and NGO officials, tourism companies, and local community members. Other research used economic and GIS data to model and predict CBC trends as well as outcomes.

## **Barriers**

Prominent barriers to CBC include climate change, socioeconomic and gender inequality, human behavior and perceptions, resource exploitation, legacies of colonialism and imperialism,

and lack of top-down commitment. Other common barriers include high population growth, constrained water and food security, and mismanagement of resources (IPCC 2014, 907).

### *Climate Change*

With the challenges and threats posed by changing climate, CBC has emerged to be an essential approach to adapting to the effects of climate change while boosting local economies and infrastructure building. CBC projects are increasingly being implemented in the Global South, but efforts must also expand to the United States.

#### Figure 1. Map of the global north and global south

Countries in the Global South are particularly vulnerable to climate change, as they bear the most adverse effects of climate change due to limited adaptive capacities in addition to more direct exposure and susceptibility to the impacts (Althor et al. 2016). The economies of many developing countries rely heavily on environmentally sensitive sectors such as fisheries, agriculture, and logging, yet climate change exacerbates the impacts on these already vulnerable industries.

CBC efforts must take into account the localized effects of global climate change. Drier conditions have changed the local tree biodiversity of the church forests of the Ethiopian Orthodox Tewahedo Church (EOTC), specifically by increasing the number of *tsid* and decreasing the number of *wichena* trees, which in turn can impact what trees community members decide to plant (Ruelle et. al 2017). For example, an increase in *tsid* might call for less demand for non-native *bahirzaf*, which both serves as an alternative fuelwood for *tsid* and exacerbates the climate change-induced drier conditions. These shifts in tree species abundances



would, in turn, impact what resources are available for use in the church and for market sale. Climate change has localized and global effects, and communities must adapt accordingly in order to have effective conservation measures.

### *Socioeconomic and Gender Inequality*

**Socioeconomic disparity** and its associated inequitable access to education hinder CBC practices (Baker-Médard et al. 2021, Kaeser 2016). People with lower socioeconomic statuses tend to have lower levels of knowledge and involvement in CBC. As a result, decisions regarding CBC initiatives tend to exclude populations of lower socioeconomic status (Baker-Médard et al. 2021). Additionally, those who hold the least wealth in a community might feel as though they have little to offer a conservation project (Baker-Médard et al. 2021). Additionally, people with lower income levels often have lower access to resources (e.g. funding, technology, and knowledge) (IPCC 2014, 907). With Ethiopian church forests, for example, a lack of funds for purchasing saplings has hindered tree replanting (Ruelle et. al 2017).

In addition to wealth distribution, **land distribution** is just as important to CBC practices. Though expanding existing conservation areas would ideally be easy to implement, it can cause conflicts over land ownership rights, since land is often distributed unequally in the hands of those with more financial and political leverage (Hodgson et al. 2009). The US is shifting toward a private model where land trusts are playing an increasingly important role in land acquisition and management (Waters et. al 2022). The current allocation of land should be redistributed to those communities who are most closely tied to their local environments, particularly in the US where the majority of land ownership is private. Unfortunately, many of

these land conservation organizations currently fail to equitably represent the communities they serve (Waters et. al 2022).

Another **underrepresented demographic** within CBC is women. They often have less control over resource management within their community (Alexander et al. 2022) A study conducted in Belize examined barriers preventing women's engagement in CBC programs (Kaeser et al. 2016). The researchers found that women who are the primary caretaker of a household feel as though they do not have enough time or motivation to participate in 'conservation programs' (Kaeser et al. 2016). By conducting interviews and surveys, researchers found that women were willing to be involved and participate in CBC but felt they lacked the resources or awareness to make meaningful contributions (Kaeser et al. 2016). A study conducted in Spiti Valley, India investigated how increasing women's involvement in conservation led to positive improvements in snow-leopard conservation (Alexander et al. 2022). While the subject requires further research within the United States, successful CBC measures should consider gender inequality and make a conscious effort to empower all constituents.

### *Legacies of Colonialism and Imperialism*

As historian William Cronon writes, the conservation movement of the Global North treats wilderness as areas untainted by human civilization (Cronon 1996). The cultural significance and physical prevalence of American national parks reflects this paradigm. The US's 63 national parks are popular vacation destinations for people living both in and outside of the country (NPS 2019). Yet, this perception of conservation can be harmful. First, there is more to the history behind the US national parks. When the Yellowstone Act was signed into law in 1872, the Shoshone, Bannock and other indigenous tribes who called the parklands their home

for centuries found their culture and sense of place eradicated. Throughout the world, this period of time was defined by colonialist governments stealing land from their original inhabitants and barring them from accessing the newly “protected” areas (Treuer 2021). Second, humans are not separate from nature but are, rather, a part of it. Therefore, humans must work in harmony with nature, not against it. NGOs, governments, and other entities working in CBC must be wary of historical legacies of colonialism when engaging with communities.

Historical legacies of colonialism have created stigmas against controversial CBC methods (e.g. trophy hunting) that can hinder CBC efforts and negatively impact local economies that rely on them (Heffernan 2022). Trophy hunting is not as detrimental as many people in the West believe and, in fact, has contributed more than a total average of \$8M annually since 2005 to South Africa’s and Namibia’s economies (’t Sas-Rolfes 2022). White and Black Rhino trophy hunting has respectively generated over \$154M and \$18.5M (after being adjusted for inflation in 2021). These funds were effectively reinvested back into the South African and Namibian communities engaged in trophy hunting CBC work and have caused a rise in the rhino population in both countries due to private wildlife ownership and market-adjusted trophy pricing (Heffernan 2022). The Black Rhino population in these two countries doubled from 2000 in 2005 to approximately 5,500 in 2017 (Heffernan 2022). In order to maintain sustainable population levels of trophy hunting species, the South African and Namibian governments have established regulations so that only 0.5% of the population can be hunted annually (Heffernan 2022). Despite the efficacy of these CBC methods, global power dynamics continue to heavily impact the participation of and investments from Western nations into southern Africa’s trophy hunting industry (Heffernan 2022). Ultimately, for conservation

practices to be effective and sustainable, they must be rooted in collaboration with and respect for the communities most in touch with specific environments.

Op-Ed: Community Conservation Inc.

Community Conservation Inc, an American nonprofit organization, seeks to “act as a catalyst to create community-based organizations in the places where biodiversity is threatened” (“Mission and Vision” 2022). By putting international scientific knowledge and local knowledge into practice, the organization has helped over 200 villages in 14 countries in over 1.24 million acres, since its inception in 1989 (“Mission and Vision” 2022).

The organization claims to “promote the highest level of participation by the local community and encourage the formation of community-based organizations that empower local people to manage their own projects and lands with minimal outside influence,” but their methods ought to be questioned (“Mission and Vision” 2022). Founder Dr. Rob Horwich claims that, “when communities are treated as part of the solution rather than part of the problem, they are willing to take responsibility for conservation,” reflecting the outsider perspective of the organization in relation to the people it seeks to help (“Home Page” 2022). The quote itself implies that the outsiders shift the responsibility (i.e. environmental stewardship) from their hands into the hands of the locals.

On their “How We Got Started” page, the organization honors its founder Rob Horwich who “initially traveled to Belize to study black howler monkeys, locally known as baboons, and quickly realized that without joining forces with local people to protect the howlers’ forest home, there might not be any more howlers to study in the future” (“Primate Habitat Conservation at Monkey Hill – Ghana” 2022). Horwich’s story is reflective of—and likely guides—the organization’s approach to conservation, which seeks the assistance of local communities to protect what the organization deems worthy of conserving. The philosophy behind the organization does not align with the values of CBC, which emphasizes the need to understand the values of the people in the communities involved so that communities can develop their own efforts and have not only a voice, but a sense of agency.

Lastly, it should also be noted that every staff and board of directors member is caucasian—there’s no diversity within organizational leadership—and this makes it more difficult for CCI staff members and the people in the communities they work with to relate to each other. Regardless of CCI staff member race and ethnicity, there will always exist an intrinsic power dynamic between CCI (and other Western-based aid groups) and the communities they work with because of historic colony-dependency relations. All of this is not to say that CCI’s efforts are immoral, but rather that it must be recognized that (a) the organization functions in a post-colonial social milieu that is still heavily entrenched in colonial legacies and (b) CCI should reevaluate its values and philosophy, and work to ameliorate the language it uses in regard to the communities it works with.

### *Lack of Top-Down Commitment*

Within organizations implementing conservation practices, individual workers sometimes struggle to secure internal support, including support for resource allocation and/or project funding. It is therefore important for organizations to administer formal structures, such as policies (e.g. prioritizing engagement), organization strategies (e.g. providing all staff with cultural competence training), and sub-structures (e.g. advisory groups) that create a top-down structure (Taylor et al. 2022). Furthermore, Keskitalo's study on international collaboration under the EU in 2010 found that organizational collaboration in frameworks like the EU can be very effective, as the EU has clear goals and regulations backed by well-funded climate change research projects focused on the EU. Member countries can then adopt the EU commission instructions according to their own needs, and they can provide institutionalized environmental policy resources to decentralized regional and local institutions (Keskitalo 2010).

### *Solution Tradeoffs*

Every solution comes with a tradeoff. For example, *Bahirzaf*, a nonnative tree species planted in some Ethiopian church forests, has positive environmental impacts. The plant is used as a fuelwood and construction material alternative to indigenous species, like the *tsid* and *weyra*, the two plant species that are the most important symbols of the EOTC (Ruelle et. al 2017). However, *Bahirzaf* also negatively impacts the local environment because (a) it harms native bird biodiversity and (2) its high evapotranspiration rate exacerbates the local effects of climate change (Ruelle et. al 2017). Though ending the growth of non-native tree species within church forests may result in some environmental benefits, other effects must also be considered,

including cultural and economic implications. This example illustrates the importance of considering the relativity of solutions: every solution is part of a complex web of interactions.

### *Human Behavior and Perceptions*

Messages designed to promote awareness in animal conservation often incorporate three potentially **harmful myths**: (1) pristine wilderness areas, where the “wild” is free of human activity, (2) the “demonized” predator (i.e. sharks), and (3) “cute” and “cuddly” idealized species (i.e. pandas). In the media, including images that show evidence of human activities and interventions in wilderness areas (e.g. including boats within photography of the Everglades) helps avoid the myth of nature as “pristine” areas untouched by humans. Even the deepest parts of the ocean are impacted by anthropogenic pollution, which is carried to ocean depths via thermohaline circulation (i.e., global conveyor belt). Films and documentaries have been and can continue to be used as tools to educate people on the state of “nature.” These images can be powerful because they highlight the beauty of the environment while maintaining a sense of reality (Clayton et al. 2013). Dr. David Guggenheim describes that “usually, everyone focuses on something beautiful, different, and wonderful. We also have to celebrate and protect the ugly and the ordinary.” When humans view nature as pristine and place it on a pedestal, it becomes more difficult to conserve. Humans are a part of nature and must factor themselves into conservation plans. “Ugly things,” like swamps or mangroves, have a purpose. Nature cannot be compartmentalized into the beautiful and ugly; it is all one productive system.

**Conflicting political views** on environmental issues also impact conservation work (Taylor et al. 2022). In November 2020, Coloradans voted to pass Proposition 114, which mandates that Colorado Parks and Wildlife, the state wildlife agency, develop a plan to

reintroduce and manage gray wolves starting by the end of 2023. The researchers found a strong relationship between support for wolf restoration and political support for the Democratic candidate for the 2020 presidential election, Joe Biden. They also found that increased age and proximity to the reintroduction region were associated with less support (Ditmer et al. 2022). This finding exemplifies the critical role of politicization on public conservation action, while also showing that many other factors impact public opinion. It is crucial to develop outreach and engagement strategies to mitigate polarization.

Additionally, CBC can face challenges related to conflicting interests and **competing demands** for natural resources. For example, local communities may have to balance their own needs and uses of natural resources with the need to protect those resources for conservation purposes. In the EOTC, for example, fuelwood collection, grazing, and the clearing of passages for new electric lines have threatened church forests (Ruelle et al. 2017). This can create tension and require careful negotiation and decision-making to find solutions that benefit both conservation and local communities.

## **Enablers**

Despite all the barriers to CBC, there are also many enablers which can help support community-driven efforts. They include community support and cohesion, value consideration, and integration and inclusion. Factors, including effective community leadership, supportive education programs and outreach (Kaeser et al. 2016), and shared community values and beliefs (Ruelle et al. 2017) have been shown to enhance CBC efforts. Focusing on these enablers in the United States can bolster existent CBC efforts or strengthen the foundation of new initiatives.

### *Human Behavior and Perceptions as an Enabler*

Human attitudes and perceptions can also help to enable CBC. **Psychological ownership**, or the level to which an individual feels ownership over a shared resource, affects how they manage and utilize the resource (Ambuehl et al. 2022). Community participation in conservation not only critically influences the success of conservation and resource management practices, but also increases this sense of ownership over natural resources (Ambuehl et al. 2022). Therefore, attitudes toward natural resources and CBC have the potential to improve with increased participation. Additionally, these improved attitudes toward natural resources further increase community conservation efforts, leading to a positive feedback loop.

Reframing the normative conceptualization of conservation as small patches of land instead of large national parks will also facilitate future CBC efforts. Conventional conservation efforts, including the protection of large swaths of land through the establishment and maintenance of national parks and protected areas is not always feasible, especially in areas with high human population densities (Ruelle et. al 2017). This is why it is vital that smaller areas of land are protected, and where CBC can serve as an alternative. The sacred spaces that are the church forests of the EOTC, for example, may only range in size from less than one hectare (0.00386 sq mi) to around 60 hectares (0.231 sq mi) (Ruelle et. al 2017). Yet, they serve as key sites of biodiversity across the northern Ethiopian highlands. CBC efforts need not exist on the scale of national parks. These smaller conservation patches add up to ultimately have a much larger effect (and make up a much larger total area) than each constituent patch.

### *Community Support and Cohesion*



Effective environmental management must actively engage communities to understand people's needs, preferences, and relational values. Mutual understanding allows stakeholders to collaborate and create more successful CBC practices. One specific component of **collaboration** is indigenous community engagement, especially in cities that have been developed on unceded indigenous land. Engaging indigenous peoples is informative because of their custodianship and deep knowledge of their local environments (Taylor et al. 2022). Other important stakeholders are landowners, local governments, nonprofits/ NGOs, local residents, and marginalized populations. In Ecuador, the United States Agency for International Development (USAID), an independent agency of the U.S. federal government, invested in improved co-management of the Greater Yasuní-Napo Moist Forest Landscape Conservation Area, which boasts some of the world's richest biodiversity. The Yasuní Biosphere Reserve Management Committee includes representatives from indigenous people's organizations and government institutions. The collaborative community helps ensure effective conservation, climate-aware practices, and improved livelihoods in the area (USAID 2021). In the United States, it is important to work with all involved stakeholders, including indigenous peoples, to pivot from the view of "pristine wilderness" to one of integrated, community-driven conservation.

Certain characteristics like **small population sizes** and **local cultural institutions** are conducive to successful CBC efforts (Brooks et al. 2013). One example of this can be seen in the sacred spaces that are the church forests of the EOTC, and are indicated by any sizable patch of indigenous trees. Humans have influenced church forests since pre-agricultural times (Ruelle et. al 2017). Legal structures, religious traditions, and collaboration between locals and authority figures drive conservation of church forests today (Ruelle et. al 2017). The church forests provide an example of how collaborative CBC initiatives that are based on a mutual

understanding of values, local knowledge, and human-ecological relations can be more effective than those efforts driven solely by government-run policies and programs (Ruelle et. al 2017).

Some church forests regenerate without human assistance; others require human assistance and serve as inspirations to conserve the tradition of planting and ancestral legacy (Ruelle et. al 2017). The age of some trees testifies to the longevity of the religion and tradition of forest stewardship (Ruelle et. al 2017). This stewardship extends beyond forest churches into farmlands, where farmers protect (e.g. do not harvest) scattered plants considered to be part of the church (Ruelle et. al 2017). Just as the intergenerational conservation of Ethiopian church forests is deeply entrenched in the religious and cultural values shared across members of the EOTC community, American CBC efforts should seek to do the same despite more value plurality.

Another important aspect of community engagement is **education**. Washington D.C.-based nonprofit Ocean Doctor conducts a “50 Years - 50 States - 50 Speeches Expedition” initiative, a nationwide tour aiming to educate youth (K-12) about oceans. Ocean Doctor Founder and President Dr. David Guggenheim describes that environmental education is “... generational. People care in the abstract about the environment but aren’t aware of what’s going on, even in their own communities.” Education is therefore a key step to sustainable coexistence with the environment, and it can begin at young ages to develop these values early on.

**Involving marginalized populations** of a community further strengthens and solidifies CBC projects. Gender inequality prevents women from participating in CBC around the world. However, several studies found that community members predict positive outcomes from women’s involvement in CBC (Alexander et al. 2022, Baker-Medard 2021). In many cultures, women care for the household and pass down traditions and beliefs; therefore, purposefully

integrating women into CBC might create a social norm in favor of conservation and stewardship. Additionally, integrating those of a lower socioeconomic status would yield conservation initiatives that truly represent the opinions of a community as a whole (Baker-Medard et al. 2021).

### *Value Consideration*



Furthermore, it is crucial to understand a **community's cultural and intrinsic values** when outlining conservation measures. People may value protecting nature for humans (instrumental values) or for nature itself (intrinsic values), but it is additionally their everyday relationships with nature that often influences human responses to conservation efforts. Three main types of value engagement are: capitalizing on existing values and connection with nature, inspiring new, positive values and connections with nature, and reducing conflict (Taylor et al.

2022). The first is simplest because it builds upon the beliefs people already hold. However, CBC implementation in the United States requires conflict reduction and mitigation. Rather than advocating for conservation solely through moralistic terms, environmental management must acknowledge a variety of outcomes in other areas, such as the economy. In cities, there are always multiple stakeholder organizations with diverse values and roles. Embracing value pluralism is therefore a CBC enabler.

Another way to motivate stakeholders to partake in collaborative CBC is through interventions that can emphasize more **tangible values**, such as financial savings, community health, or environmental stewardship (Clayton et al. 2013). Within CBC efforts, there exists an interplay between biodiversity conservation goals and human development (i.e. enhancing human well-being) goals (Souto et. al 2014). Conservation targets (e.g., species, group of species, habitat, natural resource etc.) vary according to their origins of motivation, those being external (i.e., deriving from stakeholders outside a community–like NGOs), and internal (i.e. deriving from within a community) (Souto et. al 2014). The origins of these **motivations** drive how indigenous and local people conserve a given target (Souto et. al 2014). CBC projects with external motivators (a) involve targets that are not traditionally valued by the local community and (b) have direct benefits for the community—for example, ecotourism (Souto et. al 2014). CBC projects with internal motivators (a) involve targets that are traditionally valued by the local community (i.e., they are recognized as part of the local community’s worldview), and (b) have direct benefits for the community (i.e., they heavily influence the community’s wellbeing) (Souto et. al 2014).

In order for a community to protect a certain conservation target, a community’s needs and interests must first be considered. To truly be motivated to pursue CBC measures,

communities must believe that CBC directly benefits them. These values can be emphasized along with care for nature. When working with specific communities, it is important to correctly identify motives that may drive them. These values will differ from group to group.

In Jilinkon Village in Northern Ghana, one successful implementation of CBC revolved around the community's respect for tradition, specifically the species-specific taboo placed on the bushbuck, a native antelope species (Robinson and Sasu 2013). This is an example of an internal origin of motivation and the first type of value engagement: capitalizing on existing values. Taboos are often central to indigenous forms of resource management and can lead to successful conservation measures. Other common taboos include temporal taboos that "regulate resource use in time" and method taboos that "regulate methods of resource withdrawal" (Robinson and Sasu 2013). Conservation practitioners should develop and design CBC projects that take into account indigenous and local people's cultural values (e.g., taboos) and be rooted in their motivations to participate in these projects (Souto et. al 2014). CBC is most effective when stakeholders select targets that directly enhance the well-being of the community, and communities that retain their own power achieve more consequential CBC outcomes (Souto et. al 2014, Camill 2013).

Values are generally much more heterogeneous in larger, urban settings like in the United States, but it remains true that governments must account for the motivations and values of communities. Assigned values, such as the values placed on a particular species, and fundamental values, such as responsibility toward future generations, inform motivations to coexist thoughtfully within the environment (Robinson and Sasu 2013). In a U.S.-based study of the socio-ecological drivers of public conservation voting to restore gray wolves to Colorado, researchers found that people with more non-consumptive values toward wildlife tend to be more

supportive of wolf conservation. Areas with more recreation employment and tourism, such as mountain resort towns, may be more responsive to wolf restoration due to the potential for increased wildlife tourism (i.e., financial incentive) and the prevalence of non-consumptive outdoor activities, such as wildlife watching (Ditmer et al. 2022). As stated earlier, people who voted for the 2020 Democratic candidate were more likely to vote to pass this conservation measure. These different values show the importance of capitalizing on existing values while also reducing conflict and conveying how conservation directly benefits a community.

Catering to a community's values can increase support for this specific example of conservation, but a similar framework can be followed for other conservation measures. Solutions that tangibly benefit a community garner positive responses. After the 2010 BP Oil Spill, Dr. Guggenheim's nonprofit Ocean Doctor met with the fishermen living around the Gulf and provided alternatives to shrimp trawling, including sustainable agriculture for fish. By providing economic alternatives for people, they were able to support effective conservation measures while generating food security for this community. By tailoring conservation to a community's needs, conservation measures are more likely to last. They are also more likely to surpass the barrier of politicization because a community can experience direct, tangible benefits instead of basing conservation solely on moral arguments.

Though values differ from person to person, many people generally value nature in some capacity, have strong ethical and moral convictions, and feel motivated by transcendent values (i.e., those concerned with absolute ideals such as justice) and prosocial values (i.e., those concerned with others' welfare) (Clayton et al. 2013). Thus, changing people's minds may not be completely necessary. Effective behavioral change can instead focus on highlighting these values. People are more likely to make behavioral decisions consistent with their attitudes or

values once they are reminded of them (Clayton et al. 2013). Conservation measures may therefore benefit from underscoring positive values people associate with nature. In other cases, people's values align with conservation goals, but they may not know how they can contribute positively to efforts that align with their values (Clayton et al. 2013). It then becomes important for CBC measures to prioritize behavioral skills training (e.g. lessons on how to reduce individual carbon emissions) and distribution of actionable items among affected populations.

### **CBC In the United States**

The United States is not currently a large proponent of CBC, but there are some CBC efforts that come in a variety of shapes and sizes. USAID promotes CBC mainly through monetary investment. One such example is Guatemala's Maya Biosphere Reserve, which USAID has funded for more than three decades. The local forest concession system allows communities to manage forests and harvest sustainable amounts of timber and non-timber products. These concessions have reduced deforestation and fires while maintaining tree cover, and community members can sell their forest products internationally, generating sustainable employment (USAID 2021). USAID thus supports CBC efforts through funding, which is not a hands-on method but can be a simpler option for other US organizations to get a foot in the door of CBC efforts.

The Jane Goodall Institute (JGI) practices CBC through its Lake Tanganyika Catchment Reforestation and Education (Tacare) program, which USAID also helps fund. Tacare is a project to protect chimpanzees outside National Parks by supporting sustainable livelihoods in surrounding villages. The Tacare philosophy holds that local people are the most connected to and dependent on their local ecosystems, and it is therefore important to support local ownership

of environmental management. JGI follows four general steps: engage, listen, understand, and act. Though these steps are a bit vague, one tangible project Tacare does is suggest land-use plans based on spatial global conservation data. JGI combines insights from the local community with mobile technology, allowing communities in Western Tanzania to turn land-use plans into a reality. Village governments select forest monitors, who JGI then train to use technologies to patrol forests, identify wildlife, and scout illegal activities and threats. JGI also provides family planning and environmental education, which ensures that the conservation efforts directly benefit the community and have a lasting impact. Tacare qualifies as a well-rounded CBC effort because JGI takes advantage of their access to technological resources while still rooting their efforts in the community who lives directly in the protected environment (“Engage – Listen – Understand – Act” 2020).

Moving forward, US CBC efforts should seek to both uplift the existing sacred spaces (i.e., natural spaces that are strongly associated with creation stories and that people visit as areas of commemoration and contemplation) of indigenous peoples and create new sacred spaces (Ruelle et. al 2017). Sacred spaces are diverse – ranging from mountain peaks to the shade of a singular tree, like those lone trees that stand amid the farmland surrounding church forests and remind EOTC churchgoers of the historical extent of present church forests – and are found on every continent except Antarctica (Ruelle et. al 2017). Because sacred spaces are often in areas with unique biophysical features (e.g. desert oases), they often house rare species, and thus play key roles in the conservation of not only local, but also broader regional biodiversity (Ruelle et. al 2017).

How can one create sacred space in the US? Rock climbers have found ‘sacred space’ in boulders and cliff faces. Within the broader rock climbing community, there are smaller and



more localized groups pursuing conservation efforts to educate youth in environmental stewardship so that future climbers can enjoy the same geotopes that current climbers enjoy today. One example of such a group is the Climbing Rangers, who engage Front Range youth climbing groups at popular bouldering sites at Rocky Mountain National Park (RMNP) (NPS 2022). The park also implemented the “Taking it to the Top” program, which teaches climbers (both youth and adult) how to recreate on public lands using ethical and responsible practices, through local outreach and education programs, including educational field days (NPS 2022). RMNP also has Bouldering Stewards who serve local climbing conservation efforts by promoting minimum impact bouldering practices (via field-based education and outreach at park bouldering areas and presentations at climbing gyms), facilitating Climber Stewardship events (e.g. Rocky Mountain Rendezvous Trail Maintenance Days), collecting and analyzing data to quantify boulderer use and impacts, and generally connecting with the climbing community (NPS 2022).

Though these efforts may not resemble conservation practices like those seen in the Ethiopian church forests, they are still embedded in the values of the American community directly impacted by the conservation measures. The cultural and intergenerational nature of Ethiopian church forest conservation can serve as inspiration for conservation efforts among newer initiatives and growing communities. Overall, these CBC examples demonstrate the importance of education, engagement, and collaboration. US organizations aiming to delve deeper into CBC efforts can begin by funding existing efforts, but more impactful and effective measures require delving deeper and engaging communities on the ground level.

## **Our Recommendations / Stony Run Case Study**

The local Baltimore-Based, volunteer-run organization, Friends of Stony Run exemplifies a community-based effort to maintain and restore ecosystems within urban environments. The group manages Stony Run Stream, which flows through Baltimore and feeds into Jones Falls. This nonprofit organization relies on volunteers, donations, and grants to operate. In an effort to engage a variety of stakeholders, Friends of Stony Run members collaborate with schools, local colleges, government officials, as well as surrounding neighborhoods.

The group illustrates many of the barriers and enablers to CBC. James Wolf, Friends of Stony Run's current vice president notes many challenges, including engaging different demographics, socioeconomic inequality, and government accountability. Friends of Stony Run acknowledges the lack of trust between the local government and residents. Successful engagement by Friends of Stony Run includes holding public meetings, establishing and presenting a clear vision of conservation goals, as well as providing the space for residents to have their voices heard.

Friends of Stony Run aims to empower local residents by involving them in stream restoration efforts, which illustrates integration and inclusion within CBC. For example, the group recruits volunteers to remove invasive species from the Stony Run and Wyman Park area. Volunteers also plant trees to shade out invasive plants and vines. The group focuses on restoring and conserving small plots of land to better maintain morale and show volunteers the differences they make. "We embrace the small wins," says James Wolf. They focus on accomplishments to encourage and motivate volunteers.

Garnering support and attention for Stony Run stewardship initiatives requires tactful planning. As James noted, "many Baltimoreans have more immediate concerns than conservation." Friends of Stony Run works to reframe community conservation as a social

opportunity, therefore aligning conservation goals with enhancing well-being. James explains that community organizations and social clubs have lost prevalence in recent decades, leaving people “looking to fill that social itch.” Park clean-ups and trail walks include other perks, such as refreshments and the opportunity to create a network of friends and neighbors.

Friends of Stony Run aims to integrate natural and urban environments into one collaborative ecosystem. To do this, they identify areas for trail improvements so that Wyman Park and Stony Run connect neighborhoods within Baltimore. In addition to working hands-on with stream and park restoration, residents can use park trails as a means to travel within Baltimore. Local residents overall feel a greater connection with local habitats.

#### **Plan for collaborating with Hopkins:**

Higher education institutions have the capacity to support and fund student research on human environmental impacts. Researchers at Utah State University studied the impacts of outdoor climbers on bouldering sites at Rocky Mountain National Park (NPS 2022). They mapped informal trails and visitor-generated bare ground sites, measuring environmental impacts through observation of trash, visible chalk marks, boulder “gardening” (i.e., vegetation removal on), stashed crash pads (e.g., in caves), vegetation loss (e.g. damaged trees and plants via social trail formation), and modified landing zones (i.e., the removal of rocks or trees to create more even surfaces for crash pads on which climbers land) (NPS 2022). The researchers also studied the relationship between climber attitudes toward Leave No Trace principles and their perceptions of how their own climbing behavior aligned with those principles through minimum impact practices (NPS 2022). The researchers found that those climbers who had lower climbing ability and learned to climb indoors were less familiar with Leave No Trace principles and

practiced outdoor climbing habits that reflected that (NPS 2022). This study reveals important implications for future education efforts. Education efforts might be more effective if they are presented at indoor gyms where they target those people whose values (or at least, behaviors) misalign most with Leave No Trace principles.

Similarly, Hopkins could help fund a study similar to that of Utah State University, where students lead research on the environmental impacts on Stony Run (i.e., presence of trash, invasive species, water pollutants, etc.) in the Hopkins-owned, old growth forest adjacent to Olin Hall (the Environmental Sciences building on the Johns Hopkins Homewood campus). Students interested in environmental protection – Environmental Science & Studies and Earth & Planetary Science majors/minors, or students engaged in environmental clubs – could contribute to this research. Students could also gather and analyze data on people’s understanding of the human impact on the environment (via surveys, community meetings, etc.) and people’s behaviors/practices regarding Stony Run. Students might also research Hopkins student attitudes toward conservation efforts in Baltimore in relation to their “visitor” status in Baltimore. This research can, in turn, be used to guide and streamline more targeted community education efforts.

Furthermore, this research can be used in tandem with existing volunteer efforts of Friends of Stony Run (i.e., invasive species management, trash clean-ups). Ultimately, a representative cross-section of the community surrounding Stony Run needs to be involved in these conservation efforts. All stakeholders deserve a voice and agency in the decision-making process. These stakeholders include, not only Hopkins and Friends of Stony Run, but local Baltimoreans as well.

A potential challenge lies in the actual gathering of data on Hopkins community member perceptions on Stony Run and environmental protection. Researchers must figure out how to engage community members who feel like they might not have the ability to make an impact within Stony Run conservation efforts, such as those people in lower socioeconomic classes and/or with less access to education (Baker-Médard et al. 2021). Additionally, researchers must address populations who may be averse to more traditional means of garnering community support (e.g., public meetings), and even those who are simply disinterested. Leveraging all of these stakeholders is a key component of implementing successful CBC practices.

Community meetings are a potential solution to garner support. However, community meetings led by (a) Friends of Stony run may fail to garner Hopkins student engagement, since students are busy and/or may already be involved in other on-campus environmental groups; and (b) Hopkins environmental groups may simply be preaching to the choir and fail to garner new interest in Stony Run conservation. There are also students who may be interested but are not studying an environmental discipline, or are not involved in environmentally-focused student groups. One potential solution to this barrier is to offer prizes and incentives (e.g. food) for those who fill out a club interest email, a survey (about their understanding of Leave No Trace and their behaviors toward Stony Run, for example), or sign up to engage in volunteer work (e.g., removing invasive species; participating in trash cleanups; participating in school-wide waste auditing events; helping clubs with publicity via flyers, social media posts, student news outlets; putting up creative signs on the Stony Run trail; etc.).

Fostering prolonged, sustainable interest then poses a further problem, particularly among students, the majority of whom are merely “visitors” to Baltimore and may be less inclined to invest in the long-term sustainability of the city. Hopkins student environmental groups could

potentially work around this by emphasizing the long-term sustainability of *student-wellbeing*. Ultimately, the goal is to align student values with those guiding Friends of Stony Run efforts, so that protecting the conservation target (i.e., Stony Run) enhances student well-being. As mentioned in the Stony Run section, reframing community conservation as a social opportunity can be used to help students improve their well-being in a stressful college environment by helping students expand their networks of friends and neighbors and create time to step away from academic commitments and give back to the community.

Furthermore, the school administration has the power to make these goals even more achievable by making ameliorations to the current academic curriculum so that sustainability becomes a core pillar across all majors. This could be accomplished in various ways, including by (a) requiring professors to incorporate sustainability into their course curriculums (via a lecture or unit, for example, but ideally, by incorporating sustainability concepts throughout the course), (b) requiring all students to take a set number (e.g. two) courses relating to sustainability, or (c) requiring all students a set number of volunteer hours/credits. Changes to the curriculum would be a long-term but worthwhile project that would reflect the values the institution wants to instill in its students and the community beyond.

## **Conclusion**

By identifying key enablers and barriers to CBC, we now propose informed recommendations for the United States as a whole. These recommendations include: targeted outreach, cultural awareness, education, value consideration, government funding and support, and stakeholder collaboration. To ensure the effectiveness and longevity of conservation practices, environmental managers should increase the reach of their programs to include more

people, including different demographic or cultural groups. They can do this through the organization of diverse committees, community forums, and educational initiatives. An especially important mode of education targets youth and would involve government oversight to implement required environmental education in school programming (e.g. the Climbing Rangers youth education program). Exposing people to nature at a young age helps them to feel connected to it and more easily strengthens their values regarding the environment. More uniform values help support effective CBC measures, and this is especially important in a diverse country such as the United States. Engaging volunteer workforces is another useful method for CBC, especially in urban settings. When conservation organizations offer volunteer programs to kindle and sustain their enthusiasm, they help ensure that the volunteer workforce will be renewed over time (Taylor et al. 2022).

Rather than trying to manipulate a community's behavior solely through external rewards such as money or economic gain, conservation scientists should rely on the self-motivational advantage of perceived choice, competence, and community. As Dr. David Guggenheim described, conservation efforts must be customized to the affected communities so that the community's values are aligned. Community members must be able to understand and feel the direct, tangible impacts of conservation measures. This is especially important in the United States, where "communities" can consist of many different stakeholders with different motivations. Whether values are financial, instrumental, intrinsic, moralistic, or otherwise, effective CBC in the US must cater to the predominant values of a community.

We also recommend the United States government to provide more funding to organizations like NGOs, colleges, and the conservation land trust system (e.g. similar to what USAID does). In addition to increased funding and more uniform top-down organization, we

recommend the federal/state government to empower community organizations with more resources, such as increased land jurisdiction, political power, or human capital. Lastly, CBC initiatives should develop an interdisciplinary support network of researchers, practitioners, corporate leaders, community volunteers, and government personnel concerned with sustainability (Clayton et al. 2013). With the variety of environmental challenges each and every community is facing, regional and inter-regional networks and cooperation have been proven to be the most effective in solving those problems. Thus, the CBC will have a holistic implementation and execution in line with the local community's values.

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