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Inclusive Conservation: An Analysis of Behavior Change Conservation Projects in the Congo as a Framework for Application to Myanmar

Abstract

Conservation initiatives strive to conserve biodiversity around the world. While efforts adamantly prioritize the successful conservation of endangered species and their habitats, certain strategies can overlook the secondary impacts on nearby human communities. Behavior-change conservation (BCC) integrates humanitarian theories of thought into conservation projects to support both ambassador species populations and the communities they coexist with. This literature review analyzes recent behavior-change conservation projects throughout the Congo region and evaluates their success. The findings suggest the region's utilization of BCC can act as a model for developing similar projects throughout Myanmar. The analysis considered humanitarian and biological aspects of each country. The similarities between these aspects of the two regions indicate the benefits Myanmar may experience once it utilizes BCC theories and projects. Future projects in Myanmar should further examine successful behavior-change conservation projects in the Congo and other regions of the world to develop adapted strategies for implementation across the nation.

Introduction

Conservation is a vast, diverse collection of projects and passions which aim to conserve the current condition of biodiversity around the world. Conservation efforts can vary immensely based on several variables; the primary goal of the project, the location in which the project will be implemented, the species (one or many) the project aims to aid, and the strategies utilized to meet the established goal. Research projects may seek to generate data that can be provided to legislative bodies to demonstrate the necessity of aid. Education projects may seek to improve public awareness of anthropogenic impacts on the environment and provide examples of personal changes that could benefit local ecosystems. Regardless of the specific nature and mission behind a conservation effort, success is dependent on the perceptions and behaviors people exhibit towards their environment.

Behavior-change based conservation projects integrate social science theory and contemporary theories of learning (psychology) to frame conservation issues such that they manifest changes in an individual's perception and interactions with nature (Squires, 2016; Yocum, 2022). Such changes are measurable and have been quantified through survey analysis across multiple

studies. Whereas prominent threats to biodiversity have causal overlap with anthropogenic action, behavior-change conservation (denoted as BCC throughout this paper) fixates on a targeted behavior that an individual can readily alter for a perceivable benefit to their local environment. This shift in behavior is accomplished by framing conservation within the context of an individual's worldview, lifestyle, and socioeconomic/sociopolitical positions (Squires, 2016; Yocum, 2022). This model is adaptable to encouraging behavior change across a breadth of communities- showing success in affluent, first-world cities and isolated, third-world villages. A foundational blueprint for the success of BCC was developed by the participating members of Zoos Victoria in Australia.

Connect-Understand-Act

Zoos Victoria (collection of zoos including Healesville Sanctuary, Melbourne Zoo, and Werribee Open Ragne Zoo, Australia) developed the Connect-Understand-Act (CUA) model to influence behavior change among visitors to the various establishments (Litchfield, 2018; Squires, 2016). The CUA model was developed by identifying the interwoven connections between conservation, behavioral science, and education to develop an action plan that could effectively foster learning and attitude change in the hopes of alleviating nearby environments of the harm induced by individual action (Litchfield, 2018; Squires, 2016). This dynamic model was swiftly recognized as potentially effective beyond the scope of Australia's zoos, and collaborations ensued to alleviate other biodiverse regions of anthropogenic threats by meeting the needs of the surrounding communities (Litchfield, 2018; Squires, 2016). The nine-step model describes the process of identifying threatening anthropogenic behaviors, the needs of a community and an explanation of the cause behind a community's harmful behavior, followed by the selection of an ambassador species and the integration of education outreach and solution engineering. In summary, the model suggests that understanding the culture of a community allows for successful integration of conservation beliefs alongside effective development of a solution for a challenge previously endured. Presenting conservation alongside aid, coupled with creating opportunities to educate and build personal connections between people and nature, drives individuals to change their behaviors for the sake of the environment around them. Since developing this model, Zoos Victoria has launched various, successful, local and international conservation efforts (Litchfield, 2018; Squires, 2016). Discussions surrounding the integration of human social sciences into conservation has also increased throughout the years, with more publications citing action plans that consider the conditions of communities surrounding biodiversity hotspots (Yocum, 2022).

Behavior change approaches to conservation have the potential to improve the lives of people and the environment around them. As described throughout this paper, the Congo region of Central Africa has been a site for a plethora of conservation efforts- ranging in size, specialty, and strategy. Behavior change conservation projects have stood out in recent times as indicated by their success in changing the way communities interact with their local environment (Litchfield, 2018; Squires, 2016; Yocum, 2022). The promising prospects of BCC in the Congo demonstrates the versatility of such models and suggests that other biodiversity hotspots should be the proceeding testing grounds for this approach to conservation. Myanmar of Southeast Asia qualifies as the next biodiversity hotspot to experience immense benefits from the integration of behavior change conservation. By comparing current conservation efforts in both nations and socioeconomic/sociopolitical climates, the success of BCC in the Congo indicates a substantial probability of success when implemented throughout Myanmar. This literary analysis suggests

the integration of BCC in the Congo region could be utilized as a framework for successfully developing similar, community-centric conservation projects throughout Myanmar.

Congo: Culture, Climate, Conservation

Located in Central Africa, The Republic of the Congo and the Democratic Republic of the Congo (DRC) are neighboring countries that comprise a prioritized region for humanitarian, epidemiological, and wildlife conservatory aid (UNHCR, 2023; WHO, 2022). Both countries gained independence in 1960 from European, colonial rule (French and Belgian administrations) and have endured a wide breadth of issues as they continue to develop necessary infrastructure for their distributed populations across both isolated villages and dense, metropolitan areas (Brilliant Maps, 2024). Food security, acts of violence, and epidemic regulation are three prominent humanitarian sectors in critical need of financial aid as indicated by the United Nations High Commissioner for Refugees (UNHCR) (UNHCR, 2023). A significant lack of funding remains a prominent issue in global efforts to support the countries' developing infrastructure. Last year, the UNHCR received less than half of their annual funding necessary to support refugee, humanitarian, and diverse-needs response plans for the DRC (122.4 million out of 298.9 million USD) (UNHCR, 2023).

Food Security

Food insecurity is prominent throughout the Republic of Congo and the DRC (Doherty, 2021; Mbunga, 2023; UNHCR, 2023). Considering four key dimensions of food security- availability, stability, utilization, and access -rural communities in developing countries face additional hurdles due to the challenge of transporting global aid and establishing long-term research projects (Mbunga, 2023). Within the historical context of the DRC, political conflicts and recent wars have stalled further progress towards mending food security (Alberti, 2010; Mbunga, 2023; UNHCR 2023). In the face of a high population growth rate, consistent data production related to regional food security can influence policymakers' decisions to allocate funds towards further food research and development (UNHCR, 2023) As one of the most insecure food nations in the world, regions of the DRC have severe food insecurity across as many as 88.4% of households (Mbunga, 2023). Inaccessibility of a varied diet may result from its drastic cost as well as the physical distance between communities and regionally available foods. Diets within these communities are restricted to the produce or livestock regularly and consistently produced, thus imposing a high risk of malnutrition due to a low variety of food items available (Alberti, 2010; Mbunga, 2023).

Alongside food insecurity, external forces may exacerbate a lack of diet diversity due to overexploitation. The waters of the Eastern, Central Atlantic endure illegal, unregulated, and unreported fishing, accounting for upwards of 30% of all reported catches within these waters (Doherty, 2021). Industrial fishing is significant in proportion to the size of the Congo's waters, suggesting the utilization of the water by foreign fleets. Threatening fish population stability through overexploitation can minimize their presence in waters closer to communities which utilize fish to fulfill a dietary protein requirement. Less developed countries often lack the resources (time, staff, finances) to bolster their regulation of marine resource extraction. If exploitation persists without authoritative regulation, resources could be further depleted to the brink of total loss.

Facing Epidemics

Devastating, repeated waves of pandemics have swept across the Congo throughout recent decades. The Ebola virus- and close viral relatives -persist in phases recurring as recently as 2022 (WHO, 2021). Outbreak management is a unique challenge when the population of concern is distributed across such vast distances and is embedded in isolated areas which lack direct roadways or clear space for aircraft. Funding towards aid projects directly influence the success of minimizing harm through maximizing treatment by providing adequate medical resources (Alberti, 2010; Elanga, 2022; UHNCR, 2023). The parasitic disease Human African trypanosomiasis (HAT) places further pressure on sub-Saharan African populations (Elanga, 2022). Studies following the prevalence of HAT have shown evidence of increased, alarming rates within remote, endemic regions of the Republic of Congo (Elanga, 2022). Toxic elements (PTEs) also impose increased carcinogenic risks among communities developed near areas with a significant presence of phosphate rock (Diahou, 2023). Multiple PTE's at alarming concentrations were found within the soil throughout 4 villages of the Hinda district, all of which were near recently marked locations for future phosphate mining operations (Elanga, 2022). Children, due to their tendency to walk barefoot and spend long periods in the dirt, were found to be at an increased risk of cancer due to exposure to the identified PTE's compared to adults surveyed (Elanga, 2022). The health of the Congo is, fractionally, in the hands of foreign countries with substantial, financial resources. Depending on the motivations of such influential parties, the health of people living in the Congo can be enhanced or diminished.

Displacement & Gender-Based Violence

Despite the conclusion of war and advances in political peace, incessant conflicts resulting in gender-based violence and displacement of tens of thousands of Congolese citizens continue to occur. In 2023 alone, an estimated 700,000 people were displaced within the DRC, seeking asylum from 22 neighboring countries already housing over 1 million refugees (UHNCR). Instability brought on by violence between the army and rebels has resulted in perpetual waves of humanitarian crises (UNHCR, 2023). As a result, women endure rape by combatants of both sides, families have been displaced due to destruction of homes and villages, and noncombatant men have been forced into manual labor for the combatants (Alberti, 2010; UNHCR, 2023). Humanitarian aid relies on safe, secure corridors to reach communities seeking resources because of the violence they've endured (Alberti, 2010; UNHCR, 2023). The limitations of humanitarian projects to efficiently help, alongside the government's obstacle in eliminating rebel groups through limited resources, brews unease as people seek safety for themselves and their families.

Current Conservation Climate

Traditional methods of wildlife conservation, integrated into low-income countries by affluent foreign parties, have been met with skepticism by political ecologists and anthropologists in recent years due to the relationship they establish between local communities and hired staff (Marijnen, 2017). Virunga National Park (founded in 1925 during colonial rule of Belgian King Albert I) in the eastern DRC, provides a contextual reasoning for such skepticism. This protected site exhibits what political ecologist Elizabeth Lunstrum defines as "green militarism... the use of military and paramilitary (military-like) actors, techniques, technologies, and partnerships in the pursuit of conservation" (Mariknen, 2017). Green militarism is criticized for weaponizing conservation and threatening local communities and individuals with acts of violence for the

sake of wildlife preservation (Mariknen, 2017). The utilization of green militarism as a conservation effort prioritizes wildlife over human life. Furthermore, it favors foreign funding and support. What is lost when native, local communities are no longer viewed as deserving of support? According to Marijnen (2017), nuanced conservations and consideration of socioeconomic pressures are forfeited.

Although cases like Virunga National Park reveal historical patterns of discrimination by park staff towards local and displaced communities, other conservation projects throughout the Congo demonstrate positive impacts when humanity is considered. A two-year campaign designed to integrate a new style of cook stoves in villages throughout the Eastern DRC saw results that decreased the weekly household consumption of wood by 50%, improving the habitat diversity for local primate populations (Kahlenberg, 2020). Another study sought to understand perceptions of bushmeat consumption within the cultural context of Pointe-Noire, Republic of the Congo (Chausson, 2019). Results revealed the nostalgic associations with bushmeat consumption, with individuals specifically noting its ability to signify their heritage as being Bantu (African) through the traditions they grew up around (Chausson, 2019). Creating space to discuss boundaries between cultural practices and conservation is critical to designing behavior change projects that respect past practices while ensuring they can proceed for future generations alongside stable wildlife populations (Chausson, 2019). Such prioritization of understanding was integrated into an environmental education conservation project located across 2 villages outside of Nouabale-Ndoki National Park within the Republic of Congo. Utilizing western lowland gorillas as the ambassador species, education programs were developed to improve local knowledge surrounding the environmental threats to northern Congo, the significance of respecting wildlife and poaching legislation, and to promote participation in the national park (Breuer, 2017). Comparing preliminary and post surveys, attitudes towards conservationist and gorillas improved significantly (Breuer, 2017).

Behavior change conservation projects are built upon the foundation of understanding communities' current cultural practices, expectations, needs, and routines. The consideration of the factors detailed above by currently implemented conservation projects iterate the benefits provided to biodiversity protection when both humanity and nature are acknowledged.

Myanmar: Culture, Climate, Conservation

Located in Southeast Asia, Myanmar (interchangeably referred to as Burma or the Republic Union of Myanmar) is enduring violent conflict between the official government and ethnic armed retaliation groups, bearing the moniker of The Three Brotherhood Alliance (Lederer, 2024; Rising, 2024). Gaining independence in 1948 from European, colonial rule (enforced by British administration) the region has endured a wide breadth of issues as the political conflict sweeps throughout the nation- impacting the lives of citizens uninvolved in the political warfare (Lederer, 2024; Rising, 2024; Shwe Sin Ei, 2019). The United Nations has developed a sustainable development plan for the nation, listing seventeen goals pursued to “end poverty, protect the earth’s environment and climate, and ensure that people everywhere can enjoy peace and prosperity” (UN, 2024). Ranging from the eradication of poverty to the protection of marine life, the variety of goals established by the UN highlight the critical condition of the nation. The increased frequency of natural disasters imposes another life-threatening tragedy upon citizens,

now forced to navigate the complex decision making that will ensure safety from both natural and political forces around them.

Political Conflict: Effects and Pathways

Insurgencies have occurred relentlessly since the nation's independence from colonial rule. This prolonged period of armed conflict has resulted in unpredictable shifts in regional control as violent conflict persists, with no side truly maintaining footing in one district for very long (Lederer, 2024; Rising, 2024). Operation 1027 is the current warfare occurring throughout Myanmar. As of 2021, it's estimated that at least 3 million civilians have been displaced, with an additional 18.6 seeking humanitarian aid (UN, 2024). Civilian casualties are also on the rise as the militia has increased air-strike weaponry usage and deliberate targeting of 'rebel' civilians- with a reported 170% increase in civilian casualties from airstrikes since this recent conflict began (Lederer, 2024; Rising, 2024). Accessibility to humanitarian aid is hindered by the threat of falling into the conflict between the armed parties, consequently halting extensive assistive projects implemented by foreign parties such as the UN and the Associated of Southeast Asian Nations (Lederer, 2024; Parmar, 2015; Rising, 2024; UN, 2024). Communities of refugee camps along the nations border, atop the threats of political violence, face exposure to organized crime- drug trafficking, human trafficking, gang violence etc. The crime sector of Myanmar is analyzed to be unregulated and spiraling out of control as government militias are deployed in various regions to maintain claims to territory in lieu of the Three Brotherhood Alliance (Lederer, 2024; Rising, 2024; UN, 2024).

Whereas isolated communities throughout the country may not bear immediate effects from the current political strife, the shift in attention has exacerbated the presence of poor living standards. A health assessment among one of the nation's most remote regions found alarming signs of medical neglect (Parmar, 2015). Hospital inaccessibility applied to nearly 50% of the households surveyed, along with 1 out of every 8 lacking access to a water source (Parmar, 2015). Children were found to have an increased mortality rate imposed by respiratory tract infections (Parmar, 2015), and formal education was only experienced by 28.8% of heads of households (Parmar, 2015). With government resources stretched thin and prioritizing the attainment of lost territory, civilians are threatened by shattering waves of humanitarian crises (Parmar, 2015; UN 2024).

Natural Disasters

Myanmar and its civilians have been the victims of devastating, repeated natural disasters. While cyclone Nargis is likely the most notorious natural disaster endured by the nation in recent decades (striking land in 2008), persistent flash flooding is an additional threat to the stability of rural, isolated communities (Aung, 2024; NASA, 2008; UN, 2024). Humanitarian aid accessibility is already challenged by the presence of armed forces at odds throughout the nation, but the addition of fatal floods further strains the capacity of local communities to survive on their own. The approach to such catastrophes is evacuating threatened areas, but hundreds of lives are lost during these efforts to flee. Those who survive endure forced displacement alongside hundreds of thousands of civilians. This large relocation of individuals intensifies gender-based violence as a horrific byproduct (Lederer, 2024; Shwe Sin Ei, 2019; UN, 2024). Lacking safe spaces in temporary shelter communities, far from their original settlements, and suffering economic independence as farmlands sink, the women of Myanmar face unjust threats to their livelihood on top of the devastation brought on by natural disasters.

Devastating on their own, natural disasters have been utilized as a tool of war by both parties of the political conflict throughout Myanmar for the sake of strategic gain (Howe, 2017; Passeri, 2022; Rising, 2024). Described as generators of a power vacuum, natural disasters send a shockwave through multiple facets of society. The disruption of socioeconomic conditions by infrastructure destruction ruptures the current ebb and flow of a society, allowing opportunities for change based on the desires of influential characters (Howe, 2017). The increased frequency of natural disasters, and their integration into political theatre, further threatens the minute stability remaining in the lives of Myanmar's citizens.

Current Conservation Climate

Parallels between the declaration of a geographic region as a protected area and the parties occupying said regions reveal a utilization of conservation by Myanmar's government as a regulatory process (Woods, 2019). Establishing protected areas throughout the country expands the government's control over a passively growing territory. Within protected areas, Myanmar's government can manipulate the natural habitat at its discretion, suggesting that the unrestricted utilization of landscape can fulfill objectives unrelated to conservation or humanitarian aid (Woods, 2019). Many protected areas throughout Myanmar were assigned this shielding term after rumors spread describing their utilization by rebel battalions to fulfill imperative needs (Woods, 2019). Afterwards, the government body is granted permission to displace any individuals currently living in the now-established protected area. Alterations to the landscape shape the military's ability to utilize conservation as a counterinsurgency strategy; halting rebel group access to the site's resources (Rising, 2024; Woods, 2019). The implementation of 'green territoriality' throughout Myanmar devastates local community perceptions of conservation; unjustly establishing an association between protected areas, displacement, and disconnection from once-accessible resource (Woods, 2019).

The distinction between conservation projects that prioritize honest, biodiversity values over ulterior motives can be discerned by communities that engage with the protected area. The correlation between local perceptions of conservation projects and their overall success is a common mantra throughout survey studies quantifying community satisfaction with protected areas around Myanmar like the Chatthin Wildlife Sanctuary and Indawgyi Wildlife Sanctuary (Allendorf, 2012; Htay, 2022; Shwe, 2023). The dynamic between communities and protected areas sets a precedent for the normalized interactions between the two, directing the environmental impact each will impose on one another. While communities near protected areas demonstrate a sound understanding of the goals of conservation, a large gap in community-conservation interactions limits their contextualization of certain behaviors. This restricts the probability of behavior change from occurring (Allendorf, 2012). Myanmar has been the scene of countless studies which utilize surveys to analyze community perceptions of conservation compared to their participation in conservation-favored behaviors (Allendorf, 2012; Htay, 2022; Shwe, 2023). However, the country still lacks an influx of conservation projects which implement such data to create behavior change models. The lack of behavior change exhibited throughout the nation threatens the population of people and wildlife as both shift in response to changing frequencies of interactions between one another (Rao, 2011). A study of the declining wildlife presence throughout Hkakaborazi National Park found hunting within its borders to be perpetuated by food inaccessibility, with 87% of hunters stating this as their primary motivation to capture wildlife (Rao, 2011). Wild meat that's utilized as a source of income and food reduces animal populations to support a growing human population (Rao, 2011). The eventual collapse of

the ecosystem brought on by overhunted animals may prolong malnutrition epidemics endured by rural communities throughout Myanmar (Parmar, 2015; Shwe Sin Ei, 2019).

The wavering coexistence between protected areas and nearby communities highlights the role Myanmar's government plays in developing respectful relationships that can promote change. The consideration of factors detailed above, and the nature of behavior change conservation projects in other countries, should be integrated into designing future efforts throughout Myanmar which seek to provide security to both its civilians and environment.

Comparative Analysis: Evidence for Success of Behavior Change Conservation: Congo Region and Applications to Myanmar

The militarization of conservation, perpetual threats of violence induced by political warfare, and the delayed development of crucial infrastructure are shared challenges in the Congo region and Myanmar. Violence threatens the lives of people across both regions, forcing the self-infliction of shifting priorities for the sake of survival. It's outrageous to implement a conservation project upon a group of people without acknowledging the dynamic factors which dictate accessibility to vital necessities. Analyzing studies focused on either region, the accusation of a local disinterest in conservation is fallacious and reductive. Survey-based studies demonstrate a significant degree of respect for nature upheld by participants alongside recognition of the decline in health of their surrounding environment (Allendorf, 2012; Breuer, 2017; Rao, 2011).

Behavior change conservation projects in the Congo region demonstrate an evident improvement in the lives of communities near protected areas (Kahlenberg, 2020; Litchfield, 2018; Squires, 2016). While the project's impact on the environment cannot always be directly quantified (many benefits the environment receives are secondary effects and not precisely cause-and-effect), it's reasonable to assume that a decrease in the anthropogenic changes imposed on an environment will grant the space time to begin a natural, restorative process (Kahlenberg, 2020). Such projects also improve community perceptions of conservation, laying the groundwork for relationships that foster an appreciation for conservation that spans generations. The Congo Basin along is home to a wide breadth of ecosystems- rainforests, swamps, savannahs, and rivers spanning over 500 million acres (WWF, 2024). Within these environments, over 2100 species of birds, mammals, and fish coexist alongside 10,000 species of plants (WWF, 2024). Many of these species- both plants and animals -are endemic to the Basin and found nowhere else in the natural world (WWF, 2024). Myanmar accommodates a similarly stunning array of biodiversity, earning the title as Asia's most biodiverse region (IUCN, 2022). The urgency to conserve Myanmar's lush ecosystems stems from the fortunate case that many large, stable fragments of the natural habitat remain (IUCN, 2022). 250 mammal species- including large mammals like elephants and tigers -share this region with 1000 bird species and 10% of the global population of freshwater turtle species (IUCN, 2022). Both regions are large in size and deep in biodiversity concentrations. These similarities demonstrate an equal weight both regions contribute towards global biodiversity. A loss of one may inflict unbearable stress upon smaller, unstable ecosystems. With similar socioeconomic challenges and conservation perceptions, Myanmar is a relevant contender as the next region to implement behavior change conservation projects.

Conclusion

By comparing current conservation efforts, socioeconomic/sociopolitical climates, and harmful pressures to the environment of both regions, the analyzed similarities demand an urgency to act. The success of BCC in the Congo indicates a substantial probability of success when implemented throughout Myanmar. As a result, BCC in the Congo could be utilized as a framework when developing such projects throughout new regions- Myanmar and beyond. Anthropogenic impacts on the planet scaffold atop one another, applying increasingly harmful pressures the environment must mitigate for biodiversity to persevere. As a result, species are becoming more threatened and face an increased extinction rate upwards of 25% (The World Counts, 2024). However, these same pressures are placed onto communities around the world. Whereas conservation projects can improve the conditions of an environment, it can improve the lives of people. Conservation cannot succeed if it's enacted in isolation from humanity. And conservation should not offer exclusionary protection; it should seek to improve the livelihood of all living things- to protect the global biodiversity and all life which contributes to it.

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