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An Examination of the Ways in Which Transdisciplinary Research Could Be Used to Incentivize Local Communities to Combat the Illegal Wildlife Trade

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The illegal wildlife trade (IWT) is currently one of the most critical conservation concerns, given its direct impact on biodiversity loss, endangering local ecosystems, and adding pressure to all species at a point when they face dangers like deforestation and mass extinctions. This industry also significantly impacts local communities, many of which are compelled to engage in it as a result of their precarious socioeconomic conditions. While effective countermeasures to this global issue have been identified, successful implementation of these countermeasures require diverse disciplines and collaborators. This paper argues that a transdisciplinary approach that converges knowledge and skills from social and socio-ecological fields of study is required to develop strategies that effectively incentivize communities to combat the IWT. This is true because A) at the social level, criminal justice is needed for the retraining and participation in law enforcement efforts to mitigate support for poaching; B) at the socio-ecological level, environmental economics and ecosystem management are needed for the validation of community assets and profitable management of local wildlife; and C) ecology and business administration are needed for the implementation of conservation initiatives like ecotourism. This paper not only presents the implementation of a transdisciplinary approach but also details the most important disciplines needed, provides a review of the correlation between this industry and the locals who live in close proximity to wildlife and conservation areas, and proposes workable recommendations to supporting initiatives that combat the IWT and serve as pillars for sustainable action. Without adopting and reinforcing the position argued for in this research, the IWT would continue to pose a threat to local ecosystems, populations, and economies. This is a major risk to global sustainability and will exacerbate the loss of biodiversity that is already recognized as an imminent threat by the United Nations Sustainable Development Goals.

Keywords: *sustainability, poaching, wildlifetrade, conservation, biodiversity*

Introduction

Every year, billions of wildlife, including plants, of all species are seized and poached for the illegal wildlife trade (IWT), which is currently a subject of global concern (Wyatt et al., 2022). The term ‘illegal wildlife trade’ refers to the practice of acquiring, selling, trading, or exploiting wildlife and plants in violation of local, national, and international laws and regulations (Pires & Moreto, 2011). While certain research emphasizes the disruptive repercussions of the IWT on the environment, such as biodiversity loss, other studies indicate that it is also linked to economics, the social dimension of local communities, and crime convergence. This convergence refers to the growth of established criminal networks that create interconnected systems (Nelson, 2023).

The purpose of this research is to provide a comprehensive literature review of numerous relevant publications addressing the IWT and for the intersection of different bodies of knowledge to create a single, streamlined solution: the implementation of a transdisciplinary approach, which is defined later in this manuscript. This body of work is organized around three sub-arguments, each of which is supported by literature demonstrating the validity of a transdisciplinary approach, as well as the potential of sustainable solutions for those affected by this industry, particularly local communities located near wildlife and conservation areas.

Literature Review

While there is widespread acknowledgment that the IWT is a global issue (Phelps et al., 2022), the various sources used in this research all point to distinct root causes and elaborate on those in considerable detail. The demand for wildlife products has been cited as a primary driver of the IWT (Wyatt et al., 2022). Legal and critical animal crime studies show that wildlife is seen as human property to be exchanged or exploited, which is consistent with the industry’s reputation as one of the greatest worldwide black markets (Wyatt et al., 2022). There has also been a recent surge in research pointing to corruption as a major contributor to this issue, as well as the ineffective methods used to penalize offenders and how this promotes the industry’s evolution into an unlawful exploit with few consequences (Wilson & Boratto, 2020). The IWT can become linked to other major crimes like money laundering, human and drug trafficking, and fraud if effective enforcement measures are not implemented (Anagnostou & Doberstein, 2022).

Consequences, such as environmental degradation; the disintegration of effective governance; biodiversity loss; the immediate impact on livelihoods and human health, animal welfare, and economic sectors that depend on healthy environments; are to be expected when these interactions are not recognized and instead transcend ethical and legal boundaries that are characteristic of these communities (Anagnostou & Doberstein, 2022).

Advanced studies have revealed a variety of methods to combat the IWT, with different areas of research emphasizing various techniques. Research in the field of criminal law offers potential solutions, such as increased or improved law enforcement training and involvement, as well as a deeper comprehension of crime convergence and trends within the IWT criminal networks (Anagnostou & Doberstein, 2022). Cases have

been narrowed down to focus on situational crime prevention, and research has shown that this can lead to a rapid decline in wildlife crimes in concentrated areas (Pires & Moreto, 2011). Additional cases in the same field of study demonstrate that punitive punishment is ineffective and that a more focused approach is required that encourages education and rehabilitation programs for individuals and communities involved in the IWT as a means of necessity (Wilson & Boratto, 2020). After considering the complex interactions that exist between this industry, particular communities, and political entities, some solutions focus on novel management methods that validate community assets and ensure the profitable management of local wildlife (Di Minin et al., 2022). Studies conducted provide empirical evidence supporting the efficacy of conservation initiatives, such as ecotourism. Ecotourism refers to a form of tourism centered around natural environments, with the main objective of promoting conservation efforts and facilitating wildlife observation. This approach has been found to yield tangible social advantages and can function as a means of fostering sustainable community development, particularly in the context of transitioning away from the IWT (Charnley, 2005; Wolf et al., 2019).

The scope of research required for the long-term, sustainable implementation of the presented solutions is too limited to have been adequately explored in previous research. To support and expand on these solutions, this research will examine how strategies that effectively incentivize communities to combat the IWT require a transdisciplinary approach that converges knowledge and skills from social and socio-ecological fields of study. These supporting arguments suggest that the practical application of academic theories and concepts will be ineffective if the social aspects of the targeted areas are not examined. Given these considerations, this research will argue for a transdisciplinary approach and build on this body of knowledge to assess these solutions and broaden their respective frameworks to combat the IWT.

The Impact of Criminal Justice Reform and Community-Based Enforcement Efforts

Societal attempts to address poaching and combat the IWT require a deeper understanding of criminal justice to provide retraining opportunities and increase engagement in law enforcement efforts while supporting local communities. Historically, enforcement operations have always constituted a significant portion of attempts to combat the IWT. According to Wilson & Boratto (2020), there has been a dramatic increase in the deployment of militarized anti-poaching measures, which involve extreme force, aggression, and fearmongering. In addition to being ineffective at reducing crime and recidivism, these approaches have been demonstrated to be harmful to local communities and economies due to the psychological effects of an increase in violence, as well as the correlation between a decline in locals' well-being and a decline in the local economy (Wilson & Boratto, 2020). To better comprehend the enforcement and punishment of these crimes, it is important to have a broader understanding of the intersection between criminal convergences and the IWT, as well as the dynamics between law enforcement and local communities.

Efforts to address this global issue must consider the overlap of the IWT and criminal convergences. Drug and human trafficking, corruption, and money laundering are just a few examples of these types of illegal overlaps. There are several probable intersections, but the most commonly cited are those that include the growth of criminal networks, the rise of parallel trafficking, and the pervasiveness of violent crime (An-

agnostou & Doberstein, 2022). Critical sources of convergence and patterns within criminal networks become apparent when certain concepts and theories from the study of criminal justice are applied to the understanding of the IWT, such as supply chain analysis and the comparison of the two types of criminal convergences: active and passive (Anagnostou & Doberstein, 2022). Methods for combating active convergence include tracking criminal organizations and monitoring their monetary transactions. Yet, measures that encourage community involvement and combat corruption may be useful tools for dealing with passive convergences. Continuing the implementation of law enforcement requires proper training to make these distinctions, as combating all forms of criminal convergences would necessitate collaborations among international agencies and governments.

When retraining law enforcement officials to combat the IWT, it is necessary to instill a degree of empathy in addition to the application of criminal justice theories and concepts. It is crucial that local communities, especially those that are near wildlife or threatened habitats, feel empowered to support law enforcement initiatives. To effectively combat this global issue, these initiatives must ensure that local people may reap the rewards of conservation efforts and receive backing from responsive, efficient law enforcement. Pires & Moreto (2011) emphasize that locals account for most wildlife poachers, that their primary motivation is monetary benefit, and that stricter punishment has little impact on diminishing their role in this industry. Considering this perspective, it is clear that law enforcement officials are assuming a multifaceted role in addressing the IWT and playing a crucial role in the overall efforts (Pires & Moreto, 2011). Equality and equitable treatment of locals will improve these efforts, and there is even an opportunity to encourage locals to join law enforcement efforts with a focus on bringing about sustainable change in these communities.

Integrating Economics into Socio-Ecological Management Strategies

Furthermore, supporting efforts to combat the IWT necessitates the use of environmental economics and ecosystem management at the socio-ecological level, with the purpose of validating community assets and implementing profitable management of local wildlife. There is a high demand for wildlife products because of their many desirable qualities, including their use for sustenance, medicine, spiritual or cultural objects, art, clothing, and status symbols (USAID, 2022). Forcing people to alter their habits—some of which are ingrained in traditional or cultural customs—in the name of conservation can be difficult if the underlying social and cultural factors aren't considered. In the interest of understanding the social dynamics of consumption, one must consider consumer preferences and motives, as well as the salient features of in-demand species, the impact of price, the adoption of substitutes, and the reception to modern innovation (Fukushima et al., 2021). With this understanding, we can conclude that participation in the IWT, either as a trader or a consumer, does not necessarily make a person immoral or incapable of reform. Professionals who have mastered these disciplines are able to investigate the availability of resources in high-traffic areas and construct circumstantial cases to demonstrate the need for services if they suspect that individuals are consuming these products out of destitution or for any other purpose linked to economic instability.

In addition, there is a pressing need for novel approaches that facilitate the improved management of conservation areas and the increased participation of local communities in conservation initiatives (Di

Minin et al., 2022). Sustainable management of local wildlife or protected areas should make local stakeholders feel more in control and provide them with tangible benefits. Because of the unique characteristics of these communities, the advantages they seek are not always monetary and are adaptable to meet changing needs. Management and participation can be bolstered by highlighting these additional benefits. These benefits, whether monetary or otherwise, can be achieved through measures like fostering a greater sense of responsibility for wildlife, expanding community ownership rights, managing and benefiting from wildlife, and creating employment opportunities (Fukushima et al., 2021). The potential advantages to local communities are often at the forefront of discussions about this topic; yet, the disadvantages that the community endures, which further motivate them to participate in the IWT, should also be considered. Some of these disadvantages include cultural disruptions, loss of access to essential necessities, power imbalances, and even human-wildlife conflicts that result in injuries or damage to infrastructure (Pathak, & Kothari, 1998).

Ecotourism and Alternative Methods of Business Development

To deepen the understanding of the interconnections that bind locals to the IWT, we must also investigate alternative approaches in ecology and business administration, such as ecotourism, that would dissuade people, particularly locals, from engaging in this industry. Ecotourism helps achieve this goal by providing economic incentives like local job creation and promoting responsible stewardship practices like wildlife and resource monitoring to communities (Pires & Moreto, 2011). Having an awareness of the demand that keeps the IWT as an industry intact allows us to make correlations to the prospects for monetary supplementation that are necessary to sustain the proposed business models. Although ecotourism and related business models are often presented as beneficial to local communities and the fight against the IWT, there are legitimate concerns about their motivations that must be acknowledged. The lack of evidence that the primary threats to biodiversity are being addressed has led many to question the efficacy of ecotourism for this purpose (Wolf et al., 2019). This can often be attributed to the dearth of community participation and the acquisition of the business by the communities in question. Additional disadvantages of implementing these business models in protected areas include negative environmental impacts such as those induced by road and structure construction and maintenance, plant degradation, dangerous human-wildlife interactions, and the introduction of invasive species (Wolf et al., 2019).

In addition to a focus on the economic advantages of this industry, the proposed business model's attempt to leverage this implementation without the intervention of larger, nonlocal organizations or actors, makes them more likely to be able to sustain themselves over time. To achieve its goal of fostering sustainable development in the communities it is intended to serve, the ecotourism sector must be organized in a way that A) allows those communities to garner the financial benefits of tourism without alienating or excluding them from the experience; B) these communities must be provided ownership of the area where it is conducted and have authority to determine how that land is used; C) in addition to receiving monetary contributions, these communities should also be provided with opportunities to participate in the planning and implementation of the business proposal (Charnley, 2005).

With these business models in place and local communities exercising effective leadership, more re-

sources and time will be available to combat the IWT and biodiversity loss. This, along with the consequent loss of ecosystem services—the benefits that a thriving natural environment and ecosystem bring to humans—due to anthropogenic impacts on the environment and climate, has major ramifications for ecosystem functionality, threatening crucial functions essential to human well-being (Vasseur, et al., 2017). Biodiversity loss, despite being a significant global issue, would not have been relevant in this context if the underlying conflicts that are now acknowledged had not been addressed previously. It is unrealistic to expect local communities to contribute to conservation initiatives without first addressing the factors that affect the “five livelihood assets (natural, physical, human, social, and financial)” (Samal & Dash, 2022). Once these conditions are met, people’s priorities can shift, and they are better able to devote time, energy, and authority to conservation efforts.

Ecotourism initiatives have opened new opportunities for research and surveys, which land managers can now conduct to document the encouraging upward trend in biodiversity conservation data. There is a potential for fewer locals to feel the need to poach and support the IWT to safeguard their new businesses, and those who did contribute to the industry may be more conscious of the long-term consequences of their actions and the urgency with which conservation and anti-poaching regulations must be put into place.

Transdisciplinary Research: A Contemporary Overview

In recent decades, researchers have begun to examine a novel methodology known as transdisciplinary research to address complex socio-ecological issues. In consideration of the IWT and overall wildlife crimes, interdisciplinary and multidisciplinary research has frequently been the only approach used. While there have been notable advances in addressing this global issue, the integration of transdisciplinary research methods has shown promising results in overcoming limitations of existing methodologies (Lawrence et al., 2022). This is achieved through the active involvement of stakeholders who are not affiliated with academia or government, encompassing a wider range of perspectives (Lawrence et al., 2022).

Multidisciplinary approaches to combating the IWT involve multiple organizations working on the same problem independently to produce data in the form of research papers or case studies, while interdisciplinary approaches involve organizations actively collaborating and consulting with experts within their general framework of resources (Moreto, 2018). When compared to other approaches, a transdisciplinary approach stands out for its ability to establish interconnections between bodies of knowledge and methods of practice, conveying a single idea across a wide range of disciplines and ensuring the long-term viability of offered solutions to them (Moreto, 2018).

In addition, as this is a more contemporary method in environmental and ecological studies, research like those cited here is encouraged and necessary to support a better understanding of what ‘transdisciplinarity’ is, particularly within the community of researchers looking into global issues like the effect of the IWT on local communities and biodiversity. As many significant sources of academic and government support shift their attention to more relevant—and sometimes expressly transdisciplinary—research in forthcoming years, a better understanding of what encompasses this approach with regards to combatting the

IWT across global communities will become increasingly crucial.

Conclusion

While the IWT is widely condemned, its elimination is uncertain due to numerous social and cultural factors, despite the far-reaching consequences for biodiversity and human well-being. Because of the industry's complex and volatile nature, developing sustainable solutions calls for a transdisciplinary approach that draws from a broad spectrum of disciplines and perspectives. Due to the interconnectedness of this global issue, comprehensive solutions will require significant investments, specifically in attention, resources, and effort.

Sustainable solutions to this global issue are proposed in this review paper that draws on research that has been academically peer-reviewed, providing support for the claim that a transdisciplinary approach that converges knowledge and skills from social and socio-ecological fields of study is required to develop strategies that effectively incentivize communities to combat the IWT. The IWT exacerbates the overexploitation of species and the ecosystem services they provide, making it even more crucial to find solutions (Vasseur, et al., 2017). The rate at which biodiversity is being lost can be influenced by the amount of data that is shared on the connection between local communities and the IWT (Anagnostou & Doberstein, 2022). Without sufficient attention and investments, this global issue will only get worse, with detrimental repercussions already seen by wildlife and people today. Because this industry is already well-established, a transdisciplinary approach—as demonstrated in this research—can produce sustainable and quantifiable change with the application of disciplines like criminal justice, economics and ecosystem management, and ecology and business administration.

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