A Social Model of Conservation to Fight Wildlife Trafficking:
What Conservationists Can Learn from Public Health

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The key determinants of whether particular species and ecosystems will live or die today are social factors – criminal behavior, political corruption, consumer behavior, land use decisions, cultural norms and practices, individual psychology, conflict, poverty, local livelihood choices, socio-economic inequalities, et al. But despite recognizing that our current biodiversity catastrophe has human, social roots, conservationists and environmentalists have yet to translate such consensus into action to save wildlife and the natural environment on a wide scale. This article examines this paradox in terms of efforts to combat illicit wildlife trafficking, and proposes a *social model* of conservation, which is focused on systematically identifying and addressing the social determinants of wildlife trafficking and presents an alternative to conventional – yet in many instances failing – bio-scientific models of conservation. This article focuses exclusively on the worldwide poaching crisis impacting most acutely charismatic and other economically valuable species, but likely has applicability to other important drivers of extinction and species decline such as habitat loss, ocean acidification, pollution, climate change, or other human-driven causes.

Conservation at a Crossroads

The wildlife trafficking crisis has brought the conservation sector to a crossroads. The greatest threat to wildlife today is obviously people, but conservationists – most of whom are natural scientists with little to no grounding in the theory or practice of social and political action, at least beyond their personal professional spheres – lack the tools to systematically understand and act individually and collectively to mitigate wildlife trafficking and its root causes. This represents a critical and fundamental – and well-documented – shortcoming in current responses to poaching and wildlife trafficking.

To address it, conservationists have sought to draw insights from fields as diverse as history (Pooley 2013), economics and anthropology (Mascia et al. 2003), criminology (Wyatt 2013), and counterterrorism (Bergenas and Knight 2015). Some of these more human-centric approaches offer promising new avenues to understand and confront particular aspects of the wildlife trafficking crisis. For instance, the increased attention given to intelligence collection and analysis (e.g. Moreto, 2017) has provided conservationists and policy makers alike with valuable insights into the workings of wildlife trafficking networks, especially how they operate across borders. Similarly, efforts against wildlife trafficking may be able to learn from research into criminology (e.g. White and Heckenberg, 2014) and how culture impacts conservation outcomes (Peterson et al, 2010), or initiatives like Open Standards for the

Practice of Conservation (Schwartz et al, 2012), especially in order to broaden understanding of stakeholder interests and behavior and the complex human drivers of illegal wildlife trade.

However, despite such innovations at what is the still the margins, efforts to combat wildlife trafficking remain overall deeply ad hoc and unstrategic, and lack the basis of evidence and research commonly found in other areas of conservation (Haenlein et al, 2016). Some argue that such shortcomings are simply a technical or design problem that can be remedied by greater engagement by conservationists in new (to them) fields like law enforcement and community development. This article argues that the problem lies instead at a much more fundamental level, and stems ultimately from the lack in the conservation field of a coherent model for devising a successful worldwide response to the wildlife trafficking crisis. For that, the conservation sector would be wisest to look to a perhaps unlikely place: Public Health, a field that has confronted analogous challenges and overcome them by adopting an explicitly 'social model' of research and practice.

Curing the Gatekeeper Syndrome: Towards a 'Social Model' of Conservation?

Conservation and Public Health are analogous fields in many important ways. They both are – or at least generally aim to be – rigorous and research-based yet real-world outcome oriented. And they both focus on problems that are typically national or global in scale and strategy but for which interventions must be cost-effective and implemented at highly localized or even individual levels. Conservationists face a crisis of historic proportions in wildlife trafficking, but the underlying human dimension of the problem means that we can learn from how public health achieved enormous successes not only against disease but also in confronting similar socially-rooted challenges.

Modern public health is essentially a combination of two distinct but complementary models – the *biomedical model* of health on one hand, and the *social model* on the other. The biomedical model focuses on identifying and understanding specific threats to people's health – i.e. diseases – and designing various medical interventions – drug treatments, medical therapies, vaccinations, lifestyle change, et al – to mitigate these threats (Yuill, Crinson, and Duncan 2010). Biomedical approaches rely on doctors and scientific researchers as key gatekeepers, and generally assume patients to be passive actors and disease to be treatable in isolation of the factors that caused it. Under the biomedical model of health, the doctor need only treat a disease and maybe give some advice on healthier behavior, not ask what societal conditions caused or exacerbated these problems, let alone seek to address them.

The biomedical model of health is roughly analogous to conventional conservation approaches, which, for our purposes here, let's call the *bio-ecological model* of conservation. Traditionally, wildlife conservation has focused on applying biology, ecology, and other natural sciences to identify and understand specific threats to biodiversity like habitat loss, pollution, and poaching, and on designing scientific interventions – such as ecosystem

research, species population monitoring, and wild area protection – to mitigate these threats. While more recent innovations in conservation, like those mentioned above, have emphasized greater engagement with societal questions, conservation scientists remain the main gatekeepers, and conservation interventions are still largely designed on scientific rather than social bases. Under conventional bio-ecological approaches, conservationists fill a gatekeeping role analogous to our doctor above: expertly devising typically tactically focused interventions and implementing them with the expectation that people, communities, national park staff, police, government officials, and other social and political institutions and actors – like medical patients – will dutifully and passively apply the prescribed bio-ecological 'treatment.'

Both the biomedical and bio-ecological approaches are obviously necessary and successful in achieving positive health and conservation outcomes, respectively; although, importantly, only against certain defined problem sets amenable to biological interventions. They tend to fail however when put up against thorny health or conservation problems rooted in larger social, political, cultural, or economic problems, and which therefore require policy or legal reform, community action, police operations, and other societal level interventions.

These limitations become stark when one considers that the various so-called 'strategies' to address wildlife trafficking are perhaps more accurately described as simply the sum total of whatever intervention trends are popular at a particular moment. Training and building the capacity of local law enforcement and other governmental institutions is popular, for example, but what are the implications if these institutions are corrupt or even directly complicit in the illegal wildlife trade? Expanding enforcement efforts is critical, but how do we ensure that we are arresting the right people and not just low-level, easily replaceable poachers and trafficking mules? Even when we do arrest kingpins, how do we deal with the fact that not all wildlife trafficking is done by centralized mafias, and in any case history teaches us kingpins can also be easily replaced, sometimes by someone even worse and harder to stop? We can fence and otherwise harden protected areas, but that's just not possible or ecologically desirable in many places. Increasing the firepower and operational capability of ranger forces might work, but no matter how well these units are trained and equipped they are not armies and are we (and they) really prepared to deal with the human and social toll it will exact for park rangers to kill, maim, die, and be maimed up unto the point poachers are effectively deterred? Political leaders and celebrities call for greater international cooperation, but around what plan of action, specifically? Community engagement and alternative livelihoods are useful conservation tools, but what if the community in question quite reasonably would like to see elephants killed for eating their crops and poaching brings in 10 or 20 times the salary and more social status than the non-criminal alternatives on offer? Reducing demand in consumer countries is absolutely necessary, but can the world's dying wildlife really wait while billions of consumers and potential consumers change their behavior and norms?

The problem, this paper argues, is not in the design of such interventions. The problem is that conservationists and their allies need an alternative fundamental perspective with which they can rigorously understand and research wildlife trafficking and systematically prioritize and mobilize resources to address it. Given the social roots of the illegal wildlife trade and the broader current wildlife and biodiversity crisis, conservationists can learn much from the history of how public health confronted the shortcomings in its own biomedical model.

Learning from the Successes of Public Health

Beginning in the 1970s, public health practitioners, researchers, and policy makers began to document how social factors such as parental occupation, education, income, housing, transport, and political stability were actually much more powerful determinants of health than prevalence of disease or lifestyle choices, not just as correlations but causally. Growing up poor and uneducated, it became empirically apparent, was far more dangerous to one's health than having high blood pressure or eating too much sugar or red meat (Wilkinson 2003).

A new approach was clearly needed.

In 1980, the U.K. Government published a watershed report led by Professor of Medicine Sir Douglas Black, which rigorously documented how "specific features of the socio-economic environment" had "clear causal significance" (Black et al. 1980). The Black Report, confirmed by numerous subsequent studies (esp. Whitehead 1992; Acheson 1998; and Marmot 2010), ultimately led to major reassessments of health policy throughout Europe and within the World Health Organization. Since the Black Report, what is now known as the social model of health evolved as a complement – and at times a competitor – to the biomedical model. The social model focuses on identifying and rigorously analyzing the broader determinants of health, and recognizes that many of these determinants can only be effectively addressed through collective action, political and policy reform, and societal change.

The implications of this were huge. First, it opened up a wide range of new possibilities in public health; enabling targeted, evidence-based action where it was most needed, saving resources, and increasing effectiveness of health interventions. Second, it charged people who are not doctors or scientists – policy makers, local community members, businesses, activists and campaigners – to mobilize against disease and promote, maintain, and sustain positive health outcomes locally and globally. Third, it engaged regular people and encouraged them to view health issues as important to their jobs and everyday lives, which made decision-makers and average citizens alike more receptive to and more likely to act on evidence about the drivers of poor health.

Ultimately, by systematically addressing the social determinants of health, the social model made it possible to develop public policy, legal and regulatory reform, health promotion

campaigns, and other non-medical intervention strategies that successfully targeted root causes of disease and inequities in health outcomes, all of which of course only amplified the effectiveness of medical interventions. Testament to its success is the fact that countries which use a social model of health consistently rank at the top for nearly every individual health statistic from life expectancy to infant mortality, as well as indices that measure health care quality, cost efficiency and fair distribution (Wilkinson and Pickett, 2009). It is clear that a social model of health focused on social determinants simply works.

Success is Possible against Wildlife Trafficking with a Social Model of Conservation

Conservationists can achieve the same scale of success as public health if we also adopt a rigorous 'social model' of conservation to complement and add value to established bio-ecological approaches. In fact, there are numerous individual success stories from around the world where 'social models' of conservation have already successfully reduced poaching and wildlife trafficking, sometimes to zero.

In Chad's sparsely populated Zakouma National Park, for instance, elephant populations are now rising due in large part to well designed counter poaching enforcement operations that focus on predicting and effectively responding to the behavioral, social, and network operational patterns and nuances of the poachers and ivory traffickers who operate in the area (Roberts 2015). In Kuiburi National Park, Thailand, by contrast, conventional enforcement patrols were ineffective until combined with a robust set of community outreach activities that systematically identified and then targeted the underlying social and psychological determinants of local people's tolerance for illegal poaching and poachers (e.g. trust in park authorities and justification for conservation action) (Steinmetz et al. 2014). More broadly, quantitative meta-analysis of the relative performance of different protected area management regimes in the Peruvian Amazon show a strong correlation between effective protection against forest destruction with strategies that depended on local or indigenous governance versus less directly socially embedded strategies pushed down from centralized governments or corporate entities (Schleicher et al. 2017).

National level success is possible too. Nepal, for instance, has famously achieved multiple years of 'zero poaching' of rhinos, elephants, tigers, and other species through a combination of legal and regulatory reform, participatory institutions, community-led anti-poaching patrols, benefit sharing mechanisms, community focused forestry enterprises, and biodiversity conservation interventions (Neme 2015).

The unavoidable lesson from these successes is that even though the details of the problem and solution were all different and highly localized, they all successfully fought illegal poaching and wildlife trafficking by using systematic, socially rooted interventions that produced measureable and in some ways extraordinary conservation outcomes.

The Social Determinants of Wildlife Trafficking

In the social sciences, every theory has three distinct meta-philosophical components: ontology (fundamental assumptions about the nature of being), epistemology (how knowledge is valued, organized, and prioritized), and methodology (what particular questions will be researched or problems solved). Under a bio-ecological model of conservation, wildlife trafficking is viewed ontologically as an external threat to conservationists' efforts to protect wildlife. But as wildlife trafficking has become more prevalent and more complex, conservationists' ability to understand and address it has diminished, leaving anti-trafficking interventions seemingly always two steps behind the traffickers, and resulting in a situation where it is not unreasonable to ask whether addressing the threat of illegal trade is actually even possible. A social model of conservation offers a promising alternative. It enables wildlife trafficking to be seen, ontologically, as a 'normal' social problem that can benefit from not only a host of research and proven practical solutions but also a diverse set of people and stakeholder organizations and institutions outside of the conservation sector.

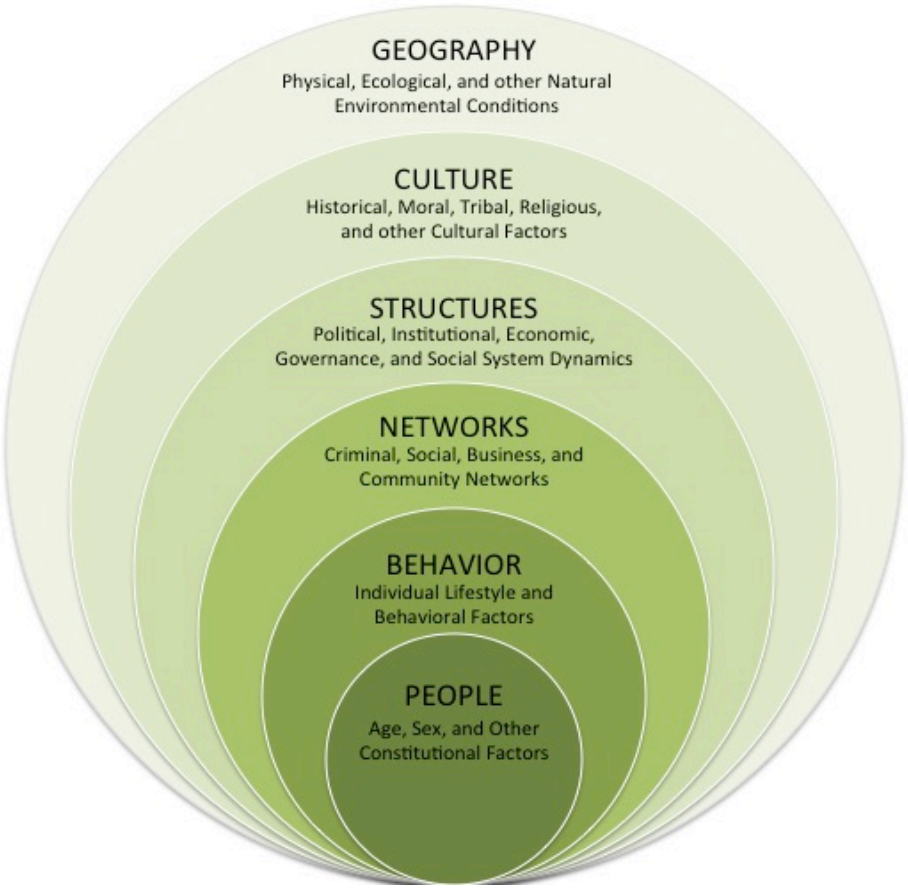
In order to take advantage of what a social model can offer as an alternative ontology, especially to ensure that it is repeatable and scalable across the full range of spatial scales, just as the social model of public health has proven to be, greater development of its underlying epistemological and methodological perspectives is also necessary. While such theoretical development lies outside the scope of this paper, it is nevertheless useful to sketch out at least what a viable epistemology of wildlife trafficking might look like within a social model of conservation.

To do so, we can once again turn to public health for assistance. In public health, specifying the *social determinants* of health has become the core epistemological perspective to understand and address issues of public health concern. Focusing on social determinants provided public health with a framework to conduct rigorous research into not only particular societal drivers of disease, but much more importantly a basis for understanding how different social factors – poverty, access to services, a community's culture and history, et al – combine to produce negative health outcomes within particular populations. Combining both quantitative and qualitative approaches, research into social determinants provides a rigorous evidentiary foundation to inform decisions of practitioners about how their actions impact health. And because social determinants research is embedded within a social model of health, the impact of this research is not limited to only doctors, public health officials, and other health professionals, but also can be used to positively influence the decisions and behavior of policy makers, community leaders, urban planners, police, legislators, and ordinary people.

I propose that a similar epistemological focus on the *social determinants of wildlife trafficking* would be useful as the underlying evidentiary foundation to understand and address wildlife trafficking. Figure 1 adapts oft-cited visualizations of how the social determinants of health

are embedded in one another (especially Whitehead and Dahlgren, 1991) to the needs of the conservation field.

Figure 1: The Social Determinants of Wildlife Trafficking



The framework is preliminary and requires further empirical research to more fully substantiate each component and to systematically link to practice; just as understanding and addressing the social determinants of health is an ongoing process that has taken decades of research and careful examination of practice, experience nevertheless from which conservation can learn and benefit. The social determinants framework should be seen primarily as a useful heuristic to organize what factors determine and shape wildlife trafficking behavior and dynamics; understanding of which will help guide holistic societally focused interventions against wildlife trafficking, whether at site and landscape levels or as part of national and regional initiatives. The dynamics of transnantional organized criminal wildlife trafficking networks has garnered much attention recently (e.g. Haenlein and Smith, 2016) but as the framework indicates, to be effective against them it is necessary to understand specifically what drives their actions from both above and below.

The social determinants framework in Figure 1 has been applied in a number of sites of practice. The first was as a planning framework for a multi-partner program to counter both

cross-border trafficking of protected rosewood and the illegal trade of scarlet macaws and other endangered fauna from the Chiquibul-Maya Mountains eco-region of Belize and Guatemala, beginning in May 2015. The framework was employed as a discussion mechanism on the dynamics of illicit wildlife trafficking in the impacted regions, initially through large collective group discussion and then followed up by semi-structured one-on-one and small group interviews with participants who wanted to add more detail outside the time available for the collective discussion. According to verbal and written feedback from the participants, application of the framework encouraged the development by participating stakeholders of an understanding of wildlife trafficking in Belize and Guatemala that was at the same time more empirically comprehensive and conceptually nuanced. In particular, examination of the social determinants enabled participants to go beyond conventional focus on only the poachers and other criminal actors responsible for wildlife trafficking activity and to bring out various societal, historical, and other drivers and contexts – such as relevant corruption and political dynamics, local cultural practices, and land use and other socioeconomic contexts – that not only impact the illegal wildlife trade in the affected area but which ultimately must inform effective solutions. It is important to emphasize that this framework enabled these knowledge outcomes using only information and insights the participants already had on hand, such as existing documentation or in many cases just what they had 'in their head,' i.e. the extremely valuable experiential insights and memories participants possessed but which they had previously not been able (or willing) to document and aggregate in a systematic way. This last finding is important as it indicates that stakeholders often collectively already have sufficient information, knowledge, and experience to both understand and at least begin to confront complex challenges like wildlife trafficking. This in turn indicates that education about the social determinants of wildlife trafficking – or even just about the framework itself and how to use it as a discussion and planning resource – may be a powerful yet inexpensive tool to help communities and local groups of stakeholders develop locally relevant strategies against poaching and wildlife trafficking with the need for much outside intervention or even research.

As further evidence of its applicability, the framework has also been used as part of training courses for NGO wildlife crime investigators and analysts from Indonesia (2016), Vietnam (2015 and 2016), Laos (2015 and 2016), and China (2015), to help prioritize and focus the planning and implementation of counter wildlife trafficking interventions in Tanzania (2015-16), and, in a more generic format to include all forms of illicit trafficking and trade, as part of a university summer school (2017).

SOCIAL DETERMINANT CATEGORY	EXAMPLE DISCUSSION QUESTIONS
GEOGRAPHY *Physical, ecological, and other natural environmental conditions*	▪ Where does the poaching take place? ▪ How do the products move? ▪ What obstacles must the traffickers and law enforcement deal with?
CULTURE *Historical, moral, and other cultural conditions*	▪ What cultural beliefs / practices / traditions influence people's involvement in poaching / trafficking or their perceptions of wildlife / poachers / wildlife traffickers?
STRUCTURES *Political, institutional, economic, governance and other structural conditions*	▪ What political or diplomatic issues are relevant? ▪ What economic trends impact trafficking? ▪ What challenges and opportunities do they offer?
NETWORKS *Criminal, social, business, and community networks*	▪ Map out the smuggling networks. Who are the poachers / middlemen / smugglers / shippers / financiers / buyers? Is the trafficking network connected to wider business or political networks?
BEHAVIOR *Individual lifestyle and behavioral factors*	▪ What are poachers exact motives? ▪ Are they entrepreneurs? Are they blackmailed? ▪ Motivations other than money / profit, e.g. social status, family obligation, etc?
PEOPLE *Age, sex, and other constitutional factors*	▪ How old are the people involved? Are they men or women (or children)? ▪ Where exactly are they from? What language do they speak? ▪ What is / was their occupation?

In each of the above practice cases, the social determinants framework was not deployed as a scientific research model, but as a framework for action-oriented qualitative discussion, cued by the example discussion questions in Table 1. In this way, until more systematic research can be done, the social determinants framework offers a useful tool for practitioners and researchers to aggregate collective knowledge on the wildlife trafficking problem in their area of responsibility in a structured and comprehensive way. The results often serve to validate existing assumptions and hypotheses, although in many cases using the framework had the opposite outcome, leading to surprising conclusions. For example, in Tanzania, it led to the finding that rather than focusing intervention efforts only on the many local poachers motivated by poverty, a more narrow focus on the much fewer and more important poaching *fundis* (skilled specialized elephant poachers), who were typically experienced hunters and

men over the age of forty motivated by status and professional enjoyment as much as money, may be a more effective and likely less costly intervention strategy.

As research produces greater empirical and theoretical understanding of the social determinants of wildlife trafficking, these initial practical applications of the framework will provide insights into how such empirical knowledge can best inform practical interventions against wildlife trafficking; findings about which will be published in due course.

Implications

A social model of conservation focused on the political, cultural, economic, and other social determinants of wildlife trafficking has the potential to bring many tangible benefits to the current fight against poaching and the illegal wildlife trade, and could make possible a successful worldwide strategy against these complex and global threats. In particular, implementation of the following recommended measures could affect lasting positive change for the cause of conservation.

Recommendation 1: *Educate and train relevant traditional and non-traditional stakeholders in the social model of conservation and social determinants of wildlife trafficking*. This should focus on increasing practical knowledge of the dynamics and drivers of wildlife trafficking among not only traditional stakeholders (e.g. conservation biologists, wildlife authorities, conservation donors, protected area management personnel) but also non-traditional stakeholders (e.g. police, military, intelligence analysts, policy makers, legislators, human rights NGOs, et al). This will encourage better informed and more unified approaches and strategies to combat wildlife trafficking, and empower non-traditional stakeholders to take more initiative within and leadership of counter wildlife trafficking efforts and in general better apply their relevant knowledge and experience to achieve conservation outcomes.

Recommendation 2: *Conduct and fund a much greater volume of research into each of the social determinants of wildlife trafficking.* This research would preferably be done by those explicitly from social science and humanities disciplines (anthropology, political science, international relations, criminology, history, theology, languages, area studies, et al), versus ecologists or biologists attempting to conduct social research. This will improve the rigor of the research and help mitigate against tokenistic application of social science and humanities research approaches. The aim of this research agenda, which could include both original primary field research as well as that using comparative, meta-analysis, and other secondary approaches, would be to increase the empirical and theoretical bases of knowledge about the social determinants of wildlife trafficking and in general terms improve the analytic rigor upon which broader findings and interventions can be based. A useful beginning to such a research program would be a comprehensive literature survey from within and external to core conservation journals of existing research which pertains to the social determinants of wildlife trafficking, ideally organized by the framework's particular levels of analysis.

Recommendation 3: *Design, implement, measure, and compare the effectiveness of conservation interventions explicitly according to how they impact the social determinants of wildlife trafficking*. Evidence-based frameworks for designing, monitoring, and evaluating conservation interventions have long been an elusive challenge for conservation practitioners and researchers alike. Leveraging the social determinants framework and the increased body of research from recommendation #2 will illuminate how conservation interventions are impacting both specific dynamics and drivers of wildlife trafficking (e.g. a specific criminal network's relationship with particular corrupt political factions in government, or the likelihood of local community members to work for or against poaching gangs) as well as the problem in more holistic, strategic-level terms. This in turn can be used as the evidence basis for practitioners to mitigate the effects of one or a set of social determinants, or alternatively identify and exploit vulnerabilities in poaching and trafficking networks evident in the social determinants research.

Implementation of these recommendations would likely prove to be a virtuous cycle, and in particular have the following long-term tangible benefits to conservation and efforts to combat wildlife trafficking.

First, they will provide conservationists with a framework to both understand social and political factors and also act strategically to influence them and achieve specific conservation outcomes. This is especially critical as conservation scientists increasingly find themselves involved in areas of social and political action in which bio-ecological expertise is largely irrelevant: law enforcement, community development, policy and legal reform, intelligence gathering, and paramilitary operations for counter poaching. Conservation interventions must be inclusive and participatory, with conservation scientists serving as enablers, facilitators, and guides rather than authoritative gatekeepers.

Second, a social model of conservation based on rigorous understanding of the social determinants of wildlife trafficking will improve how data on wildlife trafficking is gathered, structured, and used. It will help conservationists understand wildlife trafficking networks and what drives them on a much deeper, more holistic, and ultimately more useful level than is currently possible. Additionally, it will provide a framework for prioritizing information and action that is more systematic and accountable than the ad hoc and trend-prone approaches that dominate today. Intellectual rigor is no less important, after all, when dealing with social realities and political action as it is with natural scientific questions.

Third, it will open up new subsets of actionable information all along the wildlife trade chain, such as patterns in poacher and trafficker behavior, and exploitable vulnerabilities in trafficking networks, and in wholesale, retail, and consumer markets. This will make possible coordinated campaigns against trafficking networks across countries and continents, and increase our ability to anticipate poachers' and traffickers' 'next move.' Staying ahead of

criminal network adaptation is a necessary component of any successful enforcement effort against transnational trafficking networks.

Fourth, rigorous application of a social model of conservation will also enable better planning and evaluation of conservation interventions, and improved management of the attendant risks, including the very real social and political risks inherent in enforcement-oriented actions both to conservationists and to local communities and other partners. Metrics of success will become easier to measure when benchmarked against how interventions have or have not addressed the dynamics and underlying determinants of wildlife trafficking.

Finally and critically, by focusing on empowerment and broad participation, a social model of conservation will provide a basis to mobilize government officials, local communities, the transport industry as well as businesses, indigenous tribes, and publics around the world behind targeted, effective conservation action. This will make it possible to achieve that most elusive conservation outcome: political will.

Conclusion

Conservationists, governments, academics, and the public increasingly recognize the critical importance of understanding and addressing the root human causes of the wildlife trafficking crisis. Just as it worked (and works) in public health, adopting a social model of conservation focused on the social determinants of wildlife trafficking will make a difference.

The down side of such a holistic, evidence-based, targeted intervention approach is that it's not easy. It requires framework development, rigorous empirical research on the social determinants of wildlife trafficking, and constant non-ideological evaluation of conservation practice independent of donor whims and funding trends. It doesn't necessarily fit nicely within our existing bureaucratic or academic scientific structures, or within current funding frameworks. And it will almost certainly result in findings that conflict with at least parts of today's conventions of conservation thought and practice.

The up side of a social model of conservation focused on understanding and addressing the social determinants of wildlife trafficking is that it will work.

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