Exploring social influence and social marketing to reduce consumer demand for illegal wildlife

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ABSTRACT

Consumer demand for illegal wildlife is a major factor in species over-exploitation and global biodiversity loss. Governments and non-governmental organizations are just recently recognizing the significance of demand and its inherent social drivers. While greater recognition of demand is necessary, most conventional wildlife trade policy and practice do not incorporate social psychological and behavioral science to address the drivers of demand. That is, human behavior is the most significant driver of demand and understanding how behavior change can be accomplished is essential. We review social influence approaches utilized in various natural resource and conservation context. We then synthesize this literature with recent wildlife trade research and social marketing strategies to reduce consumer demand at local and regional scales. Our review illustrates social influence implemented through a social marketing framework at local and regional scales can influence behavior and reduce demand, while complementing conventional regulation, enforcement, education, and awareness approaches.

Keywords: Behavior change, conservation psychology, social norms, wildlife trade

INTRODUCTION

Contemporary biodiversity conservation requires managing humans and, at times, changing their behavior (Bennett & Roth, 2015; Clayton, 2012; Liu *et al*., 2015). It is widely recognized that better understanding of human behavior can lead to more effective conservation practices and policy (Clayton, Litchfield, & Geller, 2013; Heberlein, 2012; Kinzig *et al*., 2013; Mascia *et al*., 2003; Schultz, 2011). This is especially relevant to market-driven exploitation of wild animals, where illegal harvest to fulfill consumer demand is a major driver of overexploitation of vulnerable populations (Sodhi & Ehrlich, 2010; Traffic International [TRAFFIC], 2008). Market-driven trade of wildlife and wildlife products threatens the survival of both iconic, charismatic species (e.g., rhinos, elephants, and tigers) and less recognized species (e.g., pangolins, pythons, and parrots) (Oldfield, 2003; Rosen & Smith, 2010; TRAFFIC, 2008).

Our interests concentrate on the illegal wildlife trade for endpoint consumers in domestic and international markets. We prioritize the role of consumers based on increasing recognition that 1) enforcement and regulation strategies often fail to adequately account for the underlying market and social drivers of illegal trade (Challender & MacMillan, 2014), 2) demand for illegal wildlife trade is more appropriately viewed as being driven by wealth, not poverty (Duffy, 2010), 3) the majority of mitigation strategies neglect consumer preferences and behavior (Veríssimo, Challender, & Nijman, 2012), and 4) regulations often focus on law enforcement strategies while neglecting demand reduction and local community engagement (Roe, 2015).

Specifically, growing economies and higher disposable incomes are linked to increased consumer demand for wildlife, often as luxury items (Drury, 2011; Duffy, 2010). Endpoint consumers, typically spanning across international markets, tend to be wealthy and their demand is motivated by preferences that differ quite considerably from communities that locally harvest wildlife as a vital source of subsistence (Brashares *et al*., 2014). Furthermore, the current trajectory of illegal trade mitigation policy tends to over emphasize increased law enforcement strategies while neglecting policies that reduce demand and engage with communities at local and regional scales (Roe, 2015). While critical, enforcement and regulation are inherently one-sided, lacking a coherent or explicit mechanism to affect the social drivers of the illegal trade market (Challender & MacMillan, 2014), specifically, consumers (Veríssimo *et al*., 2012). As evidence suggests, these one-sided approaches are often insufficient to curb illegal wildlife trade and may be counter-productive (Ayling, 2013; Duffy, St. John, Buscher, & Brockington, 2015) while greater attention to understanding and decreasing consumer demand will complement traditional strategies and improve desired outcomes on both the supply and demand side.

Fortunately, governments and non-governmental organizations (NGOs) are beginning to address consumer demand and its inherent social drivers of illegal wildlife trade (Nijman 2010; TRAFFIC, 2008;

Table 1. Suggested social influence/marketing approaches to mitigate three scenarios targeting endpoint consumers of illegally-traded wildlife or wildlife products[a]

Illegal wildlife consumers	Desired behavior change	Target Audience	Social influence/marketing approach
Bushmeat consumers of protected-species at restaurants in urban areas in Peruvian Amazon	Select bushmeat with legal harvest and commercial quotas	Restaurant goers, particularly visitors and tourists whom may want to try bushmeat for the novelty[b]	*Public commitment*: encourage high-ranking military and industry personal to pledge they will not consume illegal bushmeat and denounce illegal consumption. *Normative social messaging*: place visible signs or other messages at hotels for tourists to be exposed to socially approved of behaviors concerning illegal bushmeat consumption, and that most tourists do not condone its consumption (in English and Spanish).
Consumers of illegally-harvested live birds as pets (particularly songbirds for singing competitions) in Indonesia	Select legally-harvested or captive-bred songbirds	Songbird hobbyists and members of bird clubs	*Block leader*: Recruit influential bird-club founders who use (or can be convinced to use) only captive-bred or legally-capture species for singing competitions to talk to other club founders/leaders and discuss that they should do the same. *Social comparison*: encourage development of bird clubs and singing competitions-with prestigious participants and prizes-that only allow certified captive-bred birds to encourage upward comparison from clubs who allow and implicitly promote illegally harvested songbird clubs.
Consumers of Asian pangolin[c] scales as traditional medicine in Viet Nam[d]	Select alternative modern medicines or other traditional medicines from legally-traded species	Affluent urban consumers able to pay soaring prices of traditional medicines	*Community-based social marketing framework*: understand the reasons for using these products given their recent introduction to the traditional medicine market[e] and identify barriers/constraints to discontinuing their use. *Public commitment*: obtain public pledges from celebrities, politicians, and physicians in Viet Nam stating they will not purchase or consume any pangolin product.

[a]Ideally, each scenario should start with a community-based evaluation to better understand the drivers of consumption and determine the most effective social influence intervention.
[b]Bushmeat consumers are often military, industry executives, or tourists who are either stationed or visiting the Amazonian region.
[c]Trade and consumption of Asian pangolins is illegal in Viet Nam.
[d]A first step would be identifying areas wherproducts are sold, the merchants selling them, and those who purchase these products.
[e]Over the past 15 years the demand for pangolin has increased as the traditional medicinal market has reemerged.

World Wildlife Fund [WWF] & Dalberg, 2012). The WWF and TRAFFIC, for instance, launched the Wildlife Crime Initiative in 2014, an integrated long-term initiative designed, in part, to stop poaching, trafficking, and consumption of illegal wildlife (WWF & TRAFFIC, 2014). For researchers and practitioners working to reduce consumer demand and mitigate illegal wildlife trade at local and regional scales, the desired outcome is often to change individual behavior (Drury, 2011; St. John, Edward-Jones, & Jones, 2010). In context of consumer demand for illegal wildlife, we found little evidence in the scientific literature that behavior change theories and methods are being utilized. Researchers and practitioners can, and should, draw upon a wide-range of theory-based approaches from social psychology and the broader social sciences (e.g., economics, political

science, sociology, anthropology) to change consumer behavior and reduce demand (Veríssimo, 2013).

Changing human behavior is challenging. To meet this challenge, social psychology, particularly the theories and methods associated with social influence, provide established and effective tools and frameworks (Abrahamse & Steg, 2013; Clayton & Brook, 2005). Social influence approaches recognize the power that other individuals (social actors) and social context—the immediate setting in which individuals interact and make decisions—have on decision making and behaviors (Abrahamse & Steg ,2013; World Bank, 2015). The efficacy of social influence approaches to modify human behavior stems from an inherent aspect of human nature; the people around us often influence our behavior, which can be effectively harnessed to leverage behavior change (Allport 1985; Cialdini & Trost 1998; Cialdini & Goldstein 2004; Goldstein & Cialdini 2007).

The aim of our paper is to provide conservation researchers and practitioners working to reduce illegal wildlife trade and consumer demand with an overview of social influence approaches to assist their endeavors. We introduce four widely used social influence approaches from social psychology commonly used in conservation psychology and pro-environmental behavior research (Abrahamse & Steg 2013). We review their application and effectiveness in several biodiversity conservation and wildlife trade contexts including examples of social influence approaches to reduce consumer demand. Lastly, we demonstrate how social influence approaches can be incorporated into social marketing frameworks (Andreasen 1994; Burchell, Rettie, & Patel, 2013; Veríssimo, 2013) to effectively target consumers under different socio-cultural contexts at local community and regional scales (McKenzie-Mohr, 2011).

Social influence

Social influence refers to the change in behavior (e.g., thoughts, feelings, or actions) one individual causes in another, intentionally or unintentionally (Turner, 1991). Through interaction with and observation of others, individuals gather information and form beliefs about common behavior and how they ought to behave for a given situation (i.e., what behavior is socially acceptable). Particularly influential are the behaviors and expectations of other group members, such as family and friends, neighbors and community members, or members of other meaningful social groups (Bicchieri, 2005). Interactions with other individuals from a social group 1) help foster the development of informal rules that guide individual behavior, *social norms*; 2) allow for comparison of one's own behavior to that of others, *social comparison*; and 3) provide the opportunity to learn adaptive or effective behavior(s) from others, *social learning* (Cialdini, Kallgren, & Reno, 1991).

Empirical evidence indicates that social norms, social comparison, and social learning significantly influence individual behavior under many scenarios, including in natural resource and biodiversity conservation contexts (Abrahamse & Steg, 2013; Abrahamse, Steg, Vlek, & Rothengatter, 2005; Cialdini *et al*. 1991; Cialdini & Trost, 1998). Four social influence approaches that

may be particularly effective at mitigating consumer demand for illegal wildlife are: 1) normative social information and feedback, 2) social comparison and feedback, 3) public commitments, and 4) block leaders and social network approaches (Abrahamse & Steg, 2013). In Table 1, we present examples of contemporary issues that relate these social influence approaches to reducing consumer demand of illegal wildlife or wildlife products.

Normative social information and feedback

Behavior change techniques that use normative social information and feedback have become one of the most widely applied social influence approaches (Goldstein & Cialdini, 2007; Miller & Prentice, 2016). Normative social informative and feedback approaches focus on social norms—the informal rules or standards of behavior for a particular situation shared by a group and often enforced via social sanctions such as rewards and punishments (Cialdini, Kallgren, & Reno,1991). Social norms provide two important types of information: what behavior is commonly done (*descriptive norm*) and what behavior is expected, approved of, or ought to be done (*injunctive norm*) (Cialdini *et al*., 1991). Descriptive social norms motivate behavior by providing information about what behavior is common, and, therefore, what behavior is adaptive or effective (i.e., social proof) (Cialdini, 2007). Injunctive social norms motivate behavior by providing information about social approval, i.e., what behavior assures social rewards or avoids social punishments. When information concerning either or both of these social norms is salient, individual behavior can be guided or constrained by what behaviors are perceived as effective and/or socially approved for a given social context (Cialdini *et al*., 1991).

Normative social feedback provides an individual with a means to reflect and assess their behavior in relation to the prevailing social norm. While normative social information is a powerful behavior influence, the addition of feedback enables social comparison, especially for behaviors that are not public, explicitly observed, or overtly known. For example, Schultz (1999) found households increased recycling when provided weekly descriptive norm information regarding either (a) the quantity of recyclables collected from their home and feedback comparing the current quantity to the previous week and to cumulative totals or (b) information and feedback regarding their neighborhood's recycling rate and number of participating households. Elsewhere, Schultz and colleagues (2007) found that households above the neighborhood average decreased their energy consumption when they were provided information about their energy usage in relation to their neighbors. Importantly, households that were provided the same normative social information, but were below the neighborhood average, increased their usage. This "boomerang effect" was alleviated by providing feedback of the injunctive norm to communicate approval when below the neighborhood average (a happy face) or disapproval when above (a sad face) (see also: Cialdini *et al*. 2006). Similar normative social information and feedback approaches have improved household conservation of other public utilities (Bernedo, Ferraro, & Price, 2014;

Nolan *et al*., 2008; Schultz *et al*., 2007).

The boomerang effect is important to consider when using social norms to influence behavior change, especially when framing information or feedback about socially censured or undesirable behaviors, such as purchasing illegal wildlife trade animals or products (Cialdini, 2003; Cialdini *et al*., 2006). In the context of socially censured behaviors such as stealing, littering, or consuming illegal wildlife, theory suggests that leveraging the injunctive norm (expected behavior), not the descriptive norm (typical behavior), will have a greater influence on behavior and avoid the boomerang effect because it focuses an individual on the inappropriateness or social disapproval of a behavior rather than its prevalence. Cialdini *et al*. (2006) recommended that injunctive normative social information and feedback be framed to indicate what people ought *not* to do. However, if a descriptive norm message is used, they suggested avoiding a negative framing, such as "consumption of wildlife is widespread", and instead focus individuals on a positive descriptive norm, such as "most community members do not consume wildlife" (Cialdini, 2003).

We found no published studies or programs specifically applying normative social information and feedback to reduce consumer demand of illegal wildlife trade. Two investigations, however, have capitalized social norms to tackle wildlife harvest. In Taiwan, researchers measured individuals' perceived (dis)approval of family and friends poaching protected feline species (injunctive norm) and if individuals knew people who had previously poached these species (descriptive norm) (St. John, Mai, & Pei, 2015). They found that perceptions of how others typically behaved (descriptive norms) had a strong influence on behavior and reporting of poaching behavior. Their findings also indicated that individuals who reported that their family and friends would disapprove of them poaching were less likely to admit to poaching, compared to those reporting family and friends would approve of their poaching. Disapproval from other social actors did not necessarily persuade them to refrain from poaching, however. Given these results, coupled with participants indicating they perceived no chance of being caught or incurring punishment from authorities for poaching, the authors concluded that leveraging existing social norms may be an effective means to deter poaching.. In Thailand, as part of an effort to reduce poaching, researchers attempted to create new social norms by encouraging neighbors, family members, and local leaders to communicate they would no longer tolerate poaching by community members. As we discuss later, this project incorporated a multifaceted approach with the specific intention of creating and enforcing new socially normative behavior, enforced via system of social rewards and punishments (Steinmetz *et al*., 2014).

Social comparison and feedback

People tend to compare themselves to others, and by doing so, they can assess or make sense of their own behaviors, opinions, and beliefs (Festinger, 1954). An important aspect of social comparison is that individuals tend to compare themselves more strongly to people or groups who are similar to themselves because they are perceived as more likeable and more persuasive (Burger *et al*., 2004). Studies within the environmental domain illustrate that social comparison and feedback can affect individual behavior (Ferguson, Branscombe, & Reynolds, 2011; Toner, Gan, & Leary, 2014). For example, Toner *et al*. (2014) conducted an experiment regarding perceived environmental impact (i.e., individuals' carbon footprint) to compare the effect of negative feedback on the participant's environmental impact and feedback about a larger social group's average impact. They found that participants expressed the strongest intentions to adopt proenvironmental behaviors when participants believed their behavior was worse than that from a significant social group.

Within the area of consumer behavior, social comparison and feedback can influence purchasing behavior, particularly when items are non-essential or luxury items (Bearden & Etzel, 1982; Bearden & Rose, 1990). For example, Bearden and Etzel (1982) found that the purchase of luxury items—particularly those consumed or used in public—were more likely to be influenced by others. This observation may be the result of upward social comparison (Collins, 1996; Suls & Willis, 1991). Upward comparison occurs when comparison is made to others perceived to be in a better position or are experiencing better outcomes, e.g., wealthier, more successful, or higher social status. The desire to elevate one's social status is frequently cited as a driver of consumer demand for wildlife (Drury, 2011; TRAFFIC, 2008), similar to the idea of "conspicuous consumption", wherein consumers acquire products to publicly display their status (Čekavičius & Pajarskaitė, 2012). The World Wildlife Fund (2012) found government and NGO respondents from diverse cultures speculated that the primary driver of demand for smuggled wildlife products was social status. A recent study concluded that consumers of wild-sourced, rare, and expensive wildlife products were often at the top of the social hierarchy and their purchases were used to convey wealth and status (Shairp *et al*., 2016)

Wildlife consumers have been documented comparing themselves to others, particularly proximate or relevant others, to help resolve uncertainty involving a purchase. For example, Drury (2011) found consumers of wild meat in Vietnam tended to compare themselves to friends, family, and co-workers as a means of receiving feedback as to the social appropriateness of purchasing these wildlife products. Drury also found a strong positive relationship between status (i.e., success) and consumption (i.e., demand) of wild meat by urban consumers. Making an upward social comparison to those of higher status motivated individuals to purchase the same wildlife products to demonstrate a similar "status". Doing so gave the impression of having money, power, or skill, with an additional advantage of potentially gaining economic and social favor from those higher up the social hierarchy.

Public commitments

Obtaining a commitment—the binding of an individual to a certain opinion, goal, or behavior—is particularly

effective when the commitment is made publicly (Kiesler, 1971). Public commitments are even more effective when sanctions for not following through are salient (Burn & Oskamp, 1986; Lokhorst *et al*., 2013; Osbaldiston & Schott, 2012). The effectiveness of making a public commitment is partly due to individuals seeking consistency between their attitudes and behaviors. For instance, an individual with an ambivalent or negative attitude towards illegally harvested bushmeat is less likely to purchase or consume bushmeat if they make a public commitment to abstain, thereby better aligning their publicly expressed attitude with a behavior that now carries significant social sanctions if they renege. The commitment reinforces and increases the target behavior as individuals focus on making their behavior consistent with their now salient beliefs or attitudes (Thibodeau & Aronson 1992). Research also suggests that this attitude-behavior relationship becomes more consistent over time when expressed in the form of a public commitment (Kiesler, 1971; Pallak, Cook, & Sullivan, 1980).

As Abrahamse & Steg (2013) point out, scale is relevant when considering the target audience for public commitments, i.e., monitoring commitments and holding individuals accountable when commitments fail to materialize is more difficult at broader spatial scales. For example, many governments (e.g., Hall, 2013), intergovernmental-NGO groups (e.g., http://www.cawtglobal.org/ about), and businesses, including several Chinese e-commerce companies (e.g., International Fund for Animal Welfare, 2014), have publically committed to address the illegal sale and purchase of wildlife products. The ability to monitor accountability and implement social sanctions, however, is likely limited to the local or regional scales where social influence is more targeted and effective (Abrahamse *et al*., 2005). To bridge this scale gap, NGOs like WildAid (2015) utilize public commitments from celebrity endorsers to garner broad-scale attention and larger audiences, alongside regional leaders or local community members at smaller scales to influence behavior and decrease illegal wildlife trade.

Block leaders and social networks

The use of block leaders within social influence approaches engages individuals from a local or regional social network to communicate with others about needed behavior change (Burn, 1991). Block leaders are typically individuals who already engage in the desired targeted behavior who then volunteer to communicate, persuade, and/or teach others who do not engage in the targeted behavior. Abrahamse and Steg (2013) found the block leaders approach to be the most effective social influence approach on a local scale given the inherent face-to-face interaction of community members. The strategy heavily relies on existing social networks to spread information and influence and its effectiveness often depends on the number and strength of social ties within the social network (Cook, 2005; Darley & Beniger, 1981; Rogers, 2003). Capitalizing on existing social networks increases the likelihood that information will reach target individuals or groups (Contractor &

DeChurch, 2014). It also increases the probability that individuals within the social network will be influenced by the block leader because it comes from someone within the group; someone they know, someone who is similar, and/or someone they like or respect (Burger *et al*. 2004; Prell, Hubacek, & Reed, 2009).

In a seminal field experiment, Burn (1991) used block leaders within a local social network to spread pro-recycling communications to their neighbors and encourage recycling behavior. The author found that neighborhoods with block leaders recycled significantly more material than a control group without block leaders and another neighborhood where pro-recycling information was simply left at neighbors' doors. Similar studies on recycling behavior at the community scale have consistently demonstrated that the use of block leaders significantly increases the targeted behavior (Everett & Pierce, 1991; Hopper & Nielsen, 1991; Meneses & Palacio, 2007; Nielson & Ellington, 1983). Similarly, community-based natural resource management and collective action programs have often successfully used community leaders, elders, or other well-respected individuals within a local social network to promote new behaviors and influence others to adopt them (Aral & Walker, 2012; Pretty, 2003; Pretty & Smith, 2004; Rogers, 2003).

Social marketing

Social marketing is marketing for social good. It applies marketing principles to "sell" ideas and cultivate behavior change that benefits a target audience and/or society (Andreasen, 1994, 2002; Burchell *et al*., 2013). Specifically, it is "the design, implementation, and control of programs calculated to influence the acceptability of social ideas and involving considerations of product planning, pricing, communication, distribution, and marketing research" (Kotler & Zaltman, 1971, p. 5). To achieve "social good", the social marketing framework often use theories and methods from social psychology, behavioral economics, and other behavioral sciences to incentivize, prompt, and reinforce prosocial or sustainable behaviors (Rucker, Petty, & Brino, 2015; Schultz, 2014; Tabanico, Schultz, & Schmitt, 2015). This framework typically follows a stepwise, iterative process of 1) identifying specific behavior(s) for change, 2) implementing an appropriate strategy to change behavior, which often incorporates a social influence approach (e.g., Burchell *et al*. 2013), and 3) evaluating the efficacy of the chosen strategy (Andreasen, 1994, 2002).

In the United States, large-scale social marketing campaigns have been used to decrease smoking, reduce drinking and drunk driving, and increase healthy diets and physical activity (Grier & Bryant, 2005). Smaller-scale campaigns have targeted consumer behavior (for review, see Hasting & Saren, 2003; Peter & Olson, 2010), with many recent efforts aimed at increasing "green consumerism" and the purchase of environmentally conscious, sustainable products (for review, see Peattie, 2010). For example, Project Porchlight—a social marketing campaign sponsored by government utilities in the Unites States and Canada—recruits volunteers via community groups, schools, and local businesses. Volunteers, similar to block leaders, deliver free compact

fluorescent lamp (CFL) lightbulbs throughout their neighborhoods, while also providing energy-efficiency program information and statistics.

Social marketing techniques are also used in sustainable or conservation behavior contexts (Geller, 1989), for example, to increase recycling or reduce littering (e.g., "Don't mess with Texas") (Foxall *et al*., 2006; Schultz, 2014). Elsewhere, social marketing approaches have garnered support for payment for ecosystem service in China (Chen *et al*., 2009), reduced water contamination in Ecuador (Vaughan *et al*., 2013), and mitigated deforestation in Mexico (Green *et al*., 2013). Similar interventions were successful at reducing firewood consumption in China to conserve endangered monkey habitat (DeWan *et al*., 2013) and improving compliance to reduce pressure on fisheries in Madagascar (Andriamalala *et al*., 2013).

Given that social marketing focuses on influencing behavior, particularly consumer behavior (Peter & Olson, 2010), it is aptly suited to reduce consumer demand for illegally obtained wildlife and wildlife products. Not surprisingly, many researchers and practitioners have promoted social marketing as a means to influence behavior and reduce consumer demand (Smith, Veríssimo, & MacMillan, 2010). While we were unable to find published reports or studies that applied a specific social marketing approach to decrease consumer demand for wildlife (but see WildAid, 2015).

Community-based social marketing

Community-based social marketing (CBSM) is a scalable social marketing approach to implement behavior change in various resource conservation and environmental contexts (McKenzie-Mohr, 2011; McKenzie-Mohr & Schultz, 2014; Schultz, 2014). While CBSM shares several similarities with social marketing, it originates more from the social psychological and behavior change sciences rather than marketing (McKenzie-Mohr & Schultz, 2014). The CBSM approach uses a five-step framework to implement social marketing strategies at local scales: 1) identify a specific behavior or set of behaviors related to the desired outcome or benefits, 2) uncover barriers to and benefits of the behavior(s), 3) develop strategies or design a program to overcome barriers or promote benefits, 4) pilot the selected strategy or program, and then 5) broadly implement and evaluate the strategy or program (McKenzie-Mohr, 2011). Within this framework, CBSM can be easily adapt social influence approaches to change human behavior, such as those we outlined above, i.e., commitments from community members, recruiting block leaders, social norms, and social comparison (McKenzie-Mohr & Schultz, 2014).

A methodological advantage of the CBSM approach is that it emphasizes preliminary identification of behaviors to target, removal of barriers to changing those behaviors, and then an iterative process of implementation, monitoring, and evaluation. Within natural resource management and conservation, this process draws parallels to adaptive management or learning-based management, which has been shown to be highly effective and robust (Jenks, Vaughn, & Butler, 2010; Williams & Brown, 2012). In addition, because CBSM is inherently

culturally-grounded and implemented within local socio-cultural context, there is high probability of social interaction where social influence approaches tend to be most effective (Turner, 1991; Abrahamse & Steg, 2013). The following sections summarize two examples that implemented social influence approaches at local community scales within a social marketing framework to change behavior regarding wildlife poaching (Steinmetz *et al*., 2014) and biodiversity conservation (Butler, Green, & Galvin, 2013; Jenks *et al*., 2010).

Poaching in Kuiburi National Park, Thailand

Steinmetz and colleagues (2014) implemented a comprehensive, long-term project (2006–2011) to reduce poaching in Kuiburi National Park, Thailand. The project was explicitly behavior-focused and utilized social influence approaches and social marketing techniques to increase 1) social repercussions for individuals who poached, 2) potential of social rejection from the community if caught poaching, and 3) compliance with new anti-poaching social norms. The project targeted six steps to implement behavior change. First, the authors sought to develop trust and constructive relationships within the community and increase receptiveness to wildlife conservation. Second, they worked towards effectively communicating the justification of wildlife conservation to garner public support. Third, they investigated individuals' motivations for poaching and refraining from poaching to better identify facilitators or constraints to behavior. Fourth, they sought to unravel the ethical views of individuals to better understand the perceived legitimacy of rules related to poaching. Fifth, the authors identified simple behaviors (i.e., those that were convenient, feasible, with few steps) to facilitate community members to adopt—understanding that simple behaviors regarding new knowledge are more easily accepted and implementable. Sixth, they increased community members' confidence and removed barriers to desired behaviors, for example to verbally castigate poachers, by dispelling feelings of helplessness.

Following implementation of this community-based social influence approach, there was a four-fold drop in poaching pressure across the park. Occurrence and abundance of five of six poached species increased significantly or stabilized. Local community leaders speculated that poaching declined, in part, because social influence and pressure increased due to more awareness, concern about poaching, and increased salience that community members and leaders believed poaching was inappropriate and unacceptable. This, in turn, increased community pressure not to poach, consideration of local leaders and park staff, and outspoken and public condemnation of poachers. The targeted socially influenced behavior change methods and the long-term nature of this project, which enabled researchers to evaluate the project success, demonstrate the utility of social influence approaches implemented within a structured, community-focused social marketing framework.

Local and regional-scale biodiversity conservation

The international biodiversity conservation NGO, Rare, utilizes a social marketing-based framework similar to

CBSM to inspire communities to conserve the species and habitats unique to their communities, and to introduce viable alternatives to environmentally destructive behaviors (Butler *et al*., 2013, Jenks *et al*., 2010). Rare's cornerstone campaign, Pride, recognizes that the best social influencers are often peers within a community or members of an important social group. For that reason, Rare Pride campaigns form partnerships with local organizations or conservation leaders that have expertise in the region or local communities to encourage communication among peers, trusted community members, and opinion leaders (Jenks *et al*., 2010).

On the ground, Rare Pride campaigns use facilitators, analogous to block leaders, from the local social network to promote the desired behavior changes and garner public commitments. Rare Pride campaigns enact a seven-step theory of change model. This process, similar to CBSM, is summarized as: 1) increase community members' knowledge about the environment and their behavior affects it, 2) discuss personal, cultural, and economic benefits to protecting the environment, 3) increase community dialogue between community members, 4) identify barriers that prohibit behavior change, 5) promote alternative behaviors or solutions to the target group, 6) measure and collect data regarding the effect the campaign has on behavior or the environment, and 7) continue to collect data and track to evaluate and adaptively manage success and failures (Butler *et al*., 2013). Rare's focus on social influence and social marketing within an adaptive management structure has allowed them implement several "best practices" at both the organizational and programmatic levels (Jenks *et al*., 2010), culminating in effective and successful biodiversity conservation campaigns (DeWan *et al*., 2013; Green *et al*., 2013).

Integration with traditional approaches

Social influence and social marketing approaches complement traditional regulation and enforcement strategies and education and outreach campaigns to reduce consumer demand and illegal wildlife trade. Traditional strategies to decrease illegal trade, such as increasing regulation and enforcement, aim to deter participants, while education and outreach campaigns typically aim to raise public and political awareness about the magnitude of wildlife trafficking, without prioritizing behavior change (Novacek, 2008). Despite millions of dollars spent globally, including financing increasingly militarized efforts (Duffy *et al*. 2015; Lunstrum, 2014), illegal harvest and trade of flora and fauna continue to flourish (Ayling, 2013; Challender & MacMillan, 2014; Wellsmith, 2011). We contend that the limited success of traditional mitigation strategies is due, in part, because these strategies by themselves do not provide a means to change human behavior.

Because traditional strategies tend not to incorporate a mechanism for behavior change, such as social influence techniques or other theory-based methods, they lack the ability to effectively initiate or maintain desired behaviors that mitigate illegal wildlife trade and/or consumer demand (Heberlein, 2012; Klöckner, 2015; Miller & Prentice, 2016; Schultz, 2011). Similarly, traditional

strategies do not directly address how established sociocultural or institutional factors facilitate or constrain behavior (Duffy, 2010; McKenzie-Mohr & Schultz, 2014). Instead, the social context where individuals live, work, and make decisions—and social actors therein—tend to guide behavior. Social influence approaches are effective at changing behavior precisely because they incorporate mechanism for behavior change, i.e., social norms, social comparison, social learning, and, generally, other social actors, which are inherent and considerable factors that contribute to human behavior (Bicchieri, 2005; Hetcher & Opp, 2001; Ostrom, 2000).

We acknowledge that social influence is not the only means to change behavior (Heberlein, 2012; Newell *et al*., 2014), and the four approaches that we review do not encompass all the behavior change approaches that utilize social influence (Abrahamse & Steg, 2013; Cialdini & Trost, 1998; Schultz, 2014). Other social influence approaches may likewise mitigate consumer demand or other aspects of the illegal wildlife trade. Abrahamse and Steg (2013) reviewed several additional social influence approaches, although there several related approaches to consider such as stigmatization (Ge Gabriel, 2014; Major & O'Brien, 2005; Sounder, 2013), peer pressure (Brown, Clasen, & Eicher, 1986), or religious appeals (Meissner, 2015).

Incorporation of social influence approaches within a social marketing framework provides opportunity for an iterative, adaptive process to monitor for effective or unsuccessful desired behavior change (Jenks *et al*., 2010; Williams & Brown, 2012). The iterative process helps identify whether a single approach or a combination of approaches is most effective for a particular context (Abrahamse *et al*., 2005; Osbaldiston & Schott, 2012). In Table 1, we provide several examples of social influence approaches that may be effective at reducing consumer demand within different illegal wildlife trade scenarios. We hope these examples motivate researchers and practitioners to consider how social influence and/or social marketing approaches could be incorporated within their research or programs to decrease consumer demand and illegal wildlife trade.

CONCLUSION

Human behavior, while responsible for overexploitation and illegal trade of wildlife, also represents the medium by which strategies to reduce these activities will more readily succeed.

The role of demand has seldom been a primary focus of intervention strategies and policy but is garnering increased scientific, public, and, perhaps most importantly, political attention (Executive Order No. 13648, 2013; McHale & Hayes, 2014; Roe, 2015; Roe *et al*., 2015; Wyler & Sheikh, 2009). Discouraging consumers from purchasing wild animals and using wildlife products through targeted social influence approaches and social marketing campaigns at local and regional scales can effectively mitigate demand for illegal wildlife. These approaches complement conventional regulation, enforcement, and monitoring strategies, and act synergistically with popular information provisioning, public,

awareness raising, and education strategies. While our paper primarily focuses on consumer demand for illegal wildlife and its derivatives, social influence approaches and social marketing techniques will also be useful to reduce the harvest and supply of illegal wildlife. Whether the focus is on supply or demand, an understanding of human behavior must be at the center to intervention strategies and policy.

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