Beyond the cooking pot and pocket book: Factors influencing noncompliance with wildlife poaching rules

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Beyond the cooking pot and pocket book: Factors influencing noncompliance with wildlife poaching rules

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Reducing the rate, extent, and negative impacts associated with poaching is a priority for diverse stakeholders including conservation practitioners and, increasingly, law enforcement agencies. The purpose of this paper is to explore local stakeholders’ perceptions of poaching rules, and motivations for compliance and noncompliance, using focus groups and interviews in Namibia. We found no difference between participants’ perception of the ability of regulatory and normative models to explain motivations to comply with wildlife rules; however, we found differences in the ability of moral and legitimacy-based normative models to explain compliance. Participants identified a diversity of motivations to poach; a number of motivations went beyond subsistence (“cooking pot”) and economic (“pocket book”) explanations of poaching. We suggest the criminological community capitalize on opportunities to collaborate with conservationists and others on exploring the various dimensions of poaching in order to reduce risks and environmental harm by minimizing rule breaking in conservation.

Keywords: conservation criminology; legitimacy; motivations; natural resource management; normative approaches; regulatory approaches; risk perception

Introduction

Poaching, the illegal taking of wildlife in violation of laws or rules (Eliason, 2004), can result in a variety of negative consequences including population suppression, range collapse and extinction of wildlife species (Woodroffe, Thirgood, & Rabinowitz, 2005). When poaching results in changes in the diversity and abundance of wildlife species, the natural function of ecosystems and the services they provide can be threatened (Wright et al., 2007). The loss of wildlife-related resources also threatens people, for example, through reduced access to food to meet dietary needs (Bowen-Jones, Brown, & Robinson, 2003) and reduced legally harvestable yields available for subsistence, commercial, cultural, or recreational purposes (Sethi & Hilborn, 2008). Game wardens may be socially ostracized by the community they work in when enforcing poaching rules (Vaughan & Long, 2007) and exposed to lethal threats from armed poachers (Messer, 2010). The economic security of communities depending on wildlife tourism can be jeopardized (Waylen, McGowan, Pawi Study Group, & Milner-Gulland, 2009), national security may be compromised during cross-border raids such as those perpetrated by well-armed Sudanese and Somali poachers into East and Central Africa (Warchol, 2004), and political relations may

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be strained between nations, states, or organizations trying to cope with poaching impacts (Duffy, 1999). Further, wildlife poached for consumption (e.g., primates, bats) can be hosts for virulent zoonotic diseases that may pose health risks to human populations (Swift, Hunter, Less, & Bell, 2007).

Reducing the rate, extent, and negative impacts (i.e., managing risks) associated with environmental crimes, such as poaching, is a priority for diverse stakeholders including conservation practitioners (e.g., Knapp, Rentsch, Schmitt, Lewis, & Polasky, 2010) and, increasingly, law enforcement agencies (e.g., White, 2008). The need for risk management is particularly acute in regions of the world where poaching can be facilitated by the proximity of human and wildlife populations to each other (Knapp et al., 2010), economically valuable species such as black rhinoceros being present in close proximity to low-income households (Messer, 2010), wild-derived protein playing a key role in the food security of rural peoples (Bowen-Jones et al., 2003), and porous international borders failing to prevent illicit transnational wildlife trade (Warchol, 2004). Traditional law enforcement techniques such as increased or adjusted patrols, sanctions, and fines, have proven effective at reducing or preventing poaching in some instances (Leader-Williams & Milner-Gulland, 1993). However, scarce human and financial resources can impede enforcement efforts (Keane, Jones, Edward-Jones, & Milner-Gulland, 2008; Nielsen, 2003). In addition, setting static fines and or penalties fails to differentiate between the different motivations and economic situations of local subsistence hunters and commercial poachers (Leader-Williams & Milner-Gulland, 1993). Given the risks and potential irreversible outcomes for people and wildlife associated with poaching, additional insight about how to manage poaching risks is critical for more effective crime control and conservation.

Scholars have argued that characterizing stakeholders’ motivations to poach (e.g., Hampshire, Bell, Wallace, & Stepukonis, 2004; Kühl et al., 2009; Muth & Bowe, 1998) and their willingness to comply with wildlife poaching rules (e.g., Keane et al., 2008; Leader-Williams & Milner-Gulland, 1993) are essential for helping describe, prescribe, predict, and explain antipoaching efforts. Unfortunately, the literature concerning the diversity of motivations to poach is primarily speculative (Muth & Bowe, 1998). Similarly, there is a dearth of empirically based literature relating to factors that influence compliance with wildlife poaching rules (Keane et al., 2008). The few extant studies related to poaching compliance either fail to compare the effectiveness of dominant incentives (e.g., traditional regulatory, normative) (e.g., Leader-Williams & Milner-Gulland, 1993; Messer, 2010) or are focused on fisheries-based (e.g., Hatcher, Jaffry, Thébaud, & Bennett, 2000) or protected area compliance contexts (e.g., Stern, 2008). These contexts may differ from poaching contexts in terrestrial wildlife habitats outside of protected areas in terms of the economics, ecology, human–wildlife interactions, diversity of stakeholders, and law enforcement activities. Further, the majority of wildlife resides in habitats outside of protected areas (Conover, 2002); therefore, the potential for poaching is likely greatest in larger areas with less enforcement targeted at detection of wildlife crime. Understanding factors that influence poaching compliance in this context is critical from a criminological perspective. Finally, Keane, Ramarolahy, Jones, and Milner-Gulland (2011) acknowledged that although various factors influence compliance with rules, if rules are not widely known, they cannot change behavior.

Factors influencing compliance with wildlife rules

Compliance with wildlife rules is essential to achieving wildlife management and conservation goals (Keane et al., 2008). Achieving stakeholder compliance may be complicated by: (1) a lack of local awareness of rules or misunderstanding concerning rules (Keane...
et al., 2011), (2) limited financial and human resources allocated for deterring natural resource-related crime (Keane et al., 2008), (3) a large geographic scale and, often, areas of low population density within which poaching occurs, such as protected areas (e.g., Hauck, 2007), and (4) a historical lack of interdisciplinary attention to natural resource-based compliance within the criminology, natural resources management, and social science disciplines (Gibbs, Gore, McGarrell, & Rivers, 2010). Efforts to increase poaching-related compliance are typically framed according to either traditional regulatory (Leader-Williams & Milner-Gulland, 1993) or normative (Kuperan & Sutinen, 1998) approaches.

Regulatory approaches include statutory laws that legislate economic or penal sanctions, deterrence, and enforcement measures (e.g., Ayres & Braithwaite, 1992). Such approaches to poaching compliance are widely used around the world (Hauck, 2008); penalties for poaching noncompliance can range from nominal or substantial fines and jail time (Leader-Williams & Milner-Gulland, 1993) to controversial “shoot-on-sight” policies giving law enforcement the right to use lethal force on persons found or suspected of poaching (e.g., as occurs in Kenya and Zimbabwe) (Duffy, 1999; Messer, 2010). Regulatory approaches are moderately successful at reducing illicit poaching of high-dollar value wildlife species such as elephants and rhinos (Duffy, 1999; Leader-Williams & Milner-Gulland, 1993; Messer, 2010); however, the degree to which regulatory approaches successfully deter noncommercially motivated poaching is unclear.

Normative approaches offer alternative modes of understanding stakeholder compliance with poaching rules (Keane et al., 2008; Kuperan & Sutinen, 1998). In theory, norms play an important role in bolstering compliance in contexts where efforts from traditional enforcement methods alone may be insufficient (Keane et al., 2008; Kuperan & Sutinen, 1998; Nielsen, 2003; Stern, 2008). These approaches focus on moral obligations such as standards of personal morality, moral development, social influences such as peer opinion and influence, and perceived legitimacy of laws implemented by authorities such as procedural fairness (Kuperan & Sutinen, 1998). Because normative approaches to compliance theoretically operate regardless of the economic incentives for noncompliance (Kuperan & Sutinen, 1998), through internal obligations and external acceptance of regulation (May, 2005), norms offer great appeal for scholars and practitioners trying to understand poaching (e.g., Hauck, 2008). Despite this great appeal, empirical evidence about the overall influence of normative compliance models alone on poaching rules is limited (Keane et al., 2008). Compliance models integrating traditional regulatory and normative approaches in tandem are also rare but have generally shown that although normative approaches are not sufficient alone to maintain large-scale compliance, they bolster regulatory measures and portend promise (Hauck & Kroese, 2006; May, 2005; Stern, 2008). As such, research herein evaluates both regulatory and normative dimensions to poaching compliance; we consider normative dimensions to include perceived legitimacy and moral and social norms (e.g., Kuperan & Sutinen, 1998).

Stakeholder motivations to poach

Stakeholders’ decisions to comply with poaching rules are highly complex in large part because of the diverse economic, geographic, social, and psychological contexts within which poaching occurs (Kuperan & Sutinen, 1998). Poaching manifests in many ways, from an individual poaching for home consumption or trade in a local market (Bassett, 2005) to commercial poachers and crime syndicates selling wildlife trophies in international illegal markets (Leader-Williams & Milner-Gulland, 1993). Negative human–wildlife interactions that threaten livelihoods, such as crop damage or livestock...
depredation, may motivate retaliatory (Hill, 2004) or preventative poaching (Naughton, 1997). Opportunistic poaching may occur due to chance encounters between humans and wildlife (Sánchez-Mercado, Ferrer-París, García-Rangel, & Rodríguez-Clark, 2008) or be related to unemployment (Knapp, 2007). Poaching does not always result from intentional violations of wildlife rules, for example, incidents where hunters are unaware of rules (Sethi & Hilborn, 2008). Similarly, poaching is not always driven by economic necessity. For example, poaching may manifest as an act of social defiance, symbolic protest of local natural resource management practices (Bell, Hampshire, & Topalidou, 2007) or as an act of rebellion toward specific laws or local authority (Muth & Bowe, 1998). However, the vast majority of this literature is not based on systematic inquiry into stakeholder-defined motivations, as researcher assumptions relating to motivations are often built into research design (e.g., bushmeat or trophy poaching). Many poachers are likely to have multiple motivations for engaging in illegal behavior (Bassett, 2005). Understanding poachers’ motivations has been identified as important to crafting appropriate and effective responses (Duffy, 1999; Hampshire et al., 2004; Muth & Bowe, 1998) and increasing compliance with wildlife rules. This research empirically evaluates local perceptions of motivations to poach wildlife and explores opinions of wildlife rules related to poaching, outside of state or federally protected areas, using Namibia as a case study. Our objectives were to: (1) explore stakeholder awareness and perceptions of wildlife rules, (2) describe stakeholders’ attitudes about compliance with wildlife rules, and (3) create a stakeholder-defined taxonomy of motivations to poach.

Poaching in Caprivi, Namibia

The Caprivi region of northeast Namibia has rich natural resources (Jones & Barnes, 2006), including high concentrations of wildlife (e.g., largest populations of free ranging elephants in Africa) and a favorable agricultural climate (O’Connell-Rodwell, Rodwell, Rice, & Hart, 2000); yet, Caprivi remains one of Namibia’s most impoverished and least developed regions (Suich, 2010). Poaching rates in Namibia were unsustainably high in the 1980s and early 1990s (Nott & Jacobsohn, 2004). Exacerbated by drought and volatile periods of political instability (Bruchmann, 2002; Vaughan & Long, 2007), poaching threatened to virtually eliminate wildlife populations in numerous regions of the country including Caprivi (Bruchmann, 2002; Jones, 2003). Poaching levels decreased after Namibia achieved independence in 1990 (Nott & Jacobsohn, 2004); the country’s newly established and still expanding community-based natural resource management system (CBNRM) (i.e., the conservancy system) has been credited with contributing to this reduction (Vaughan & Long, 2007). However, Caprivi residents continue to experience numerous challenges associated with poaching in other sub-Saharan African contexts including food insecurity (Jones & Barnes, 2006), poverty (Suich, 2010), high unemployment (Namibian General Services, 2001), and high incident rates of human–wildlife conflict (O’Connell-Rodwell et al., 2000).

Three communal conservancies in East Caprivi (i.e., Dzoti, Mbara, and Wuparo conservancies) served as case study sites for this research, which commenced July through September 2009. Conservancies were selected based on: (1) the recommendation of local and regional non-governmental organizations (NGOs) with a long-term presence in the region, (2) the permission of relevant traditional authorities, (3) the willingness of conservancies to participate, (4) the comparability of conservancies concerning livelihood characteristics, habitat types, and wildlife species composition, and (5) the presence of poaching monitoring and enforcement efforts (i.e., community game guards, wildlife
Figure 1. Study sites, East Caprivi, Namibia.

officers). These conservancies are contiguous across the landscape and located in proximity to two national parks (Figure 1).

Data collection methodology

This research used a case study approach (Yin, 2009), focus groups (Morgan, 1993), and semistructured interviews (Bernard, 2006) to achieve its objectives. The same research protocol was replicated in each conservancy. Focus group and interview participants were solicited from each of the conservancies’ zones (i.e., distinct residential areas) in proportion to the respective village’s population using a random sampling technique (i.e., cluster sampling with probability proportionate to size) (Bernard, 2006). Given there were no reliable lists of residents in the conservancies (e.g., property tax records), this technique entailed identifying population clusters (i.e., village zones) and assigning a given number of interviews to each cluster based on its population size relative to other clusters (Bernard, 2006). Gender parity was maintained by specifying an allotted number of participants to each gender within each cluster sampled. All village zones within each conservancy were sampled. Convenience sampling was used within each village zone to select participants for interviews and focus groups (Bernard, 2006). This resulted in a complex and semirandom sampling design. In order to help reduce biased sampling, only one participant per household was eligible to participate from each village zone. Focus group and interview participants were permanent residents of their respective conservancies and 18 years of age or older; ethnic affiliation, educational attainment, or socioeconomic status were not prerequisites for participation. Participation in one research activity did not exclude participation in the other, as there were separate objectives for each research activity. Focus group and interview participants were independently selected using the previously defined sampling protocols. This sampling protocol facilitated inferential statistical analysis that could be generalized to all residents of the study conservancies. However, results herein may not be generalized to the regional or national conservancy level.
Focus groups
To create a stakeholder-defined taxonomy of motivations to poach, we conducted focus groups in the Dzoti and Wuparo conservancies. We collected and pooled data from local environmental decision-makers, men and women in these conservancies. Focus group participants were divided into three groups comprised of: (1) male residents, (2) female residents, and (3) local environmental decision-makers of either gender to promote a nonthreatening and permissive environment for dialogue (Smith, Barrett, & Box, 2000) and help diffuse potential power differentials between participants during data collection (Morgan, 1993). During the focus group, when participants identified poaching as a risk to either local livelihoods or wildlife, they were asked to discuss and describe poaching activities and probable motivations for poaching in their conservancy. Participants were never asked their compliance status in regards to poaching rules and regulations. Each group discussed the diversity of motivations for poaching. Motivations were initially free-listed by the group and then collectively rank-ordered from the most to the least prevalent.

Semistructured interviews
To address the second objective, understanding stakeholder perceptions of wildlife rules, semistructured interviews were conducted with conservancy residents in the Dzoti, Mbara, and Wuparo conservancies. Interview questions were designed to elicit information about awareness of rules, perceptions about effectiveness of wildlife rules, and factors that affect stakeholder compliance with wildlife rules (i.e., perceived legitimacy and moral and social [hereafter morals normative] normative approaches, regulatory approaches). Close-ended questions were posed using four-point visual Likert scales because these scales have been shown to lessen culturally driven bias toward neutral or extreme response categories (Roster, Albaum, & Rogers, 2006) and are appropriate in situations of low literacy (Chachamovich, Fleck, & Power, 2009). Close-ended questions were also used to assess stakeholders’ awareness of wildlife rules, perceptions of legitimacy of creation of rules, the effectiveness of rules in protecting people and wildlife, and how well decision-makers take into account risks to people and wildlife when creating the rules. We used open-ended questions to generate a list of locally known wildlife laws enforced by designated decision-making bodies and wildlife norms enforced through social or cultural institutions. We used six questions to assess the normative approach (i.e., authorities are responsive, rules are doing the right thing, rules are enforced fairly, moral obligation, respect for authorities, shame if caught) and three questions to assess local stakeholder perceptions of the effectiveness of traditional regulatory approaches (i.e., fear of enforcement, severity of punishment, effectiveness of local enforcement efforts) (Kuperan & Sutinen, 1998). Each concept was queried using one close-ended question designed to measure respondent’s attitude toward local wildlife rules. Participants were not asked about their compliance status in regards to wildlife poaching.

Data analysis
Focus groups
We used an iterative process to guide coding and analysis of individual participants’ free-listed motivations to poach (Bernard, 2006). First, we reviewed all motivations to generate overarching categories (Saldaña, 2009). Next, we placed each motivation into a category and coded each motivation into an exclusive categorical variable (Bernard, 2006).
A research assistant then provided an independent review of the generated categories and coding of each motivation within the categories. We conducted a final iteration of coding to double-check findings (Saldaña, 2009). We adapted methods from Tschakert (2007) to analyze individuals’ motivations to poach. We calculated an incident index (I) (i.e., proportion of focus subgroups that identified a particular motivation), importance index (P) (i.e., ordinal rank each group assigned to a particular motivation), and a prevalence index (R) (i.e., overall most prevalent motivation to poach and is a function of a motivations incidence and importance index) for each category for motivations to poach (for equations and additional details, see Tschakert, 2007). Each index has a value between zero and one; as the index approaches one it means the motivation was identified by a higher proportion of subgroups (I), was ranked higher when mentioned (P), and overall more prevalent than other motivations to poach (R). We pooled data from the two focus groups held in the Dzoti and Wuparo conservancies.

**Semistructured interviews**

We used descriptive statistics to analyze responses from four-point Likert scales (0 = “not at all”, 1 = “little”, 2 = “somewhat”, and 3 = “greatly”) and dichotomous questions (0 = no, 1 = yes) related to stakeholder perceptions of wildlife rules. We recoded questions from Likert scales into binary responses (0 = low, 1 = high) related to the concepts of legitimacy-based normative, moral-based normative, and traditional regulatory motivations to comply for descriptive statistical analysis. Mean compliance scales were computed for each participant based on responses to questions about: (1) the importance of normative approaches (i.e., legitimacy, moral, and social norms), and (2) regulatory approaches (fear of detection, punishment, enforcement efficiency). Summative compliance scales for morals normative (respect for authority, shame if caught, following rules is the right thing to do), legitimacy normative (appropriate rules, fair enforcement, democratic consultation), and traditional regulatory approaches were also calculated. Because we wanted to explore stakeholders’ perceptions of the influence regulatory and normative approaches, we used a within-subject paired-samples t-test to assess perceived influence of the two models’ scores on compliance (Vaske, 2008). Further, we also performed within-subject paired-samples t-tests to explore the difference between the perceived influence of legitimacy versus morals normative approaches and the regulatory approach.

Finally, we reviewed responses to open-ended questions related to local wildlife laws and norms using LeCompte and Goetz’s (1983) scan, order, review, and compare methodology to qualitatively consider similarities and differences between wildlife laws and norms. The methods for this research were approved for the duration of the project by the Michigan State University (MSU) Committee on Human Subjects (Protocol ID# X09-443).

**Results**

Fifty stakeholders (decision-makers = 17; men = 16, women = 17) participated in focus groups (n = 2 conservancies) that discussed poaching. Focus group participants ranged in educational background from no formal schooling to college education, age (18–60+ years⁵), and all participated in some form of subsistence-based activities or rural industries (e.g., artisanal fisheries, vegetable farming, thatch roof harvesting). One hundred seventeen semistructured interviews were conducted with stakeholders in three conservancies. Participants ranged in educational background from no formal education
to some college education or adult vocational training, age (18–89), and the vast majority (96%; \( n = 112 \)) reported agriculture or livestock as their primary livelihood strategy.

**Poaching motivations**

Focus group participants identified 15 motivations to poach, which were summarized into nine categories (Table 1). The motivations of income generation (I = 1.00) and food (I = 1.00) were mentioned by all subgroups and were also ranked as the two most important motivations (income generation: P = 0.88; food: P = 0.85). Therefore these two poaching motivations, income generation (R\(_j\) = 0.89) and food (R\(_j\) = 0.87), were the two most prevalent; these motivations were ranked over twice as important as the next category, poaching for retaliation or wildlife removal (R\(_j\) = 0.41). Four motivations to poach were associated with the retaliation and wildlife removal category: protecting fields (R\(_j\) = 0.31), protecting human lives (R\(_j\) = 0.11), remove wildlife from the area (R\(_j\) = 0.11), and protecting livestock (R\(_j\) = 0.08). Two poaching motivations were related to the conservancy management and services category: protesting conservancy rules or establishment (R\(_j\) = 0.21) and lack of conservancy benefits (R\(_j\) = 0.08). Firearm training (R\(_j\) = 0.09) and entertainment (R\(_j\) = 0.08) were also cited as motivations for poaching in conservancies.

**Perceptions of wildlife rules**

A majority of interview participants (93.1%, \( n = 108 \)) were aware of wildlife rules within their conservancies and the majority (94.0%, \( n = 109 \)) believed that the creation of these rules by local decision-makers was the “right thing to do” (Table 2). Most participants

<table>
<thead>
<tr>
<th>Motivations for poaching</th>
<th>Overall rank</th>
<th>Prevalence index</th>
<th>Incidence index</th>
<th>Importance index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income generation(^a)</td>
<td>1</td>
<td>0.89</td>
<td>1.00</td>
<td>0.88</td>
</tr>
<tr>
<td>Food (meat)</td>
<td>2</td>
<td>0.87</td>
<td>1.00</td>
<td>0.85</td>
</tr>
<tr>
<td>Retaliation/wildlife removal</td>
<td>3</td>
<td>0.41</td>
<td>0.67</td>
<td>0.35</td>
</tr>
<tr>
<td>Protecting fields</td>
<td></td>
<td>0.31</td>
<td>0.50</td>
<td>0.38</td>
</tr>
<tr>
<td>Protecting human lives</td>
<td></td>
<td>0.11</td>
<td>0.17</td>
<td>0.50</td>
</tr>
<tr>
<td>Remove wildlife from the area</td>
<td></td>
<td>0.11</td>
<td>0.17</td>
<td>0.50</td>
</tr>
<tr>
<td>Protecting livestock</td>
<td></td>
<td>0.08</td>
<td>0.17</td>
<td>0.00</td>
</tr>
<tr>
<td>Animal products (non-meat)(^a)</td>
<td>4</td>
<td>0.40</td>
<td>0.67</td>
<td>0.34</td>
</tr>
<tr>
<td>Skins (pelts)</td>
<td></td>
<td>0.31</td>
<td>0.50</td>
<td>0.38</td>
</tr>
<tr>
<td>Trophies(^b)</td>
<td></td>
<td>0.21</td>
<td>0.33</td>
<td>0.38</td>
</tr>
<tr>
<td>Elephant ivory</td>
<td></td>
<td>0.11</td>
<td>0.17</td>
<td>0.50</td>
</tr>
<tr>
<td>Medicine</td>
<td></td>
<td>0.08</td>
<td>0.17</td>
<td>0.00</td>
</tr>
<tr>
<td>Protesting rules/conservancy</td>
<td>5</td>
<td>0.21</td>
<td>0.33</td>
<td>0.44</td>
</tr>
<tr>
<td>Lack of employment</td>
<td>6</td>
<td>0.19</td>
<td>0.33</td>
<td>0.25</td>
</tr>
<tr>
<td>Firearm training</td>
<td>7</td>
<td>0.09</td>
<td>0.17</td>
<td>0.13</td>
</tr>
<tr>
<td>Entertainment</td>
<td>8</td>
<td>0.08</td>
<td>0.17</td>
<td>0.00</td>
</tr>
<tr>
<td>Lack of benefits from conservancy</td>
<td></td>
<td>0.08</td>
<td>0.17</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Notes: \(^a\)Income generation was kept separate from animal products due to the fact that these wildlife products may be utilized by local people for noneconomic purposes (e.g., subsistence based, cultural). \(^b\)Trophies refer to nonivory, nonpelt based products (e.g., antlers, teeth, and head mounts).
Table 2. Stakeholder perceptions of wildlife rules.

<table>
<thead>
<tr>
<th>Percentage of respondents</th>
<th>No</th>
<th>Yes</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aware of rules</td>
<td>6.9</td>
<td>93.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Decision-makers doing the right thing by creating wildlife rules</td>
<td>3.4</td>
<td>94.0</td>
<td>0.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How well to the wildlife rules protect:</th>
<th>Not at all</th>
<th>Little</th>
<th>Somewhat</th>
<th>Greatly</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>All people in the community</td>
<td>7.8</td>
<td>7.8</td>
<td>15.7</td>
<td>68.7</td>
<td></td>
</tr>
<tr>
<td>Other people like yourself</td>
<td>6.1</td>
<td>5.2</td>
<td>14.8</td>
<td>73.0</td>
<td>0.9</td>
</tr>
<tr>
<td>All wildlife species</td>
<td>0.9</td>
<td>4.3</td>
<td>15.7</td>
<td>78.3</td>
<td>0.9</td>
</tr>
<tr>
<td>Endangered wildlife species*</td>
<td>0.9</td>
<td>9.6</td>
<td>17.4</td>
<td>72.2</td>
<td></td>
</tr>
</tbody>
</table>

How well to the wildlife rules protect:
- All people in the community
- Other people like yourself
- All wildlife species
- Endangered wildlife species*

When decision-makers create wildlife rules how well do they:
- Take into account risks to local livelihoods
- Take into account risks to wildlife

Note: *Endangered species were defined to participants as, “Wildlife species at high risk (i.e., wildlife of conservation concern, endangered animals).”

believed rules provided moderate to great protection to people in the community, other people like themselves, all wildlife species, and endangered wildlife species. There was a divergence in opinion when it came to how well decision-makers have taken into account risks to livelihoods and risks to wildlife when creating rules. A majority (68.1%, n = 79) believed poaching risks to wildlife versus human livelihoods (41.4%, n = 48) was weighed more heavily in the decision-making process. Participants generated a diverse list (n = 14; two were common concepts) of distinct wildlife rules (i.e., codified laws and sociocultural norms) (Table 3). A greater diversity of wildlife norms enforced by cultural or social sanctions (n = 9) than statutory laws enforced by legislatively recognized bodies (e.g., Ministry of Environment and Tourism [n = 5]) were identified. Two rules were common to both the law and norm category: no hunting without permission and no burning (i.e., setting fires to clear land for agriculture); both were the most commonly cited laws and norms among participants.

Motivations to comply with wildlife rules

Perceptions of the importance of factors related to the legitimacy normative, morals normative, and traditional regulatory approaches in motivating local compliance were similar among interview respondents; the percentage of respondents rating compliance factors of high importance ranged from 87.8% to 97.4% (Table 4). Mean summative scale scores for normative ($\bar{x} = 2.73$, $SD = 0.31$, $SE = 0.03$) and regulatory ($\bar{x} = 2.69$, $SD = 0.50$, $SE = 0.05$) motivations to comply with wildlife rules were similar. No difference was found between normative and regulatory models ($t = -0.93$, $df = 113$, $p = .355$). However, a difference was noted between external (i.e., legitimacy) and internal (i.e., social and moral norms) dimensions of normative compliance ($t = -4.59$, $df = 113$, $p = .000$). The morals normative dimension ($\bar{x} = 8.51$, $SD = 1.02$, $SE = 0.03$) received the highest average score and the legitimacy normative dimension ($\bar{x} = 7.86$, $SD = 1.35$, $SE = 0.13$) scored the lowest. The morals normative dimension also differed from the regulatory model ($t = -3.18$, $df = 114$, $p = .002$). No difference was detected between the regulatory and legitimacy normative models ($t = 1.27$, $df = 113$, $p = .206$).
Table 3. Diversity of wildlife laws (i.e., statutory rules) and wildlife norms (i.e., cultural or social rules).

<table>
<thead>
<tr>
<th>Wildlife laws</th>
<th>Wildlife norms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common concepts</td>
<td></td>
</tr>
<tr>
<td>No burning</td>
<td>No burning</td>
</tr>
<tr>
<td>No hunting without a permit (or face arrest/prison/court)</td>
<td>No hunting without permission (or reported to the traditional authority/arrested/court)</td>
</tr>
<tr>
<td>Divergent concepts</td>
<td></td>
</tr>
<tr>
<td>May not kill, injure, retaliate against wildlife for damage without reporting first</td>
<td>Any meat and money from legal hunting must remain in the community</td>
</tr>
<tr>
<td>No firearms in protected areas</td>
<td>Certain species are not to be touched (e.g., giraffe, elands)</td>
</tr>
<tr>
<td>Problem animals should be reported</td>
<td>Certain species are not to be harassed, chased or provoked (e.g., buffalo, elephants)</td>
</tr>
<tr>
<td></td>
<td>Do not kill more than one animal [wildlife] at a time</td>
</tr>
<tr>
<td></td>
<td>Do not plant crops eaten by wildlife</td>
</tr>
<tr>
<td></td>
<td>Guard agricultural fields night and day</td>
</tr>
<tr>
<td></td>
<td>Killing wildlife is only acceptable for cultural festivals</td>
</tr>
</tbody>
</table>

Table 4. Interview participants’ rating of concepts related to motivations to comply under legitimacy-based normative, morals-based normative, and traditional regulatory models.

<table>
<thead>
<tr>
<th>Motivation to comply</th>
<th>Percentage of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Legitimacy-based normative model</td>
<td></td>
</tr>
<tr>
<td>Authorities take local opinions into account</td>
<td>12.2</td>
</tr>
<tr>
<td>Rules are doing the right thing</td>
<td>2.6</td>
</tr>
<tr>
<td>Rules are enforced fairly</td>
<td>10.3</td>
</tr>
<tr>
<td>Morals-based normative model</td>
<td></td>
</tr>
<tr>
<td>Following rules is the right thing to do</td>
<td>2.6</td>
</tr>
<tr>
<td>Respect for authority</td>
<td>3.5</td>
</tr>
<tr>
<td>Shame felt if caught</td>
<td>5.2</td>
</tr>
<tr>
<td>Traditional regulatory model</td>
<td></td>
</tr>
<tr>
<td>Fear of getting caught</td>
<td>12.2</td>
</tr>
<tr>
<td>Local rules are well enforced</td>
<td>11.2</td>
</tr>
<tr>
<td>Severity of punishment</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Discussion

Stakeholder perceptions of wildlife rules

One striking finding from this work is the high level of awareness about poaching rules among study participants. These results contrast with those of others who have found relatively low levels of knowledge about wildlife laws among local peoples in developing nations with poaching problems (e.g., Keane et al., 2011). The high level of awareness about poaching rules among our study participants might be explained by the amount of public engagement about environmental issues surrounding Namibia’s conservancy
system. Under Namibia’s CBNRM model, wildlife is collaboratively managed by government agencies, NGOs, and rural communities; responsibility for monitoring and enforcing poaching rules is largely tasked to community game guards (Stuart-Hill, Diggle, Munali, Tagg, & Ward, 2005). The conservancy system facilitates a high level of engagement between local authorities and communities and increases the visibility of deterrence efforts beyond the ability to patrol using state resources alone (e.g., each conservancy has game guards). It is important to not misconstrue a high level of local awareness that poaching rules exist with local understanding of the nuances associated with poaching rules (e.g., species subject to rules, seasonal hunting limits). For instance, a local lack of understanding of species-specific rules, such as which wildlife species are designated as protected, game, or nuisance, can result in illegal exploitation of vulnerable species (Keane et al., 2011) and unintentional noncompliance by local stakeholders. Additional research could investigate local understanding of such nuances in wildlife rules as well as the extent to which the conservancy system is a factor influencing awareness of rules.

One might assume from our data and extant literature that simply because participants are aware of wildlife rules they may be more willing to change any noncompliant poaching behavior. The notion that awareness directly translates into behavior is readily found in the literature about conservation and compliance. For example, Keane et al. (2011) concluded involvement with local conservation organizations would help sensitize people to conservation laws, build awareness, and facilitate wildlife-related compliance. Baruch-Mordo, Breck, Wilson, and Broderick (2011) proposed developing new educational approaches that better deliver information as a key component of promoting wildlife-related compliance. This assumption, a linear knowledge-attitude-behavior relationship, does not always bear out when empirically tested (Gore, Knuth, Scherer, & Curtis, 2008). For example, Waylen et al. (2009) found although ecotourism positively affected local attitudes and knowledge toward conservation, including the perception that poaching was a major threat to wildlife, poaching behavior continued and was widespread among study households. Ultimately, the relationship between awareness of, attitudes toward, and compliance with rules must be empirically evaluated; fortunately the literature offers us compelling ways to accurately measure such behavior (e.g., Solomon, Jacobson, Wald, & Gavin, 2007) so that effective change strategies may be implemented based on demonstrated evidence.

Although participants were well aware of wildlife rules, it is noteworthy that there was overlap between examples provided, and some categories (e.g., no burning, no hunting without permit) fit under both the norms and laws classification. Additionally, more norms than laws were identified. Does this imply a measurement error during data collection or a blurred distinction between local norms and laws? Are laws that are backed by moral or social norms seen as more legitimate by participants? Is the rate of compliance higher for laws that are reinforced by norms? Further research is needed to unpack the apparent dichotomy between norms and laws to confirm unequivocal results and ascertain if one or both has a dominant influence on compliant behavior.

**Motivations to comply with wildlife rules**

We found no difference between the perception of the ability of regulatory and normative models to describe and explain study participants’ motivations to comply with wildlife rules. This finding reinforces other evidence that normative approaches, when used in tandem with traditional regulatory approaches, can enhance understanding about local compliance with environmental rules (e.g., Kuperan & Sutinen, 1998; May, 2005; Stern, 2008). For example, Stern (2008) found that voluntary compliance was essential for
resource protection in national parks and normative factors such as trust and legitimacy of protected area managers were critical to increasing voluntary compliance. Stern further stated that respondents rarely cited fear of detection as a reason for compliance with protected area rules. In contrast, our study respondents believed that traditional regulatory incentives, such as the severity of punishment and fear of getting caught, were as influential as normative incentives in deterring noncompliance with wildlife rules. Additionally, unlike in marine contexts where the likelihood of regulatory enforcement is low (e.g., Kuperan & Sutinen, 1998), study participants residing in conservancies, outside of protected area boundaries, believed that both the fear of getting caught and the effectiveness of local enforcement were highly instrumental in deterring noncompliance. This finding has implications for criminology and criminal justice in developing nations, such as Namibia, because resource constraints often limit the ability of governments to implement legislation (Wilkie, Carpenter, & Zhang, 2001). For example, deterrence and detection methods range from relatively low-tech schema such as citizen involvement in deterrence and detection programs (e.g., the Turn in a Poacher program; McSkimming & Berg, 2008) to high-tech approaches requiring significant financial resources such as aerial surveillance or microchipping animals and animal parts (e.g., rhino horns; Corcoran, 2010). Given the aforementioned constraints, rules are often implemented with less than ideal enforcement levels to back them up and the result is often that compliance is voluntary (Rowcliffe, de Merode, & Cowlishaw, 2004). Normative approaches to compliance may be particularly relevant in such contexts (vs. wealthier countries where enforcement can be more effectively achieved through public and private policing) because they can allow for constraints on human behavior that are not dependent on the state for enforcement (Jones, Andriamarovololona, & Hockley, 2008).

There is a growing body of evidence that normative factors are essential to increasing compliance with poaching rules even though governments worldwide largely respond to poaching risks through increasing law enforcement activities and capacity (e.g., Hauck, 2008; Hauck & Kroese, 2006). For example, Rowcliffe et al. (2004) found no evidence for the effectiveness of wildlife protection laws aimed at protecting vulnerable species yet concluded compliance with species protection laws could be improved most by increasing the probability of detecting violations rather than increasing penalties. Our study participants illustrated diverse reasons to comply with rules that went beyond traditional regulatory incentives and data herein suggest a much more nuanced response strategy is likely warranted. To simply assume that noncompliance necessitates regulatory change is to assume away a suite of possible normative alternative responses that could reduce noncompliance. However, it is important to distinguish that examining the mean difference in the stakeholders’ perceptions of the role of regulation versus their perception of the role of normative factors is not the same thing as testing the impact of regulation or normative interventions on their actual compliance rates. Additionally, our study participants were of unknown compliance status and, therefore, due to our study design, we do not have the ability to compare and contrast motivations to comply between nonpoachers and poachers. Ultimately, finding the optimal balance between providing incentives to voluntary comply with rules (“dangling the carrot”) and deterrence efforts by local law enforcement (“hitting with the stick”) is a critical step toward greater compliance with environmental rules (Hauck & Kroese, 2006).

In contrast to finding little difference in the ability of regulatory and normative approaches to describe compliance, we found differences in the ability of morals and legitimacy normative models to explain compliance. Deconstructing the normative dimensions of compliance as having both a legitimacy and moral normative components may prove
highly useful in promoting compliance on the ground as well as building scholars’ capacity to measure norms related to criminology and conservation. Resultant questions of interest include, does Namibia’s CBNRM system increase overall compliance by fostering a sense of moral obligation to address harms to wildlife and/or perceived legitimacy of poaching rules among local stakeholders? Can CBNRM systems be used elsewhere to increase compliance via legitimacy-based normative approaches? There are many reasons other than explicitly managing natural resources that may cause people to engage in normative behaviors that protect species, and there are many benefits beyond species conservation that may be realized by local peoples by abiding by norms as well (Callicott, 1990). The practical question for practitioners is how to help facilitate and preserve different norms in the face of changing economic conditions (Jones et al., 2008), human migration (Lingard, Raharison, Rabakonandrianina, Rakotoarisoa, & Elmqvist, 2003), property and resource management rights (Ostrom, 1999), land ownership, and codified conservation rules. Fortunately, the anthropology and development literature offers us guidance about how these conditions can affect social norms as well as the robustness of norm preservation in the face of change (e.g., in addition to the aforementioned references, see also Gelcich, Edwards-Jones, Kaiser, & Castilla, 2006, and Horning, 2003).

Motivations to poach wildlife

This work represents a first attempt at empirically identifying stakeholders’ motivations to poach; we were unsurprised, based on the literature (e.g., Knapp, 2007; Muth & Bowe, 1998), when participants identified a wide range of motivations to poach wildlife. Poaching to generate income (e.g., trophy poaching) and obtain wild meat (i.e., bushmeat) for subsistence or commercial gain are the most commonly cited motivations in the literature for sub-Saharan Africa. Retaliation for wildlife damage has also been noted in the literature (e.g., Bowen-Jones et al., 2003; Hill, 2004; Leader-Williams & Milner-Gulland, 1993). It is noteworthy, however, that participants identified a number of motivations they believed existed in their communities, which move beyond “cooking pot and pocket book” explanations of poaching. These motivations included poaching as a form of entertainment, for firearms training, to acquire medicinal animal products, and as a form of protest of rules or lack of benefits from wildlife conservation. For example, some participants mentioned noncompliant poaching acts motivated by rebellion or disagreements with rules; these motivations were related to negative local attitudes toward the establishment, governance, or benefit distribution scheme of the conservancy. The extent to which these motivations drive noncompliant activities is an empirical question but would be of particular interest to practitioners given such motivations can be rooted in public perceptions of the legitimacy rules, local decision-makers, and effectiveness of the conservancy to provide benefits to stakeholders.

Interestingly, participants did not identify a motivation that is a high priority for some practitioners, namely poaching for the live animal and pet trade. Indeed, Namibia is a known source country for the international pet trade, particularly avian and reptilian fauna (Warchol, 2004); such trade not only poses risks to overexploited species but also to human and animal health through the potential introduction of pathogens (Chaber, Allebone-Webb, Lignereux, Cunningham, & Rowcliffe, 2010). Further, participants did not identify thrill killing (i.e., psychological excitement of killing an animal) or gamesmanship (i.e., desire to outwit law enforcement) as motivations for poaching in their conservancies, even though these motivations for poaching have been discussed elsewhere (e.g., Muth & Bowe, 1998). Finally, poaching as an adaptive behavior (e.g., helping a person adapt to life’s
stresses or oppression, social stress levels that heighten levels of aggression, or helping a person survive changes in society) was not explicitly mentioned as a motivation but is documented in the literature (e.g., Hauck, 2008). Given our sampling frame and study design, our results should be interpreted and generalized with caution; the compliance status of focus group participants was unknown; therefore, the extent to which discussions surrounding motivations to poach comes from first- or second-hand knowledge versus a hypothetical exercise for each participant is also unknown. Furthermore, just because study participants did not identify certain motivations to poach does not mean that the motivations do not exist. Logical next steps would be to repeat data collection related to motivations to poach with known noncompliers (e.g., poachers). However, Eliason (2003) warned that even if poachers agree to participate in research they might mislead, lie or conceal their true motivations for participating in a criminal act. Further knowledge of both the diversity and prevalence of local motivations to poach wildlife can lead to more effective formulation of responses aimed to bring a greater number of stakeholders into compliance with wildlife rules.

Conclusion
How does one appropriately tie motivations to poach with criminological responses that increase compliance and minimize noncompliance? Data herein suggest participants’ motivations to comply are not necessarily equivalent to participants’ motivations for noncompliance and promotes thinking about these two concepts as two sides of the same coin. Answering this question will likely necessitate empirical understanding of local awareness of poaching rules, the local context of motivations to comply with those rules and motivations for noncompliance with poaching rules. Clearly, some motivations for noncompliance are best dealt with from a regulatory manner, for example, reducing poaching incidents motivated by large profits, such as those related to the illegal sale of skins, horns, or ivory, will likely require methods such as increased patrolling, or fines (Leader-Williams & Milner-Gulland, 1993). In other instances, normative approaches could be employed to influence compliance, such as when local stakeholders feel that rules making the harvest of culturally or medicinally significant wildlife illegal constitute a social injustice.

Reducing the rate, extent, and negative impacts of poaching is likely to remain a high priority for criminology and conservation practitioners. Deeper understanding about theory, methods, and practice that inform effective enforcement and compliance can help expand the toolbox of solutions for the diverse contexts within which poaching occurs. Data herein advance a scant knowledge base by contributing novel insight to factors influencing stakeholders’ motivations to poach and comply with poaching rules. This research also elaborates on normative and regulatory approaches to compliance in general and focused on wildlife in Namibia in particular. We suggest the criminological community capitalize on opportunities to collaborate with conservationists and others on exploring the various dimensions of poaching in order to reduce risks and environmental harm by minimizing rule breaking in conservation.
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Notes
1. Ecosystem function, which is the capacity of natural systems to provide goods and processes essential to biological communities, including humans, and ecological services such as pollination and seed dispersal, are two examples of the natural function of ecosystems.
2. A stakeholder is any individual who affects or is affected by a particular management issue such as wildlife management. This is a common way to refer to citizens who are actively and latently affected by wildlife and wildlife management in a conservation context. Our study design did not discriminate between those who self-identified as being actively involved or not in wildlife management; instead, stakeholders were defined as any citizen within the communal conservancy. The status of poaching compliance behaviors among study stakeholders is unknown. However, given that each of these citizens has a stake in wildlife management in these conservancy areas, it can be assumed that every stakeholder has the potential to not comply with wildlife rules.
3. We acknowledge that interventions or theoretical concepts of compliance go beyond regulatory and normative approaches and an argument based solely on these approaches may be seen as an incomplete subset of concepts in the criminological literature on compliance. However, these two interventions (regulatory, normative) are the most prevalent in the natural resource-based compliance literature (e.g., Hauck, 2008; Nielsen, 2003) and also the most often applied interventions in this context.
4. Following Hauck (2008), we use the term rules when referring to both statutory laws (i.e., rules enacted and enforceable through state mandated authorities) and sociocultural norms (i.e., rules enacted and enforced through traditional norms or communal authorities) regulating the appropriate use of wildlife.
5. The overarching research objectives for this project were to examine perceptions of risk and vulnerability to human–wildlife conflicts (HWC) in general and not poaching in particular. Both sampling instruments (focus group, interview) asked for opinions on risk to livelihoods from HWC and risks to wildlife from HWC. The interview specifically mentioned poaching as a risk to wildlife; focus groups were asked to independently list risks to wildlife, meaning that poaching was a topic that focus group participants discussed without prompting by researchers.
6. Detailed demographic information (e.g., age, educational attainment, ethnic group) was collected during interviews. Detailed demographic information was not collected on focus group participants. However, the groups were divided into gender groups (men and women) and then by decision-making authority (i.e., members of the conservancy staff, committee, or traditional authority were defined as decision-makers). The minimum age to participate was 18 and we had two individuals self-identify as pensioners (i.e., Namibians of the retirement age of 60 or greater) during the risk ranking exercise.

References


