

Levels of conflict over wildlife: Understanding and addressing the right problem

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Abstract

Human–wildlife conflicts are complex and defy simple explanations and solutions. The fields of conflict analysis and peacebuilding offer insights into the intensity, intractability, and possible approaches to addressing different kinds of conflict. Building on these fields, as well as advances in conservation practice, we adapt a framework for human–wildlife conflict that consists of three levels of conflict over wildlife: Level 1 conflicts are disputes over issues such as crop or livestock loss or concerns about safety, yet typically involve relatively high tolerance of the damage-inducing species. In level 2 conflicts, in addition to visible impact of wildlife, there is a history of unsatisfactory attempts to address these issues, creating underlying resentment, tensions, and a sense of injustice among at least one of the parties. Level 3 conflicts are deep-rooted and become intertwined with the identities of the parties and community involved, and extend to broader tensions over social identities and clashing values and beliefs. Such conflicts require mediated reconciliation dialogues and conflict transformation approaches. A structured understanding how to address a conflict before it escalates to a deeper level is fundamental for managing conservation challenges as complex and dynamic as conflicts over wildlife.

KEYWORDS

conflict resolution, conservation, human–wildlife conflict, peacebuilding

1 | THE COMPLEXITY OF CONFLICTS OVER WILDLIFE

Conflicts over wildlife, often called human–wildlife conflicts (HWCs), present a serious and intensifying threat to the survival of numerous species (Dickman, Marchini, & Manfredi, 2013; Woodroffe, Thirgood, & Rabinowitz, 2005; Inskip & Zimmermann 2009). These disputes occur when the behaviour and needs of wildlife conflict with those of people, with real or perceived negative impacts on conservation and human interests.

Conflicts over wildlife are extremely variable, complex, and defy simple explanations. In some cases, people tolerate extreme losses from the presence of wildlife despite living in poverty, while others experience negligible economic losses but are entirely unwilling to accept the presence of a species under any condition (Liu et al., 2011; Suryawanshi, Bhatnagar, Redpath, & Mishra, 2013). Further complicating matters, this dramatic variation in attitudes toward, and tolerance of the presence of a species is rarely proportional to the actual damage sustained by the parties and generally does not

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correlate to factors such as education or income levels, land ownership, species involved, or any other characteristic (Liu et al., 2011; Suryawanshi et al., 2013; Zimmermann, 2014). For example, a study across seven countries involving 17 different communities experiencing human–jaguar conflict found that while each case had some predictors of tolerance of jaguars, none was consistent across multiple case studies (Zimmermann, 2014). Many other studies (e.g., Arbieu et al., 2019; Kansky, Kidd, & Knight, 2016; Kansky & Knight, 2014; Manfredo & Drayer, 2004; Marchini & Macdonald, 2012) also found that tolerance levels for wildlife may be shaped by a range of factors which may include varying combinations of attitudes, values, beliefs, social norms, culture, socio-political contexts, and media.

The absence of universally predictable drivers and patterns of HWC intensity explains why potential solutions in one setting do not easily transfer in other settings or scenarios (Zimmermann, 2014). This variation also provides clues why damage-reducing interventions work well in some scenarios but cause an escalation of conflict in others (Madden & McQuinn, 2014; Mascia et al., 2003; Rabinowitz, 2005).

New conceptual approaches are needed to understand and address conflicts over wildlife. Elsewhere, the field of conflict analysis and peacebuilding has generated an array of conceptual models to analyze the intensity, intractability, and possible approaches to addressing conflict (Lewicki, Weiss, & Lewin, 1992; Ramsbotham, Woodhouse, & Miall, 2005). Conflict theory has long proposed that different stages or levels of conflict exist and must be addressed with interventions appropriate to not only the context but also the sources of conflict (CICR, 2002; Fisher & Keashly, 1991; Lederach, 1997; Miall, 2004). Much can be learned and adapted for conservation from these and other sectors, but many of these models are applied to violent conflicts and build solutions or processes assuming extreme intensity. Human–wildlife conflicts are different, they vary in intensity, and any violence (if present) is of a different nature (directed toward animals, rarely between the stakeholders) and their manifestations are often more subtle, which is why these models are not always directly applicable.

All human–wildlife conflicts are complex, but some are more complex than others. Efforts to address the visible problem without fully considering the underlying socio-political conflicts fuelling the situation often result in only temporary fixes, or worse, exacerbating these pre-existing tensions (Dickman, 2010; Thirgood, Woodroffe, & Rabinowitz, 2005; Webber et al., 2007).

Based on earlier work by McQuinn with the Canadian Institute for Conflict Resolution (CICR, 2002), Madden and McQuinn (2014) proposed the levels of conflict

model to help make sense of the different types of underlying and deep-rooted conflicts. Here we build further on this body of work to offer practical guidance for identifying the level of conflict for a given HWC situation. Understanding the situation one faces is critical to determining the approach and resources required, but also the possible ethical dilemmas faced by those who seek to resolve or address conflict (Vucetich et al., 2018). The aim of this paper is to reaffirm the importance of levels of conflict in the management of human–wildlife conflict and add to this a framework of questions and indicative responses to help practitioners identify the levels and intensity of conflict they face.

2 | THREE LEVELS OF CONFLICT OVER WILDLIFE

As proposed by Madden and McQuinn (2014), human–wildlife conflicts always involve some form of presenting dispute over resources or safety—such as damage by wildlife to crops, livestock, fisheries, game, property, or facilities. People's reaction to these effects is obvious and tangible making the problem easily to identify. This is called the dispute level and represents Level 1 of the model (Figure 1).

All human–wildlife conflicts present at Level 1 and it is these issues that frame the apparent problem. It is for this reason that the vast majority of HWC mitigation efforts focus on trying to find practical solutions to reduce damage and threats in these situations. Some HWCs are indeed nothing more than Level 1 conflicts, and in these cases such practical solutions—which often involve methods such as barriers, repellents, conditioning, guarding, and other physical interventions—can settle the situation. Level 1 conflicts are typically those in

The Levels of Conflict over Wildlife

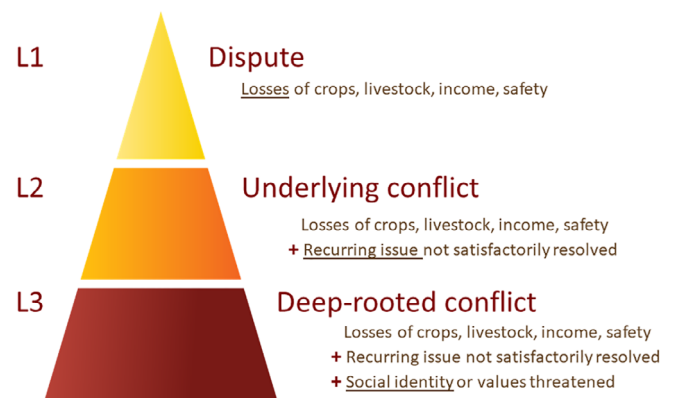


FIGURE 1 The levels of conflict over wildlife

which there is high tolerance of, and appreciation for, the damaging species (whether for cultural, economic, or other reasons) and the affected communities have neutral or positive relationships with any third parties involved in the situation.

For example, in some cases of human–elephant conflict, such as in some communities in northeast India, the impact of damage by elephants is detrimental, a matter of life-and-death for impoverished farmers who can lose their entire livelihood to elephants in a single night (Davies et al., 2011; Wilson, Davies, Hazarika, & Zimmermann, 2013; Zimmermann et al., 2009). Yet some of these communities have a strong, culturally grounded tolerance of elephants and are willing to work with third parties, such as government officials or conservation organizations to find solutions. These are conflicts that can largely be resolved with measures such as community-based interventions of fencing and deterrents (Davies et al., 2011; Wilson et al., 2013; Zimmermann et al., 2009).

However, in many human–wildlife conflicts there is more going on under the surface. In Level 2, or *underlying conflicts*, the situation includes the visible issues of a Level 1 conflict but the damage or losses incurred are taking place in the context of a history of unsatisfactory attempts to address previous incidents. This history of disputes creates a build-up of expectations, perceptions, and resentment toward the species or toward anyone trying to address the issue. If previous attempts to address the problem were perceived as unfair, disappointing, or misleading, underlying conflict takes root. It is only necessary for one of the parties to perceive the history in this way, it may be, for example, that conservation actors or authorities considered the issue satisfactorily addressed, but the affected community did not. Over time, these disappointments or misunderstandings accumulate, creating a “them versus us” perception of the situation.

On the island nation of Mauritius for instance, conflict over Mauritian fruit bats (which are listed by IUCN as Endangered) has escalated and led to controversial government-endorsed culls of bats, in response to damage to lychee and mango orchards and the mess and noise of bat presence in people's back yards. Yet at the heart of this conflict is a history of underlying tensions between parties, and resolving this conflict requires a process to bring the parties to work together toward feasible and mutually agreed solutions (IUCN SSC, 2018).

Finally, if underlying conflicts are left to grow and align with pre-existing socio-political conflicts, stakeholders may come to perceive the conflict as threatening their values or communal identity. Here the conflict is no longer framed solely in terms of wildlife, but rather, broader grievances or tensions over social identities and beliefs (Lederach, 1997). Individuals and communities

affected by this conflict come to feel that their identity or values differ fundamentally from those who are perceived as trying to address or “meddle” in an issue. The conflict has escalated into a Level 3 or *identity-based* conflict. Such conflicts create extremely difficult and ethically challenging situations.

In several parts of Europe and in North America, wolves are the subject of some of the most intractable human–wildlife conflicts (Treves, Naughton-Treves, & Shelley, 2013). Perceptions about wolves in some places are so negative that for example in Norway and France farmers have at times suspected that the government was secretly reintroducing wolves into their region (Skogen, Mauz, & Kränge, 2008), while in Slovakia, deep hatred of wolves remains even though actual depredation on sheep has been reduced to a negligible level (Rigg et al., 2011). In such cases financial compensation will not improve tolerance of wolves (Treves et al., 2013) as these conflicts are embedded in wider issues of social change, where relationships between the stakeholders have badly deteriorated and are deeply-held value differences over a symbolic animal in longstanding political, economic, and cultural conflicts (Bisi, Kurki, Svensberg, & Liukkonen, 2007; Skogen et al., 2008; Nie, 2002). These intense conflicts cannot be addressed with practical or financial solutions alone (Bisi et al., 2007). They require approaches that reconcile the incompatible beliefs and values or identities of those involved.

Attempts to address a deep-rooted human–wildlife conflict with Level 1 strategies such as a fence can further widen the divide between those affected by the wildlife and those trying to resolve the issue. Thus, ill-informed conservation efforts to address these conflicts can create or intensify underlying conflicts. Such situations require substantial qualitative analysis in order to avoid making the situation worse, so a “do no harm” approach in these scenarios is key for ethical and effective resolution of conflicts over wildlife. Yet how can we determine when a human–wildlife conflict is fuelled by underlying issues, how these different levels of conflict should be addressed, and by whom?

3 | IDENTIFYING THE LEVELS OF CONFLICTS OVER WILDLIFE

To assess a given human–wildlife conflict, researchers tend to quantify losses, examine spatial or temporal patterns, describe socio-economic characteristics, and measure attitudes. Indeed, attitudes are the most-studied human dimension in human–wildlife conflict research (Manfredo & Drayer, 2004). Attitudes are one important explanatory variable, but behavior is also determined by

norms and perceptions of control (Ajzen, 1991; Ajzen & Fishbein, 1980; Manfredi & Drayer, 2004), so measurement of attitudes as a proxy for behaviors is of limited use in applied conservation (St John, Edwards-Jones, & Jones, 2010). Instead, the researcher needs to gain insight into the values and beliefs of the affected stakeholders (Kellert, Black, Rush, & Bath, 1996; Manfredi & Drayer, 2004; Zimmermann, 2014). Quantitative and qualitative research methods, including surveys, participant observation, focus groups, and other forms, can give an initial indication of the levels of conflict perceived by the different parties involved in the situation. If the result of initial conversations suggests underlying or deep-rooted conflicts, additional in-depth enquiry will be a necessary component of the conflict mitigation process that follows.

To get to the heart of the matter quickly, certain signs or indicators can help identify the level of conflict in a given situation. Building on the results of a previous empirical study of HWCs (Zimmermann, 2014) and our experience working with communities affected by human–wildlife conflicts around the world, we propose a framework to help practitioners test what levels of conflict might prevail in a given situation. The questions have been categorized into five key areas of analysis to provide a starting point, from which practitioners can then tailor questions to the situation and, for instance, incorporate these into assessments using standard quantitative and qualitative social research methods. The five broad types of questions are as follows: (a) perceptions about the species that is being blamed in the conflict, (b) questions about the apparent situation itself, (c) questions about the history of previous attempts (by any party) to address the conflict, (d) the extent of willingness to engage in attempts to find solutions, and (e) views about others involved in, or trying to assist with the situation, such as authorities or other third parties. Table 1 summarizes the lines of questioning and things to ask, and suggests the typical reactions or indicative responses each level is most likely to generate.

In a Level 1 human–wildlife conflict, one would expect to find some level of empathy or understanding for the needs of the wildlife implicated in the situation. The affected person or community is likely give neutral or positive response to questions about the species, while expressing concern about income loss, damage, and safety. Their main worry will be around the tangible impacts or losses experienced. If there is any history of attempts to resolve the issue, these are likely to be perceived as helpful so far, or at least not as negative. There will likely be a willingness to work with third parties in trying to develop interventions to address the issue, and an interest in receiving assistance, with offers of help perceived as genuine or trustworthy.

TABLE 1 Key areas of questioning and typical responses that help identify the level of conflict over wildlife

Level of conflict	Responses to questions about the species	Responses to questions about the situation	Responses to questions about the history of attempts	Responses to questions about finding solutions	Responses to questions about others involved in the issue
Level 1: Dispute	Empathy or understanding for the needs of wildlife. Neutral or positive response to questions about the species	Complaints about income loss or concerns about safety. Main concern is with tangible impacts or losses	Little history of attempts, or previous attempts were seen as helpful, or not perceived as negative	Willingness to adapt habits and cooperate with interventions. Openness to receiving help and cooperating with trials for solution	Others are perceived as genuine or trustworthy in their attempts to help
Level 2: Underlying conflict	Dislike of the species involved; strong NIMBY effect (“not in my back yard”)	Accumulated frustration about the situation, seen as a major issue. Frequency and impact of losses usually exaggerated	There is a history of unresolved losses or resentment about the actions of third parties	An expectation that someone else should solve this issue, or compensate for it	Scepticism about the motivations of others
Level 3: Identity-based conflict	Strongly negative expressions that seem disproportionate to the damage they cause. Vilification, exaggeration, transfer of blame	Use of strong or polarized language. Perceived as very serious, with expressions of feeling threatened in their way of life	Very negative reflections about history of attempts to resolve, seen as unhelpful or even deceptive	Unwilling or very reluctant to make modifications to help reduce damage	Hostility toward the intentions of others, sarcasm or blaming. Feel their identity not understood appreciated

Level 2 human–wildlife conflicts would manifest as a much more noticeable dislike of the species involved, and a strong NIMBY (“not in my back yard”) sentiment, that is, the people affected may not want the damaging wildlife eradicated completely but want to ensure they are contained to areas well away from people. There is likely to be some accumulated frustration about the situation, which is seen as a major problem, with the frequency and impact of losses exaggerated. There will be a history of unresolved disputes and some resentment about the actions of third parties, which are perceived as insufficient or ineffective. There may be an expectation that someone else should solve this issue, or compensate those affected, and there will likely be scepticism about the motivations of third parties getting involved in the problem.

Finally, in Level 3 human–wildlife conflicts we are likely to be confronted with strongly negative expressions about the species that seem disproportionate to the damage they cause. Expressions may include vilification of wildlife, exaggerations of events, and blaming of others. Language will be strong or polarized, and the wildlife in question will be referred to as “your” bear/wolf/elephant/lion, as opposed to “the” or “our” animal, which are strong indicators of deeply negative or resentful emotions about the species. The conflict may be perceived as very serious, and respondents may even speak of their way of life being threatened, and feeling misunderstood by others. They are likely to hold very negative perceptions of the history of attempts to resolve the issue and may see these as failures, or even that they have been misled or deceived, and may be hostile toward or sceptical of the intentions of others. They will most likely be unwilling or reluctant to make modifications to try to reduce damage by wildlife.

4 | ADDRESSING EACH LEVEL OF CONFLICT

Conflict theorists in international relations and peace-keeping advocate for conflict resolution processes that mirror the levels or types of conflict in a particular context (Fisher & Keashly, 1991; Miall, 2004). Thus for management of Level 1 conflict the aim is to contain tensions and constructively prevent escalation. In underlying conflicts found in Level 2 conflicts trained impartial mediators can help parties explore the root causes and try to move them from destructive (zero-sum) to constructive outcomes (positive-sum). Level 3 conflicts may require conflict transformation approaches, in which the structures of conflicting relationships are reframed and addressed (Azar & Burton, 1986; Lederach, 1997; Miall, 2004; Özerdem & Lee, 2016). Importantly, such

conflict theorists argue that only in the simplest of cases (such as Level 1 HWCs) can conflict be addressed quickly. By contrast, when underlying tensions exist (i.e., issues of clashing identities, social change, and embedded histories) then conflict mediation inevitably takes more time, and sometimes requires multitrack approaches (Miall, 2004; Ramsbotham et al., 2005).

Similarly, conservation has to adapt its approaches to human–wildlife conflict according to the depths and characteristics of the given conflict. Here we propose an introduction to the general approaches applicable to each level of conflict. Each in turn would benefit from in-depth guidance, but for many approaches much literature and practical guidance is already available, and available for example in the IUCN SSC Human-Wildlife Conflict Resource Library (IUCN SSC, 2019). We provide a brief summary of approaches to each level in Table 2.

Level 1 conflicts, which are about negotiable interests, can be approached through *conflict settlement* through negotiation, compromise, or the development of practical solutions resulting in outcomes acceptable to all parties involved (Ramsbotham et al., 2005). The aim here is to restore safety, or protect from, compensate or recover and prevent damage and economic losses. Such strategies might include, for example, fencing, barriers, early-warning alarms, deterrents, or even income-supplementing measures that offset the risk of loss to wildlife. Providing this involves a good process of co-management, participatory decision-making, and careful stakeholder engagement, these approaches can be very effective in mitigating the conflict in question.

Addressing underlying issues in Level 2 conflict requires *conflict resolution* approaches that explicitly address the history of disputes and search for common ground among the parties (Reimann, 2004). Practical solutions are still relevant, but these need to be combined with approaches that uncover and address underlying interests (Patton, 2005). Here the emphasis is on building relationships among the stakeholders in order to ensure future incidents are addressed proactively, and this often requires re-framing of the issues raised, and discussion of history and acknowledgment of past grievances (Freshman, 2005; Patton, 2005). Interventions related to community behavior change are also often relevant in such cases, using approaches such as social marketing, that is, the use of marketing techniques to create values and influence behaviors to the benefit of the target audience (McKenzie-Mohr, 2000; Verissimo, 2013).

Level 3, or identity-based conflicts, are the most challenging as the parties perceive its outcome to impinge on their values, identities, or way of life. This level requires reconciliation dialogues and conflict transformation approaches (Fisher, 2001; Lederach, 1997; Madden &

TABLE 2 Summary of how to identify and address each level of conflict over wildlife

Approaches to address the conflict	
Level 1: Dispute	Practical solutions <ul style="list-style-type: none"> • Safeguard income and security (e.g., barriers, alarms, husbandry improvements) • Reduce risk of losses (and actual losses) to levels acceptable to the (farmer) and reduce levels of risk • Increase productivity or diversifying income sources to off-set risk
Level 2: Underlying conflict	Relationship building <ul style="list-style-type: none"> • Focus on building and fostering constructive relationships between the stakeholders • Ensure initiatives address past issues in practical or symbolic ways • Practical solutions play a role but are effective only if in combination with approaches to address norms and behaviors
Level 3: Identity-based conflict	Reconciling conflicting identities <ul style="list-style-type: none"> • Addressing conflict at this level usually involves dialogue processes that balance power among the parties and empower communities • The emphasis must be on re-balancing decision-making, ownership, and co-investment • Symbolic gestures demonstrating respect afford stakeholders dignity that is often perceived to be lacking

McQuinn, 2014; Özerdem & Lee, 2016; Reimann, 2004). Indeed, given that many values or beliefs are deeply held, suggestions of negotiation or compromise can exacerbate the situation (Jassin, Sheikh, Obeid, Argo, & Ginges, 2013). As this level of conflict often concerns power, decision-making, and perceived ownership over the resources in question, addressing the conflict usually requires long-term processes of facilitated dialogue that acknowledges power differences among the parties and redistributes decision-making, ownership, investment, or responsibility among the stakeholders. Symbolic gestures can be effective at demonstrating respect and afford stakeholders dignity that is often perceived as lacking. This level of conflict requires the help of a trained third party conflict mediator, using strategies comparable to multitrack diplomacy, where either official third party neutrals or unofficial inside impartial facilitators are sent to assist, or other options and combinations of these (Miall, 2004; Ramsbotham et al., 2005; Reimann, 2004; Ropers, 2014).

5 | IMPLICATIONS FOR PRACTICE AND POLICY

Effectively determining which of the three levels of conflict are at play in any situation is essential in improving the success of efforts to conflicts over wildlife worldwide. The levels of conflict framework provides us with a practical yet precautionary approach to human–wildlife conflict—critically important and largely lacking at this time in conservation conflict mitigation efforts. As explained in this paper, addressing human–wildlife conflicts without good insight into the levels and causes of conflicts not only fails to resolve them, but can potentially exacerbate the situation. Over time, mismatched conservation efforts can actually contribute, for example, Level 2 conflicts becoming identity-based (Level 3)—which raises ethical questions about well-meaning but poorly understood attempts at addressing human–wildlife conflicts.

The levels of conflict model is a tool that needs to be incorporated at the design stage of a conservation plan or intervention, ideally as part of any theory of change in conservation planning (Marchini et al., 2019). The types of questions to be asked (as in Table 1) that help unveil the level of any given human–wildlife conflict can easily be incorporated into baseline research and monitoring and evaluation plans, and we propose to include in analysis, planning, and implementation of human–wildlife conflict mitigation projects.

The concept of addressing conflicts over wildlife at appropriate levels can also be incorporated into relevant sections of wildlife or biodiversity strategies and regional or national policies of governments, as well as institutional policies or guidelines for nonprofit organizations and other actors wishing to address human–wildlife conflict. Furthermore, grant foundations and funders of conservation project may use this conceptual model to help inform and influence high-quality and well-informed conflict mitigation strategies. The International Union for Conservation of Nature (IUCN) is also currently developing policy and guidelines for good practice in human–wildlife conflict, which includes the concept of three levels of conflict as outlined here.

Much human–wildlife conflict mitigation work around the world is reactive, responding to crises where loss of life or substantial economic loss has led to retaliatory violence against the species held responsible. While these efforts are important, conservation needs to do more to proactively address underlying issues or prevent Level 1 conflicts from worsening over time. For example, in situations where large carnivores populations have recovered, new conflicts are emerging as a result, as seen in the case of Asian lions in the Gir Forests of India

(Venkataraman, Macdonald, & Montgomery, 2014) or wolves in Germany (Arbieu et al., 2019). A structured understanding how to address a conflict before it becomes entrenched brings a do-no-harm approach into such conservation efforts, and facilitates transdisciplinary and holistic thinking, which are fundamental in conservation challenges as complex and dynamic as conflicts over wildlife (Macdonald, 2019; Macdonald, Loveridge, & Rabinowitz, 2010; Pooley et al., 2017).

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CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

AUTHOR CONTRIBUTIONS

Alexandra Zimmermann: Conceptualization (lead); writing – original draft. **Brian McQuinn:** Conceptualization (lead); writing – original draft. **David W. Macdonald:** Writing – original draft.

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