

This article was downloaded by: [Rodney Jackson]

On: 19 May 2015, At: 18:45

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Human Dimensions of Wildlife: An International Journal

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/uhdw20>

HWC Ten Years Later: Successes and Shortcomings of Approaches to Global Snow Leopard Conservation

Rodney M. Jackson^a

^a Snow Leopard Conservancy, Sonoma, California, USA

Published online: 19 May 2015.



CrossMark

[Click for updates](#)

To cite this article: Rodney M. Jackson (2015): HWC Ten Years Later: Successes and Shortcomings of Approaches to Global Snow Leopard Conservation, Human Dimensions of Wildlife: An International Journal, DOI: [10.1080/10871209.2015.1005856](https://doi.org/10.1080/10871209.2015.1005856)

To link to this article: <http://dx.doi.org/10.1080/10871209.2015.1005856>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms &

Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

Research Article

HWC Ten Years Later: Successes and Shortcomings of Approaches to Global Snow Leopard Conservation

RODNEY M. JACKSON

Snow Leopard Conservancy, Sonoma, California, USA

*Over the past decade important advances have been made toward addressing human–wildlife conflict associated with the endangered snow leopard (*Panthera uncia*). Engaging and motivating stakeholders through more participatory protocols remains a vital ingredient toward the design, implementation, and of monitoring robust, long-lasting, and locally adapted solutions that stress the community’s collective and positive visions for the change. Co-existence with this predator can be best achieved by empowering rural communities and helping them forge more harmonious and eco-centric relationships with their environment, one in which snow leopards are perceived as valued assets rather than pests to be eliminated. The Global Snow Leopard Environmental Plan endorsed in 2013 by all 12 snow leopard range countries offers a possible blueprint for this transformational process to take place. The major challenge rests with securing the necessary financing and the scaling up of remedial interventions to landscape levels across the range states.*

Keywords snow leopard, *Panthera uncia*, human–wildlife conflict, GSLEP, community-based conservation

Introduction

The International Union for Conservation of Nature (IUCN) 4th World Parks Congress (WPC), which highlighted the importance of involving local people in conservation, led to greater awareness of the cost borne by local communities residing in or near a protected area. Human–wildlife conflict due to crop and livestock depredation emerged as a common worldwide threat to conserving a wide range of wildlife species, including large felids like the endangered snow leopard (*Panthera uncia*) (Inskipp & Zimmermann, 2009). Oli, Taylor, and Rogers (1994) published the first detailed report of livestock loss caused by snow leopards in the Himalayas; this topic was examined in more detail by Mishra (1997), Jackson and Wangchuk (2001), and Namgail, Fox, and Bhatnagar (2007) among others. The 5th WPC brought human–wildlife conflict (HWC) to the global stage as part of efforts to

Address correspondence to Rodney M. Jackson, Snow Leopard Conservancy, 75 Boyes Blvd, Sonoma, CA 95476, USA. E-mail: rodney@snowleopardconservancy.org

address current challenges facing protected area management through a workshop entitled “Creating Coexistence between Humans and Wildlife: Global Perspectives on Local Efforts to Address Human-Wildlife Conflict” (Madden 2004). Participants presented case studies in a special issue of the journal *Human Dimensions of Wildlife*, including this author’s recommendations for engaging communities in HWC (Jackson & Wangchuk, 2004).

This article briefly summarizes the major issues and advances toward addressing HWC-related threats involving snow leopards by exploring questions such as:

- What is the trend in HWC as it affects large predators like snow leopard in developing countries?
- Has our ability to deal with HWC improved since the 2003 WPC workshop?
- What new insight has been realized regarding strategic approaches for addressing HWC and its challenges?

Livestock depredation from snow leopards has been increasing in many parts of this felid’s vast range (1.2–1.6 million km²) that encompasses 12 South and Central Asia countries, from the Himalayan mountains to the ranges of southern Siberia in Russia (Jackson, Mishra, McCarthy, & Ale, 2010; Li, Yin, Wang, Jiagong, & Lu, 2013). Historically, pastoralists have co-existed, albeit uneasily, with large carnivores while herding their livestock in some of the world’s least productive rangelands characterized by extreme climatic and temperature ranges, high aridity, limited forage, and low overall biomass. They have regularly faced droughts and winters with deep snowfalls resulting in large-scale livestock die-offs that have been further accentuated by shifts in climate. Over 40% of households in many areas live below national poverty levels with an average per capita annual income of US\$250.00 to \$400.00 (Mishra et al., 2003). These hardy communities exhibit strong cultural affinities for, and economic dependence on, animal husbandry. Options for alternative income sources and assets to offset depredation losses are scarce or even absent. Given the region’s harsh environment and geographic isolation, many households are extremely vulnerable to political and economic marginalization. Rather like the pastoralists of sub-Saharan Africa, livestock represents a household’s primary “bank account,” so that heavy depredation contributes to capturing people within so-called poverty traps (Dickman, Macdonald, & Macdonald, 2011). While human density is low or very low, use of the land is extremely pervasive across large swathes of snow leopard range, leading to intensified competition between domestic stock and wildlife. This in turn leads to escalating HWC, both within and outside the confines of protected areas. Since few if any protected areas are free of such influence, the long-term survival of the snow leopard hinges upon uneasy coexistence with subsistence pastoralists or farmers eking out their living in the same harsh environment (Jackson et al., 2010).

Snow leopards occupy relatively large home ranges, range widely, and are thinly distributed, so that conservation measures have to be applied at the landscape and population level in order to be effective. With diminishing prey numbers due to poaching and rangeland degradation or disturbance, along with the ever-growing livestock herds, the risks to domestic stock will only intensify—with retributive killing of snow leopards by herders constituting the most serious long-term threat to this endangered felid (Jackson & Wangchuk, 2001).

Oli et al. (1994) reported that local herders considered extermination of this rare predator as the only acceptable solution for tackling annual losses averaging 26.6 animals per household in Nepal. Range-wide snow leopard related losses range from less than 1% in parts of Mongolia or Western China to over 12% of livestock holdings in hotspots in Nepal and India, but typically averages 1 to 3%, with annual economic losses ranging from less

than US \$50.00 to over \$600.00 per household—significant amounts given the low annual per capita incomes (Bagchi & Mishra, 2006; Namgail et al., 2007; Jackson et al., 2010; Li et al., 2013).

Herders are especially angered by surplus killing which occurs when leopards enter a nighttime corral and kill 10 to 50 or more of the confined sheep and goats within a single event. In Hemis National Park, India, such events (14% of all incidents) accounted for 38% of all livestock lost and probably led to the most retributive action against snow leopards (Jackson & Wangchuk, 2001). It contrasts with open-range predation, where livestock can usually escape so that only a few animals are lost; this is an outcome that most pastoralists are far more willing to tolerate. Typically less than 10% of households suffer disproportionately heavy loss. This is usually from corralled sheep and goat kills or killings of unguarded, but high-valued yaks and horses while pasturing on the open range. Snow leopards are capable of killing nearly all types of domestic animals, and while herders act to reduce the risk of depredation, these are often insufficient. Complacent guarding, poorly constructed nighttime pens, favorable stalking cover, and insufficient wild prey are cited as the primary factors contributing to livestock depredation (Jackson et al., 2010).

Interventions

A number of remedial measures for HWC have been suggested, many of which have or are currently being applied (see Figure 19.3 and Table 19.1 in Jackson et al., 2010). These include:

- *Predator-proofing of high risk corrals*, with emphasis on communally managed enclosures. However, physically improving structures with wire-mesh walls or roofs is relatively expensive, so it is limited to those corrals most vulnerable and best suited to strongly participatory, multipronged approaches described by Jackson and Wangchuk (2004);
- *Compensation for livestock losses*: This addresses the symptoms rather than the underlying root cause for depredation loss and furthermore requires regular infusions of cash to support payouts over the long term;
- *Community-managed livestock insurance schemes*: The monthly premiums from the members may also be supplemented with revenue generated from savings and credit or loan schemes that seek to establish alternative or more diverse and productive livelihoods (Hussain, 2000; Gurung et al., 2011);
- *Immunization of livestock against diseases* in exchange for snow leopard and biodiversity conservation by livestock owners based on the underlying premise that herders will also agree to maintain fewer more healthy livestock (this may offer a perverse incentive to some, encouraging increased livestock holdings to the detriment of forage availability along with rangeland health);
- *Handicrafts production* based on wildlife-friendly livestock products, which appears to be most effective when managed through women's associations and embedded with performance-based conservation agreements that bring economic penalties, including loss of bonus payments, in the event of poaching incidents involving snow leopards or prey species (Mishra et al., 2003);
- *Improved daytime guarding*, including the use of guard dogs and communally hired shepherds to watch over sheep and goat flocks;
- *Prey species restoration*, including anti-poaching measures or grazing land set asides for wild ungulates (Bagchi & Mishra, 2006); and

- *Avoidance of depredation hotspots* during winter months (when most loss usually occurs) may represent a cost-effective option if alternative pastures are available. Also, herder vigilance could be increased greatly in areas of broken terrain that give snow leopard excellent hunting cover and where they naturally tend to rest.

To date, HWC remediation has largely been implemented through a top-down approach, probably because practitioners tend to be academic researchers and nongovernmental organization (NGO) managers hampered by limited resources. Interventions tend to target one or a few geographically confined communities rather than employing a regional or landscape approach. As a result, transaction costs are high or very high (Jackson et al., 2010; Mishra et al., 2003), with community involvement often occurring too late in the process to ensure sufficient trust for building ownership or the necessary internal capacity for assuming a leadership role in implementation. Costs could be significantly reduced if affected communities acted following the example of others. On a positive note, the numbers of papers addressing the opportunities, challenges, and processes for participatory planning and mitigation of HWC have increased significantly over the last decade (Treves, Wallace, & White, 2009; Maheshwari, Midha, & Cherukupalli, 2014).

Streamlining HWC for Addressing Human–Carnivore Issues Across Snow Leopard Range

Given this background, what have we learned in the way of improving planning and conservation actions to address livestock depredation from snow leopards? First, HWC is being increasingly recognized as a *complex phenomenon that requires careful multidimensional evaluation and planning undertaken at the landscape level*, rather than being narrowly focused on a few small or isolated sites. One-time characterizations of depredation sites and/or loss rates fail at understanding the “bigger picture” associated with highly dynamic predator–prey populations that are constantly changing, especially under human and environmental pressures. This in turn drives or at least influences local livelihoods, animal husbandry practices, and livestock production and ultimately determines how the rural livestock development sector is best sustained. Clearly, numerous, closely interlinked environmental and socioeconomic factors serve as drivers, with human perceptions often at odds with the actual pattern of depredation (Suryawanshi, Bhatnagar, Redpath, & Mishra, 2013; Suryawanshi, Bhatia, Bhatnagar, Redpath, & Mishra, 2014). Thus, the “effectiveness” of conservation actions may depend more on what herders perceive than the actual depredation losses incurred. Disease and poor nutritional status associated with severe weather events or overtly stressed rangelands is usually responsible for greater mortality to livestock herds than predators. Furthermore, depredation losses exhibit marked spatiotemporal variation, even across a relatively small environmental gradient or landscape unit. Finally, the local cultural context can exert fundamental influence on success rates of community-managed remedial interventions (Waylen, Fischer, McGowan, Thirgood, & Milner-Gulland, 2010), especially if these fail to consider socioeconomic factors (Dickman, 2010), hidden opportunity and transaction costs (Barua, Bhagwat, & Judah, 2013), or the many other drivers behind rural poverty (Barrett, Alexander, Travis, & Dasgupta, 2011).

A better understanding of herder rationale for selecting livestock types, herd structure and dynamics, or grazing strategies and productivity is needed to identify which components conflict most with predator ecology and behavior. Such knowledge supports

scaling-up of HWC to the landscape level by isolating the factors important to fostering coexistence between humans and carnivores. Clearly this implies regional level assessments and interventions, instead of the current practice of treating HWC on a case-by-case basis.

Second, we should not underestimate the importance of *ensuring transparent and full participatory involvement for crafting lasting, in-situ solutions* to HWC (Jackson & Wangchuk 2004; Treves et al., 2009). This requires employing more robust and participatory research that employs social science protocols well adapted to developing countries and which target the re-establishment of moribund traditional knowledge networks (Berkes, 2003). HWC research tends to be dominated by Western-trained scientists, who usually lack sufficient understanding of local cultural and social issues. Household drivers of conflict may differ from those operating at the community or national levels (Dickman, 2010; Suryawanshi et al., 2014), another reason for developing multipronged HWC programs.

These must be accompanied by a significant *scaling up of training and capacity-building efforts* aimed at strengthening and empowering each community's capacity for achieving lasting solutions to HWC. Clearly incentivized HWC programs must receive the highest priority (Dickman et al., 2011; Jackson & Wangchuk 2004; Mishra et al., 2003), along with emerging models for supporting ecosystem services and wildlife premium mechanisms (Dinerstein et al., 2013). However, these should only be provided *in support of implicitly and clearly linked actions to alleviate socioeconomic impacts of livestock losses* at both household and community levels. Any incentive has to be carefully integrated into the existing institutional governance framework and emerging markets in order to attain the necessary level of livestock management and production for achieving and then sustaining the potential economic, environmental, and social capital of this sector.

Education awareness and outreach initiatives need to be more active in targeting herders and district level livestock department staff to incrementally improve livestock guarding and rangeland management practices. Legislation aimed at enhancing national policies for integrated livestock development and biodiversity conservation is a critical need in some range countries. We need to alter the existing approach to livestock compensation with fundamental structural and governance changes that reward those herders following sound husbandry practices rather than the current practices of offering what amounts to largely unconditional payouts for depredation losses (Maheshwari et al., 2014). Monitoring should be undertaken within the framework of Adaptive Management with the full participation of all stakeholders.

In October 2013, the 12 snow leopard range countries and their partners unanimously endorsed the *Global Snow Leopard Ecosystem Protection Plan* (GSLEP) (available at: <http://en.akilbirs.com/>). With the support of interested organizations, they agreed to work together to identify and secure at least 20 snow leopard landscapes across the snow leopard's range by the year 2020, under the motto "20 by 2020." Snow leopard landscapes are defined as those areas supporting at least 100 breeding age snow leopards conserved with the involvement of local communities, that support adequate and secure prey populations, and that have functional connectivity to other snow leopard landscapes, some of which may cross international boundaries. The foundation of the GSLEP rests with the allied *National Snow Leopard and Ecosystem Protection Programs* (NSLEPs) developed and endorsed for implementation by each range state. Given the pivotal role for local people and government working together, and with support from national and international organizations, this initiative could represent an unequalled opportunity for advancing HWC across the high

mountains of Central Asia. Ultimately, the outcome will largely depend on the attention, commitment, and long-term will afforded by the concerned parties.

References

- Bagchi, S., & Mishra, C. (2006). Living with large carnivores: Predation on livestock by the snow leopard (*Uncia uncia*). *Journal of Zoology*, *268*, 217–224.
- Barrett, C. B., Alexander, J., Travis, C., & Dasgupta, P. (2011). On biodiversity conservation and poverty traps. *Proceedings of the National Academy of Sciences*, *108*, 13907–13912. www.pnas.org/cgi/doi/10.1073/pnas.1011521108
- Barua, M., Bhagwat, S. A., & Judah, S. (2013). The hidden dimensions of human-wildlife conflict: Health impacts, opportunity and transaction costs. *Biological Conservation*, *157*, 309–316.
- Berkes, F. (2003). Rethinking community-based conservation. *Conservation Biology*, *18*, 621–630.
- Dickman, A. J. (2010). Complexities of conflict: the importance of considering social factors for effectively resolving human-wildlife conflict. *Animal Conservation*, *13*, 458–466.
- Dickman, A. J., Macdonald, E. A., & Macdonald, D. W. (2011). A review of financial instruments to pay for predator conservation and encourage human-carnivore coexistence. *Proceedings of the National Academy of Sciences*, *108*, 13937–13944.
- Dinerstein, E., Varma, K., Wikramanayake, E., Powell, G., Lumpkin, S., Naidoo, R., . . . Kushlin, A. (2013). Enhancing conservation, ecosystem services, and local livelihoods through a wildlife premium mechanism. *Conservation Biology*, *27*, 14–23.
- Gurung G. S., Thapa, K., Kunkel, K., Thapa, G. J., Kollmar, M., & Mueller Boeker, U. (2011). Enhancing herders' livelihood and conserving the snow leopard in Nepal. *Cat News*, *55*, 17–21.
- Hussain, S. (2000). Protecting the snow leopard and enhancing farmers' livelihoods: A pilot insurance scheme in Baltistan. *Mountain Research and Development*, *20*, 226–231.
- Inskipp, C., & Zimmerman, A. (2009). Human-felid conflict: A review of patterns and priorities worldwide. *Oryx*, *43*(1), 18–34.
- Jackson, R., & Wangchuk, R. (2001). Linking snow leopard conservation and people-wildlife conflict resolution: Grassroots measures to protect the endangered snow leopard from herder retribution. *Endangered Species Update*, *18*, 138–141.
- Jackson, R., & Wangchuk, R. (2004). A community-based approach to mitigating livestock depredation by snow leopards. *Human Dimensions of Wildlife*, *9*, 307–315.
- Jackson, R., Mishra, C., McCarthy, T. & Ale, S. (2010). Snow leopards: Conflicts and conservation. In D. W. Macdonald & A. J. Loveridge (Eds.), *Biology and conservation of wild felids* (pp. 417–430). Cambridge, UK: Cambridge University Press.
- Li, J., Yin, H., Wang, D., Jiagong, Z., & Lu, Z. (2013). Human-snow leopard conflicts in the Sanjiangyuan Region of the Tibetan Plateau. *Biological Conservation*, *166*, 118–123.
- Madden, F. (2004). Creating coexistence between humans and wildlife: Global perspectives on local efforts to address human-wildlife conflict. *Human Dimensions of Wildlife*, *9*, 247–257.
- Maheshwari, A., Midha, N., & Cherukupalli, A. (2014). Participatory rural appraisal and compensation intervention: Challenges and protocols while managing large carnivore-human conflict. *Human Dimensions of Wildlife*, *19*, 62–71. doi:10.1080/10871209.2013.828247
- Mishra, C. (1997). Livestock depredation by large carnivores in the Indian trans-Himalaya: Conflict perceptions and conservation prospects. *Environmental Conservation*, *24*, 338–343.
- Mishra, C., Allen, P., McCarthy, T., Madhusudan, M. D., Bayarjargal, A., & Prins, H. T. (2003). The role of incentive programs in conserving the snow leopard. *Biological Conservation*, *17*, 1512–1520.
- Namgail, T., Fox, J. L., & Bhatnagar, Y. V. (2007). Carnivore-caused livestock mortality in Trans-Himalaya. *Environmental Management*, *39*, 490–496.
- Oli, M. K., Taylor, I. R., & Rogers, M. E. (1994). Snow leopard (*Panthera uncia*) predation of livestock—An assessment of local perceptions in the Annapurna Conservation Area, Nepal. *Biological Conservation*, *68*, 63–68.

- Suryawanshi, K. R., Bhatnagar, Y. V., Redpath, S., & Mishra, C. (2013). People, predators and perceptions: Patterns of livestock depredation by snow leopards and wolves. *Journal of Applied Ecology*, *50*, 550–560.
- Suryawanshi, K. R., Bhatia, S., Bhatnagar, Y. V., Redpath, S., & Mishra, C. (2014). Multiscale Factors Affecting Human Attitudes toward Snow Leopards and Wolves. *Conservation Biology*, *28*, 1657–1666.
- Treves, A., Wallace, R. B., & White, S. (2009). Participatory planning of interventions to mitigate human-wildlife conflicts. *Conservation Biology*, *23*, 1577–1587.
- Waylen, K. A., Fischer, A., McGowan, P. J. K., Thirgood, S. J., & Milner-Gulland, E. J. (2010). Effect of local cultural context on the success of community-based conservation interventions. *Conservation Biology*, *24*, 1119–1129.