

From conflict to coexistence: the challenges of the expanding human–wildlife interface

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In April 2023, the first international conference on human–wildlife conflict and coexistence (Zimmermann, 2023) took place at the University of Oxford, UK. Over 500 delegates from 70 countries attended, including academics, conservation practitioners and government and community representatives, confirming the growing importance of this subject. We share a common interest in the challenges of the expanding human–wildlife interface. Our work addresses the problems faced by communities living alongside elephants (Chen et al., 2016), jaguars (Caruso et al., 2020), tigers (Dhanwatey et al., 2013), leopards (Kittle et al., 2014), lions (Jacobsen et al., 2022), wolves (Eshete et al., 2015), caimans (Harris et al., 2022), Komodo dragons (Azmi et al., 2021) and other species.

In its simplest form conflict occurs when the presence and behaviour of wildlife have negative impacts on people and their interests and/or vice versa. The IUCN Species Survival Commission Human–Wildlife Conflict & Coexistence Specialist Group (IUCN, 2023, p. 3) defines human–wildlife conflict as ‘struggles that emerge when the presence or behaviour of wildlife poses actual or perceived, direct and recurring threat to human interests or needs, leading to disagreements between groups of people and negative impacts on people and/or wildlife’. This is a departure from earlier definitions in that it does not

consider all anthropogenic effects on wildlife, even though these effects do have implications for conservation.

With growing human populations and dwindling wild spaces, human–wildlife conflict is a so-called wicked problem: conflicts are becoming more frequent, serious and widespread, and extremely challenging to resolve. However, the diversity of research on this problem is expanding and we are now better placed to develop, implement and adapt approaches to solve the problem. This issue of *Oryx* presents case studies of human–wildlife interactions and the application of innovative tools to tackle human–wildlife conflict. We learn of emerging threats from the increasing reliance of polar bears on anthropogenic food (Smith et al., 2023) and from Asian elephants venturing into human-dominated landscapes to consume crops (Fernando et al., 2023). Matanzima et al. (2023) document crocodile attacks on people in Zimbabwe, which are more prevalent in the night and early morning, and Charerntantanakul et al. (2023) document the high mortality of flying foxes in Japan when farmers use loose nets to protect tankan oranges. Other aspects of human–wildlife interactions include the complex links between socio-economic factors and the use of giraffe body parts for consumptive and trophy uses (Muneza et al., 2023) and bio-cultural conflicts arising in the use of wildlife products as ceremonial ornaments in Kenya (Torrents-Ticó et al., 2023). Innovative tools to investigate human–wildlife conflict are being developed, such as scanning news stories to understand human–tiger interactions in Indonesia (Neo et al., 2023). But Djoko et al. (2023) alert us to the potential ineffectiveness of the relatively new technique of deploying diurnal bees to deter largely nocturnal elephants from entering crops.

During many engaging discussions at the Oxford conference it became evident that although the circumstances of and approaches to conflict differ across locations, and solutions are site-specific, coordinated strategies are required to address the threats resulting from conflict and to forge sustainable coexistence (Sillero-Zubiri et al., 2006). Issues of scale remain the greatest challenge: a suitable solution to a local problem (e.g. deploying beehives or electric fences to deter elephants) often cannot be scaled up, hindering meaningful progress.

However, two recent textbooks (Conover & Conover, 2022; Reidinger, 2022) offer a compendium of approaches to tackle conflict, covering the dilemmas of living alongside animals,

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from sparrows to elephants. In addition, in March, the Human–Wildlife Conflict & Coexistence Specialist Group published guidelines (IUCN, 2023) for understanding and mitigating human–wildlife conflict. The guidelines provide foundations and principles for good practice, focusing on approaches and tools for analysis and decision-making, and are not limited to any particular species or region.

Management of wildlife populations involved in conflict faces numerous issues relating to conservation, perceptions of nature, animal welfare and the economics of natural resources, and strategies to manage conflict must consider all of these matters. But coexistence cannot be secured without tolerance from people, and in-depth understanding of the determinants of peoples' attitudes is required, as in Shahi et al.'s (2023) examination of livestock depredation by snow leopards in the Himalayas.

Reflecting on the articles in this issue of *Oryx*, the Oxford conference and our collective professional experience, we identify two principal lessons. Firstly, to understand human–wildlife conflict properly, we need to dig into its multiple layers: the disputes, the underlying causes and any deeper issues. Many early reports described local people as obstacles to the management and recovery of wildlife populations, but the same people are now recognized as a vital part of the solution. Local communities living alongside wildlife have substantial roles as key players in the protection of declining wildlife populations, including outside protected areas. It is of paramount importance that local people are involved or—better still—become leaders in promoting coexistence and helping to revert often deeply rooted, negative views of wildlife. Secondly, every interaction is unique. Although textbooks and the new human–wildlife conflict guidelines offer a useful framework to assess the expanding human–wildlife interface, solutions to conflict and other negative human–wildlife interactions, and the promotion of coexistence, need to be managed on a case-by-case basis, to fit each unique set of ecological, cultural and economic circumstances.

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