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Editorial: Preventing zoonoses. Promoting biophilia

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Editorial on the Research Topic

Preventing zoonoses. Promoting biophilia

Introduction

Wild animals have an active role in the patterns of processes of most zoonoses – infectious diseases that can be transmitted between people and other animals (Kruse et al., 2004; Jones et al., 2008; Rahman et al., 2020). Throughout human history, infectious diseases originating in wild animals have had a profound impact on the evolution of *Homo sapiens* (Wolfe et al., 2007; Karesh et al., 2012). In the contemporary era, environmental degradation on a large spatio-temporal scales and the increasing globalization of trade and travel has led to a significant escalation in the threats posed by zoonoses to human, animal, and ecosystem health (Marano et al., 2007; Esposito et al., 2023). While enhancing public awareness to reduce the risks of zoonoses infection and spread is necessary, it can inadvertently instill or amplify fear of wildlife and the natural environment (biophobia). For instance, the increased reporting of zoonotic risks linked to bats, despite the rarity of human infection, has promoted a widespread biophobia towards bats, leading to the destruction of bat roosts and culling efforts that undermine both bat conservation and ecological health (Anderson and Reaser). There is a pressing need to strike a balance between public awareness of zoonotic risks and the promotion of biophilia – the innate human affinity for seeking positive connections with nature – to foster sustainable coexistence rather than fear-driven responses (Kirkey).

Recognizing that promoting biodiversity conservation through a positive human-nature relationship is a fundamental strategy for zoonosis prevention, this Research Topic explores the potential of integrating biophilia into zoonosis prevention efforts. By consciously and actively promoting biophilia, rather than biophobia, we can inspire a deeper appreciation for wild animals and the ecosystems they inhabit, thereby strengthening conservation efforts and, ultimately, addressing zoonotic risk at their source. Bringing together diverse perspectives and research, this Research Topic reports new scientific findings, catalyzes discussion, and provides practitioners with actionable insights bridging biodiversity conservation and public health.

The articles

The Research Topic opens with the Perspective “Wildlife culling as a biophobic response to zoonotic disease risk: why we need a One Health approach to risk communication” in which the authors establish the need for this Research Topic – well intended public health messaging aimed at preventing zoonotic outbreaks can instilled fear of wildlife (biophobia), leading to the wildlife culling and habitat destruction. The authors review several cases, including examples in which government agencies directed the mass killing of wildlife despite a lack of evidence that the species targeted was spreading the pathogens of concern (Anderson and Reaser).

The Perspective “What’s love got to do with it? A biophilia-based approach to zoonoses prevention through a conservation lens” provides something of an antidote to the fear-induced culling described in the previous article. The author proposes that public health communication strategies rooted in biophilia concepts may be more effective at generating empathy for both ecological and human communities, leading to greater willingness to leave zoonotic pathogen hosts and their habitats alone, further reducing spillover events and the ecological conditions that make spillover more likely (Kirkey).

During the SARS-CoV-2 pandemic, biophobic (aversive) responses towards bats were recorded in urban and rural areas of Mexico’s Yucatán Peninsula, making evident the need to monitor bat diversity, investigate species’ biology, and, perhaps most importantly, conduct educational activities that foster an affinity for bats. The authors’ Original Research described in “Ecological-based insights into bat populations in the Yucatán Peninsula under a One Health approach: coexistence or biophobia” establishes a baseline for zoonotic disease screening and prevention in the Yucatán Peninsula, as well as demonstrates the importance of coexistence with bats given their key role in maintaining the health of ecosystems (Sánchez-Soto et al.).

In the Policy and Practice Review “Protecting urban wildlife fauna, fighting zoonoses, and preventing biophobia in Brazil”, the authors explore how Curitiba, a Brazilian city, may serve as a model for a One Health approach enabling zoonoses prevention and biodiversity conservation to be achieved simultaneously. They place emphasis on the importance of nature connection (e.g., urban gardening) as an antidote to biophobia (Kmetiuk et al.).

“Veterinary clinicians as One Health messengers: opportunities for preventing zoonoses while promoting biophilia in the United States” is a Perspective on key constraints facing veterinarians as One Health communicators at the zoonotic disease/biodiversity conservation interface. Overcast proposes two solutions to integrate preventive zoonoses messaging and biophilia promotion within veterinary clinical practice: (1) the human-animal bond should be reconceptualized within veterinary clinical sciences as a community-level resource akin to natural capital, and (2) the veterinary extension workforce should be expanded to include agents facilitating local conservation and public health information exchange with companion animal veterinarians. The author’s intent is to empower veterinarians to communicate about

zoonotic disease risks and conservation, ensuring that One Health principles are embedded in everyday clinical interactions and broader community initiative.

The paper “Application of the MENTOR model to advance One Health by promoting bat conservation and reducing zoonotic spillover risk” is a Perspective on an international fellowship program, MENTOR-Bat, that incorporates One Health and conservation within its activities to advance evidence-based strategies for improving the well-being of bats, humans, and the environment. Protecting bat populations and their habitats ultimately reduces biodiversity threats, helps prevent pandemics, and supports essential ecosystem services (Smith et al.).

The Perspective “Love Them & Leave Them: science-based rationale for a campaign at the public health-conservation interface” envisions a social marketing campaign that promotes coupled messaging on zoonoses prevention and biodiversity conservation. The authors’ aim is to encourage public health communicators to provide responsible messaging on wildlife that may host zoonotic pathogens while simultaneously inspiring people to respect – ideally protect – wildlife and wildlife habitats to support the health of ecological systems. In other words, love wildlife but leave it alone – thereby mitigating the risk of exposure to pathogens (Reaser et al.).

In the complementary Perspective “Art can provide a means for promoting biophilia as an aspect of zoonoses risk communication” the author makes the case for strategically employing art as an effective method to communicate zoonotic risk while promoting biophilia. She notes that employing art as a method of communication has been explored by various scientific fields but has not been sufficiently applied to infectious disease messaging (Beaumont).

“Responsible biophilia for zoonosis prevention through a cultural lens” reflects on the experience and existing knowledge of diverse human-wildlife interactions across cultures that are associated with zoonotic risks. The Perspective includes case studies that illustrate the interconnections between biophilia and zoonotic risk and explores integrated approaches to achieve both public health and conservation goals while considering culture and livelihood needs (Li).

Call to action

The potential for fear-driven responses to public information about wildlife-associated diseases presents challenges to biodiversity conservation and human health. Wildlife might be killed. Habitats might be destroyed. People might get infected while engaged in wildlife culling and habitat destruction. Zoonoses risk mitigation approaches that couple disease prevention goals with conservation goals are urgently needed. They are essential and must be sparked and informed by the essential relationship – the connection – between nature and human nature. Protecting public health necessitates that we acknowledge people as an aspect of natural systems and cycles. The healthier the planet, the healthier the planetary inhabitants.

The articles in this Research Topic make a strong case for greater awareness of biophilia-based zoonoses prevention. Further, they call for responsible public health communication that aims to safeguard biodiversity. Finally, this body of work reminds us of the importance of supporting conservation efforts that protect ecosystems and prevent the emergence of disease. Ultimately, this work reminds us that the health of people, wildlife, and the planet are deeply interconnected.

Author contributions

JR: Conceptualization, Supervision, Project administration, Writing – review & editing, Funding acquisition, Writing – original draft. HL: Writing – review & editing, Writing – original draft. IK: Writing – original draft, Writing – review & editing. TB: Writing – review & editing, Writing – original draft. SS: Writing – original draft, Writing – review & editing.

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