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## PERSPECTIVE OPEN ACCESS

# Conservation Rangers Urgently Need Mental Health Provision

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**Received:** 26 September 2025 | **Revised:** 9 February 2026 | **Accepted:** 25 February 2026

**Keywords:** institutional support | occupational stressors | policy and governance | psychological health | ranger wellbeing

## ABSTRACT

Conservation rangers face extreme occupational and environmental stress, including exposure to conflicts, poor working conditions, and limited occupational support, placing them at high risk of psychological harm. Ranger wellbeing is central to effective and just biodiversity conservation, requiring institutional support, training, and context-sensitive interventions underpinned by robust mental health monitoring.

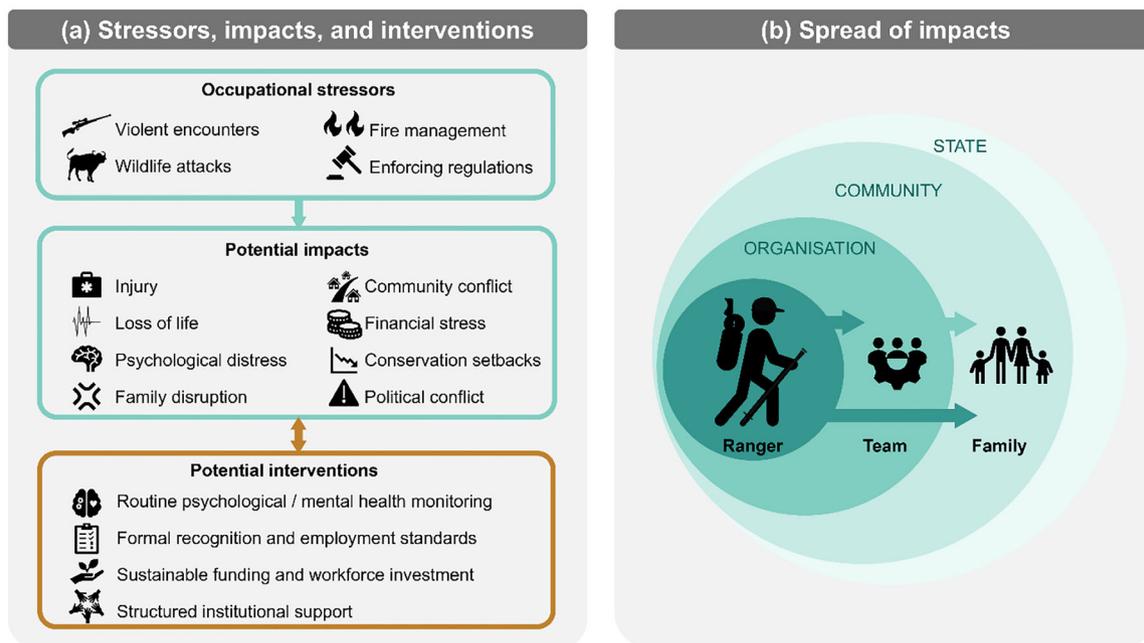
## 1 | Introduction

The Global Biodiversity Framework (GBF), adopted by 196 parties in 2022, set out 23 ambitious targets to halt and reverse biodiversity loss by 2030 (CBD 2022). Target 3, a flagship of the GBF, commits to nearly doubling the current extent of protected and conserved areas, to cover 30% of the world's surface by 2030 (CBD 2022). Yet, expanding coverage alone will not secure conservation outcomes unless these areas are “effectively conserved and managed” (CBD 2022). Currently, many of the world's protected and conserved areas are under-resourced and under-staffed, reflecting

persistent underfunding and recruitment challenges, especially in remote or insecure regions (Anagnostou et al. 2022; Appleton et al. 2022). This chronic underinvestment limits management capacity and simultaneously places heavy burdens on conservation rangers (frontline workers who safeguard nature, hereafter referred to as rangers). The mental health of these frontline rangers is heavily impacted by difficult working conditions and occupational hazards (Pienkowski et al. 2023a), most especially conflict with people, ranging from verbal abuse to violent, armed encounters with rule-breakers (Soofi et al. 2024; Moreto 2016; Anagnostou et al. 2022). This is especially problematic,

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**FIGURE 1** | Framework of (a) occupational stressors eliciting potential physical, psychological and social wellbeing impacts, and potential interventions, (b) with impacts spreading from rangers through to the state.

considering that achieving the global “30 × 30” target will require an estimated fivefold increase in the ranger workforce, from 286,000 to 1.5 million (Appleton et al. 2022). Without commensurate investment in human and institutional capacity, scaling up area-based conservation will only amplify the considerable pressures already being felt by rangers. This scenario would effectively undermine the long-term conservation gains of the “30 × 30” target. This perspective has two aims: (I) to draw attention to the scale of mental health burden on rangers, and (II) to propose priority actions to support ranger mental health and wellbeing.

## 2 | Pressures Faced by the Ranger Workforce

Rangers perform diverse roles, including monitoring biodiversity, engaging with communities, enforcing environmental laws, managing ecotourism, and addressing human–wildlife interactions (Figure 1; Stolton et al. 2023). These responsibilities expose rangers to a wide range of occupational pressures. Many operate in remote areas, often away from their families and with limited access to basic healthcare, safe accommodation, essential supplies and in most cases with inadequate skills and equipment (Maxwell et al. 2020; Anagnostou et al. 2022; Appleton et al. 2022; Stolton et al. 2023). Rangers frequently face physical risks from dangerous wildlife, hazardous terrain, and, in some regions, encounters with unauthorized resource users including hunters, loggers, and miners, who may be armed (Soofi et al. 2024; Weir et al. 2024). These risks are further compounded by operational challenges such as irregular work shifts, insufficient or faulty equipment, inadequate training, low pay, and limited institutional support (Moreto 2016; Pienkowski et al. 2023a; Stolton et al. 2023).

In some contexts, rangers may be ordered to perform duties that extend well beyond their professional remit. For example, they may be instructed to engage in peacekeeping, border security, or armed conflicts (Lunstrum et al. 2025; Weir et al. 2024; Budichau et al. 2025). Such role expansions introduce additional occupational pressures and blur professional boundaries, underscoring the importance of safeguarding rangers’ conservation mandate (Day et al. 2023; de Hemptinne 2023).

Conservation law enforcement often occurs in socially and politically complex settings. Efforts to protect biodiversity can intersect with contested resource use, creating tensions with local livelihoods, food security, and cultural practices (Maxwell et al. 2020). Combined with the physical and organizational challenges outlined above, these social pressures collectively shape the working environment of rangers. In some regions, militarization of conservation further amplifies danger and operational complexity, highlighting the importance of a “politics of care” approach that prioritizes ranger wellbeing alongside biodiversity objectives (Lunstrum et al. 2025; see Table S1 for definitions).

## 3 | Impacts on Ranger Mental Health and Conservation Outcomes

Exposure to sustained occupational pressures can have substantial effects on rangers’ mental health. Mental health refers to psychological functioning and the presence or absence of distress, while wellbeing encompasses broader positive states, including life satisfaction, balance, sense of purpose, feelings of safety, and the ability to cope with challenges (Patel et al. 2018; WHO 2022).

Rangers regularly encounter a combination of stressors, whether physical (e.g., injury or sleep disruption), psychological (e.g., substantial cognitive load or emotional strain), or social (e.g.,

loneliness, strained family relationships) (Anagnostou et al. 2022; Pienkowski et al. 2023a; Stolton et al. 2023). Political and structural factors, such as role expansion beyond conservation mandates, can exacerbate these stressors, increasing the risk of trauma and moral injury (Litz et al. 2009; Lunstrum et al. 2025). These mental health impacts have prompted recent calls (e.g., Lunstrum et al. 2025) to demilitarize conservation and establish a “politics of care” that embeds clear professional boundaries while acknowledging rangers’ safety needs in contexts where armed threats exist (Lunstrum et al. 2025).

The scale and severity of these exposures emphasize the potential for trauma-related outcomes. Between 2006 and 2021, 2351 rangers were killed on duty, with 42.2% in armed confrontations (Galliers et al. 2022). A global survey of 7110 rangers across 28 countries found that most (82%) had faced life-threatening situations, nearly a quarter (24%) had been seriously injured, and over half had experienced threats or violence (WWF 2019). Repeated and accumulating exposure to such stressors places substantial, yet under-recognized strain on rangers’ wellbeing and family life (Moreto 2016; Anagnostou et al. 2022; Pienkowski et al. 2023a). Unmet mental health needs in this context are likely to produce widespread, preventable suffering (Patel et al. 2018).

Individual responses to occupational stressors vary. Some rangers demonstrate resilience, defined as the capacity to maintain or recover psychological functioning under stress (Bonanno 2004; Jones et al. 2022). Resilience depends not only on personal traits but also on social and organizational support, including peer networks, training, and management practices (Seaborn et al. 2022). Others experience longer-term psychological effects. For example, exposure to the injury or death of a colleague can generate a compassion cost, defined as the emotional burden of witnessing others’ suffering (Pihkala 2020; see Table S1 for definitions). Such experiences may contribute to prolonged grief and increase the risk of post-traumatic stress disorder, which is characterized by persistent distress and functional impairment following traumatic events (Oliveira et al. 2023). Rangers may also experience moral injury, or psychological harm that arises when individuals witness or participate in acts that violate deeply held moral values (Litz et al. 2009; Table S1).

Supporting ranger mental health is, therefore, both an ethical imperative and a practical necessity. Most other high-risk frontline professions, including military, police, paramedics, and firefighters, benefit from substantial formal recognition and more established support systems than rangers, reflecting wider acknowledgment of the risks and consequences associated with these occupations (Anagnostou et al. 2022). Rangers experience similar stressors, and deserve consideration, care, and protection of their wellbeing, regardless of conservation outcomes (Patel et al. 2018; WHO 2022). Additionally, mental health directly influences work capability. Psychological distress can reduce performance, increase absenteeism, and lower productivity (Lerner et al. 2004; Pienkowski et al. 2023b; Montano et al. 2017). In conservation contexts, emerging evidence demonstrates burnout (Lerner et al. 2004) and poor wellbeing result in lower engagement and self-reported performance among conservation professional rangers (Loffeld et al. 2025). Evidence from other high-risk occupations, such as policing and firefighting, further shows that psychological strain can impair decision-making under pressure

(Jones 2017; Moreno et al. 2024). Conversely, targeted resilience-building and psychological skills interventions can enhance both mental health and functional performance (Patel et al. 2018; Oliveira et al. 2023; Moreno et al. 2024).

Rangers often lack access to basic healthcare or dedicated psychological support. Their wellbeing may be affected by suicidality, loneliness, and moral injury, which can erode individual and collective resilience (Moreno et al. 2024). Although direct evidence connecting ranger mental health to conservation outcomes is limited, a plausible pathway exists. Poor mental health can reduce individual performance, which in turn may undermine conservation effectiveness (Ojha and Gairola 2014; Loffeld et al. 2025). In the absence of mental health support, prolonged exposure to stress and danger can erode morale, increase the risk of misconduct, and weaken trust with local communities (Moreto 2016; Anagnostou et al. 2022; Appleton et al. 2022; Stolton et al. 2023). Conversely, improved working conditions and institutional support can enhance job satisfaction, engagement, and staff retention (Pienkowski et al. 2023a).

Despite the ethical and operational importance, mental health support for rangers remains scarce. Formal counseling pathways, trained supervisors, and referral mechanisms are rare, particularly in low- and middle-income countries, where ratios of less than two mental health workers per 100,000 people are common (Moreto 2016; WHO 2022; Pienkowski et al. 2023a).

#### 4 | Four Priority Actions to Support Ranger Mental Health and Wellbeing

Addressing the gap in mental health provision requires sustained investment in training, institutional support, development of peer-to-peer networks, and routine mental health monitoring. These can be incorporated into existing international frameworks, organizations, and declarations, including the Chitwan Declaration, the Hyeres Declaration, the International Ranger Federation (IRF), and the Universal Ranger Support Alliance (URSA) employment and welfare standards. Together, these advocate for protecting rangers from nonconservation duties, clearly demarcating their professional boundaries, and embedding wellbeing into organizational and political structures (Lunstrum et al. 2025). Ensuring such support enables rangers to fulfill their roles safely, while upholding dignity and human rights, as well as longer-term sustainability of the workforce (Jones 2017; Anagnostou et al. 2022; Pienkowski et al. 2023a; Moreno et al. 2024).

To address these challenges, we propose four interconnected interventions (Figure 1):

First, routine and proactive psychological monitoring. Self-reported or administered assessments can detect early signs of distress that could lead to absenteeism or potential risk of misconduct, thereby helping to prevent long-term harm. Mental health monitoring programs should be designed to safeguard rangers and their families, who depend on their emotional availability and income (Figure 1). In practice, this could involve periodic assessments conducted by trained occupational health staff or peer-to-peer screening programs, supported by confi-

dential reporting mechanisms (Jones 2017; Harden et al. 2021; WHO 2022). To be effective, mental health monitoring should be embedded within existing management structures and aligned with international frameworks such as the World Health Organization's Guidelines on Mental Health at Work (WHO 2022). Low-cost digital tools (e.g., wellbeing apps, mobile surveys, rotational check-ins) could also be adapted to local contexts to support consistent monitoring (Moreno et al. 2024). Regular evaluation of program effectiveness and perceived benefits should also be included in monitoring programs. Given the stigma often associated with seeking mental health support, particularly in developing countries, programs should be coproduced to reflect the social, cultural, and economic contexts of ranger work rather than imposing standardized solutions.

Second, rangers should be formally recognized as essential workers by national governments. As recommended by the IRF, the Chitwan, and the Hyeres Declarations, such recognition should be accompanied by secured employment, unionization, and welfare standards, alongside clear training requirements outlined in global competency frameworks. Training should include resilience and psychological skills programs (structured interventions for managing stress, recovering from incidents, and maintaining effective functioning under operational pressure; Harden et al. 2021) like those implemented in other high-risk policing contexts (Moreno et al. 2024). Training should also include predeployment programs to prepare rangers for operational challenges and stressors, including skills such as coping strategies, stress management, emotion regulation, decision-making under pressure, peer support, and promotion of group cohesion (Harden et al. 2021).

Tailoring training to the operational, environmental, and social challenges that rangers face will ensure it is practical, contextually relevant, and directly applicable to daily ranger work. For example, it may address encounters with wildlife offenders, navigating remote and hazardous terrain, and how to manage conflict with local communities (Soofi et al. 2024). Recognizable branding could further ensure that rangers receive the same respect and protection as humanitarian workers, particularly in conflict areas (Stolton et al. 2023). Importantly, training and psychological interventions must be supported by basic enabling conditions, including safe working environments, access to healthcare, and adequate equipment, without which such programs are unlikely to be effective or sustained.

Third, we advocate for sustainable and long-term financing for protected and conserved area management. Adequate funding underpins fair wages, improved working conditions, risk allowances and incentives, sufficient staffing, continual professional development, and investment in infrastructure (Moreto 2016; Anagnostou et al. 2022; Appleton et al. 2022). Financing mechanisms such as trust funds, debt-for-nature swaps, and other long-term financing approaches, which can secure dedicated resources for ranger wellbeing, should explicitly allocate funding rather than treating it as a discretionary cost. Such investments are fundamental to building a professionalized and internationally recognized ranger workforce.

Lastly, structured, long-term institutional mechanisms are needed to embed wellbeing within ranger governance.

Bodies such as the World Commission on Protected Areas, the International Union for Conservation of Nature (IUCN), and the IRF can play a central role in advancing this agenda. Embedding wellbeing at the institutional level requires formal supervision, clear mental health policies, and accessible referral pathways for professional support. Institutionalized mental health provision, leadership training, and peer-support structures should strengthen motivation, accountability, and professionalism within the ranger workforce. Conversely, neglecting these governance systems risks erosions in morale, compromised wellbeing, and weakened conservation outcomes (Moreto 2016; Anagnostou et al. 2022; Pienkowski et al. 2023a).

Ranger wellbeing is central to effective and ethical conservation. Chronic psychological burdens, including trauma, moral injury, and distress, threaten both individual wellbeing and operational performance (Anagnostou et al. 2022; Pienkowski et al. 2023a). Embedding mental health support through institutional mechanisms, targeted training, and sustained investment enhances engagement, professionalism, and long-term workforce sustainability (Lerner et al. 2004; Loffeld et al. 2025; Moreno et al. 2024). Although empirical evidence directly linking ranger mental health to conservation outcomes remains limited, earlier studies indicate that supporting wellbeing improves work performance, decision-making, and role fulfillment, thereby contributing to conservation effectiveness (Ojha and Gairola 2014; Stolton et al. 2023). As global initiatives such as the 30×30 target expand conservation responsibilities, ensuring that rangers are adequately supported is essential to safeguard both their wellbeing and sustainable conservation outcomes. Ranger wellbeing cannot be treated as an afterthought; it must be recognized as a core element of conservation policy and practice moving forward.

## Acknowledgments

This perspective was shaped by the first author's loss of ranger friends and insights from contacts with rangers over the years. MS, TP, JCF, and NBZ were supported by Research England's Expanding Excellence in England (E3) Fund, UK Research and Innovation. DJI is funded by a UKRI Research and Innovation Future Leaders Fellowship (grant no. MR/W006316/1 awarded to DJI). FAVSJ and TK received funding from the European Research Council (ERC) under the Horizon 2020 research and innovation program (grant agreement no 755965 awarded to FAVSJ, grant agreement no 101001239 awarded to TK).

## Data Availability Statement

The authors have provided the required Data Availability Statement, and if applicable, included functional and accurate links to said data therein.

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