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Life on the Frontline Conservation: The Job Satisfaction and Motivation Relationship of Eco-Guards in Protecting Tropical Biodiversity, Eastern DR Congo

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Rangers, or eco-guards, are indispensable actors in biodiversity conservation, particularly within protected areas (PAs) in conflict-affected regions such as the eastern Democratic Republic of Congo (DRC). However, these frontline defenders often work in life-threatening conditions with minimal institutional backing. This study examines how job satisfaction influences motivation and performance among rangers in four ICCN-managed PAs: Maiko and Kahuzi-Biega National Parks, Itombwe Nature Reserve, and Luama Hunting Domain. Between November 2022 and February 2023, 160 rangers and PA program heads were surveyed through semi-structured interviews using a mixed-methods approach. Findings reveal that 63% of rangers experience low job satisfaction, mainly due to poor salaries, erratic bonuses, limited promotion prospects, weak communication, and lack of judicial protection. Despite facing violence and insecurity, 64% reported joining the profession out of a passion for nature. Notably, higher income and longer service were positively correlated with satisfaction. Crucially, the study highlights that enhancing ranger wellbeing has direct conservation benefits: improving salaries, housing, medical support, and legal safeguards can increase ranger morale and retention, reduce corruption, and enable more consistent field presence. Increased ranger density and performance-based incentives (e.g., through the SMART system) can strengthen anti-poaching efforts and biodiversity monitoring. Furthermore, offering structured career development and psychosocial support helps maintain a resilient workforce capable of operating in volatile areas. These measures echo the Chitwan Declaration (IRF, 2019) and urge policymakers and conservation actors to prioritize ranger welfare as a strategic pillar in conservation planning. This research provides practical pathways to bolster PA effectiveness in high-risk landscapes.

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INTRODUCTION

In the contemporary landscape of organizational development, performance enhancement increasingly hinges on an in-depth understanding and efficient management of human capital. Of all human resource dynamics, employee motivation and job satisfaction stand out as pivotal variables influencing organizational outcomes. Motivation not only channels employee efforts but also fosters continuous engagement and persistence, making it a strategic lever for driving institutional goals forward. This assertion holds true even for public sector organizations such as the *Institut Congolais pour la Conservation de la Nature* (ICCN), the Congolese authority tasked with biodiversity protection. In this regard, motivation acts as a powerful internal force that stimulates individuals to initiate actions and persevere in achieving their assigned tasks despite challenges. The centrality of motivation to employee conduct and organizational success makes it a vital subject of inquiry for both academic researchers and human resource (HR) practitioners (Parola et al., 2019). The urgency of this matter intensifies in public service contexts, where the effective functioning of organizations can

have profound implications for national development and environmental sustainability.

Job satisfaction, a closely related concept, has long been a cornerstone in the study of organizational behaviour. According to Locke (1969), job satisfaction is "the pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values." This definition underscores the emotional and evaluative dimensions of job satisfaction, framing it as a subjective response to the extent to which one's job aligns with personal goals and values. Greene (1989) extended this understanding by emphasizing the complexity inherent in job satisfaction and dissatisfaction. He highlighted how employees' assessments of various work environment factors—ranging from compensation to interpersonal relations—contribute to their overall sense of fulfilment or discontent.

As global organizations grapple with how best to boost performance in a competitive and uncertain world, the relevance of human resource management practices, particularly those related to motivation and satisfaction, becomes more

pronounced. Within this context, employee motivation emerges not only as a functional requirement but also as a strategic imperative for sustained organizational success (Wilkinson et al., 2010). Performance is influenced by a confluence of variables including knowledge, technical skills, and above all, motivation (Campbell, 2007). Motivation governs the direction, intensity, and persistence of human effort over time, directly impacting productivity and institutional results. This paper will use the terms *eco-guard* and *ranger* interchangeably to refer to conservation professionals engaged in frontline biodiversity protection roles.

Despite its importance, there remains a limited understanding of how organizational features influence job satisfaction in both public and private sector environments (Hansen & Høst, 2012). This gap is especially pronounced when examining how these organizational characteristics modulate the relationship between Public Service Motivation (PSM) and job satisfaction (Scott & Pandey, 2005). PSM offers insights into why certain individuals, including rangers in particularly adverse working conditions, maintain an unwavering commitment to their roles. For these employees, the desire to serve the nation or protect the environment often supersedes material concerns, acting as a psychological buffer against job dissatisfaction.

In the specific context of eco-guards in the DRC, job satisfaction is indispensable for effective job performance (Anderson, 2013; Oswald, 2012), given the multifaceted and challenging nature of their responsibilities. Traditionally, job satisfaction has been conceptualized as an individual's general attitude toward their job (Weiss et al., 1967). Empirical research supports a positive correlation between job satisfaction and job performance (White, 2008). From the perspective of human relations theory, job satisfaction is considered a mediator linking social dynamics in the workplace—such as interactions with supervisors, colleagues, and management structures—to broader

organizational outcomes like efficiency and productivity (Parola et al., 2019). Nonetheless, the connection between human resource management and organizational success often receives inadequate attention in the realm of ranger-led conservation efforts (Kehoe & Wright, 2010).

The International Ranger Federation (2021) defines a ranger as an individual "responsible for safeguarding nature, and cultural and historical heritage, and protecting the rights and well-being of present and future generations" while simultaneously facilitating recreation and community engagement within protected areas (PAs). Rangers also serve as vital links between local communities, the administration of PAs, and conservation authorities.

Protected areas form the foundation of biodiversity conservation across the globe (Stoner et al., 2007). In the Democratic Republic of Congo (DRC), efforts to support and expand PAs have spanned more than three decades, with objectives that encompass not only biodiversity conservation but also the preservation of ecosystem services and cultural heritage (Cazalis et al., 2020). The national government has pledged to increase PA coverage to 15% of the country's land area, approximately 351,750 square kilometres (Sayer, 1992).

The role of eco-guards is formally recognized in Congolese law. According to Law No. 14/003 of February 11, 2011, on nature conservation, eco-guards, alongside conservators, comprise the personnel responsible for the surveillance of PAs (RDC/Journal Officiel, 2014). Surveillance, in this legislative context, transcends the mere identification of infractions; it encompasses the broader mandate of mitigating threats to PAs, including but not limited to poaching (Kimoni, 2024). Surveillance is intended to monitor ecological integrity, assess the effectiveness of management interventions, and gauge the impact of diverse threats on conservation outcomes (Spira et al., 2019; Fancy et al., 2009). The legal foundation for monitoring PAs is provided in Article 41 of the

aforementioned law, which stipulates that monitoring must be conducted by national staff, with auxiliary support from police or military forces only when necessary. The conservation mission itself—distinct from surveillance—is delegated exclusively to ICCN's eco-guards and park wardens, as outlined in Article 38 (RDC/Journal Officiel, 2010). The ICCN operates both in-situ and ex-situ, governed by Law No. 08/009 of July 7, 2008, which defines general provisions applicable to public institutions (RDC/Journal Officiel, 2009).

Despite the critical importance of protected and conserved areas (PCAs), many suffer from poor management (Singh et al., 2021). Effective management is a prerequisite for mitigating threats and preserving biodiversity, yet data reveals that only 24% of surveyed PAs globally meet acceptable management standards (Juffe-Bignoli et al., 2014). In the DRC, systemic issues such as insufficient staffing, limited training opportunities, ageing personnel, and poor compensation mechanisms severely undermine conservation efforts. ICCN, which oversees PAs in the country, employs roughly 1,329 rangers (ICCN, 2003), the majority of whom are middle-aged, married, and responsible for large families. The financial constraints are acute: the total operational budget is roughly USD 3 million (ICCN, 2015), with a median funding level below USD 1.18 per hectare per year (Bruner et al., 2001). Rangers receive meagre salaries between USD 50 and 60 per month, supplemented by performance-based bonuses ranging from USD 80 to 1,000. However, the bonus system is punitive in nature, subtracting pay for missed days rather than rewarding high performance.

In terms of staffing, the average is one ranger per 62 square kilometres—1.86 times less than the recommended density of three rangers per 100 square kilometres (Bruner et al., 2001). Moreover, education levels among rangers remain a concern: only 15% possess university degrees, while 52% have technical training, and the remainder have

minimal educational qualifications (Inogwabini et al., 2005).

Globally, rangers are essential actors in the defense of biodiversity (Singh et al., 2021; 2020; Harter et al., 2004). The estimated 1.5 million rangers worldwide (McPherson, 2021) fulfil multiple roles, including community outreach, ecological monitoring, tourism facilitation, law enforcement, wildlife relocation, data management, conflict mediation, education, and even border security (Kuiper et al., 2021; Singh et al., 2021; Anagnostou, 2020). In addition to law enforcement, their work extends to fire control and habitat maintenance—tasks crucial to ecosystem service preservation (Singh et al., 2021; Moreto, 2016).

Nevertheless, the occupational hazards are significant. Many rangers work in treacherous environments with minimal resources, low compensation, and constant threats from armed groups, poachers, and wildlife (Eliason, 2011; Ogunjinmi et al., 2008). In spite of these conditions, rangers often demonstrate exceptional courage and resilience (Singh et al., 2021). Yet such attributes should not excuse the systemic neglect of their working conditions. Studies conducted in Africa and the United States confirm that unfavourable work environments can erode ranger motivation, morale, and job satisfaction (Eliason, 2011; Ogunjinmi et al., 2008). Eco-guards in the DRC, for example, contend with the added dangers posed by armed conflict, disease exposure, and vast territories under their care (Belecky et al., 2021). These forests harbour flagship species targeted by poachers and are located in zones where firearms are widely available due to historical conflict (Spira et al., 2019). Since the 1990s, hundreds of rangers have been killed in the eastern DRC while fulfilling their duties (Marijnen, 2017).

The magnitude of these challenges underscores the necessity of professionalizing PA management, placing it on par with established sectors such as education and healthcare (Appleton, 2016). Sustainable conservation outcomes demand a

workforce of skilled professionals that includes state employees, indigenous communities, NGOs, and private partners.

Given these realities, this study seeks to investigate what motivates rangers to engage in and remain committed to their occupation, and how job satisfaction influences their job performance. Building on the established correlation between satisfaction and performance (Judge et al., 2001), this study aims to deepen our understanding of the role PSM plays in this dynamic, particularly within organizations motivated by societal service. Empirical findings suggest a strong positive relationship between PSM and job satisfaction (Vandenabeele, 2009; Bright, 2008), though research on the specific factors influencing eco-guards' satisfaction in the DRC's protected areas remains limited.

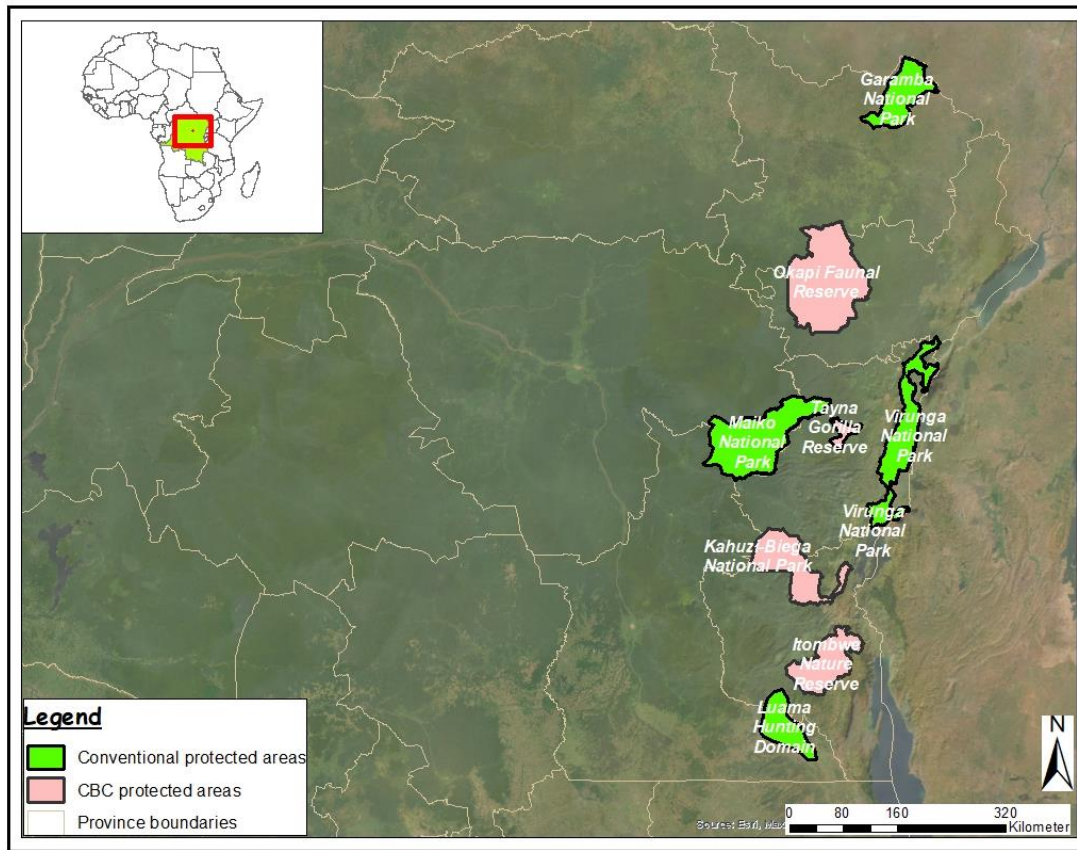
In light of the increasing threats to forest ecosystems and the inefficiencies of conventional approaches, scholars and practitioners advocate for more radical, transformative conservation strategies (Onyango, 2013; Kimani, 2012; Mathu, 2007). The urgent need to arrest forest degradation calls for well-supported, motivated, and professionally trained rangers whose job satisfaction is not only a human resources

concern but a pillar of successful conservation policy.

MATERIALS AND METHODOLOGY

Study Area

The eastern region of the Democratic Republic of Congo (DRC) represents a globally significant biodiversity hotspot. It comprises a wide range of ecosystems, extending from lowland rainforests (600–1,000 meters above sea level) to transitional forests (1,000–1,700 meters), and culminating in montane forest zones (1,700–3,475 meters) within the Albertine Rift, reaching their highest point at Mount Mohi (Mubalama et al., 2021). This geographical and altitudinal variation supports the highest vertebrate diversity in Africa, including 402 species of mammals—34 of which are endemic—and 5,793 known plant species, 567 of which are endemic to the region (Plumptre et al., 2007). Further west, the terrain transitions into humid forests along the Lualaba River, situated around 400 meters in elevation. These forests are notable for their relatively intact canopy coverage despite growing anthropogenic pressures. Importantly, the national deforestation rate in the DRC remains modest, estimated between 0.2% and 0.3% annually (MECNT, 2009).

Figure 1: Study Sites Location

Four Protected Areas (PAs) were strategically selected for this study: Maiko National Park (MNP), Kahuzi-Biega National Park (KBNP), Itombwe Nature Reserve (INR), and the Luama Hunting Domain (LHD). These sites (Figure 1) were deliberately chosen to reflect a diversity of conservation challenges, ecological zones, and governance regimes. For instance, while MNP and KBNP are established national parks with strict protection mandates, INR is a relatively recent nature reserve with community-involved management, and LHD represents a regulated-use hunting area. The contrast between these PAs allows for a comparative analysis across different levels of enforcement, resource pressures, and ranger responsibilities. All four PAs fall under the jurisdiction of the Congolese Wildlife Authority, the Institut Congolais pour la Conservation de la Nature.

At the time of data collection, 577 rangers, or "eco-guards," were employed across the study sites (Mubalama et al., 2024). The ranger force was predominantly male, with women representing a small fraction—21 in total: 16 in KBNP, four in MNP, and one in INR. On average, the rangers were 45.5 years old and reported large household sizes, with an average of seven children (range: 0–11).

Mixed-Methods Approach to Assess Ranger Motivation and Working Conditions

This study adopted a mixed-methods research design (Tashakkori & Teddlie, 2010), incorporating both quantitative and qualitative approaches to evaluate ranger motivation, job satisfaction, and working conditions across the four PAs. Data were collected over a four-month period, from November 2022 to February 2023, through a combination of structured and semi-structured instruments.

Quantitative data were gathered via pre-tested questionnaires administered to 160 of the 365 rangers (43.8%) working across the four PAs. In addition, a separate questionnaire was administered to the heads of patrol posts to capture managerial insights into ranger motivation, perceived challenges, and work environment issues. At the INR and LHD, 37 out of 45 eco-guards participated in the survey. Prior to administration, all surveyors were trained to ensure standardized and accurate data collection. Respondents were fully informed of the study objectives and assured of data confidentiality. Participation was voluntary, with consent obtained before each interview.

Sampling Strategy and Survey Implementation

A convenience sampling method was used to select rangers present at PA headquarters during data collection, capitalizing on periods when most staff were available due to patrol rotations and briefings. Although 22 rangers stationed at remote outposts could not be reached due to logistical constraints, the final sample size was sufficient to achieve theoretical saturation, where additional responses would provide diminishing new insights.

To ensure managerial perspectives were adequately represented, purposive sampling was used to select heads of patrol units based on their leadership roles and field experience (Palinkas et al., 2015). The semi-structured format of interviews and open-ended questions encouraged rangers to speak candidly, often using idiomatic expressions in local languages. These responses were later interpreted with cultural sensitivity to uncover emic perspectives on ranger motivation and institutional challenges.

Qualitative Analysis and Thematic Categorization

The qualitative component of the study focused on analyzing open-ended responses from the ranger and patrol leader surveys. Descriptive coding (Saldaña, 2009) was used as the initial method of organizing textual data. This involved identifying

key topics and labelling them with concise codes to facilitate categorization. These codes were then clustered into broader thematic categories, including (i) Ranger Work Experience: This encompassed responses related to salaries, benefits, promotion prospects, intrinsic motivations for conservation work, and aspirational goals for environmental protection, and (ii) Work Environment and Institutional Support: Included themes on field equipment and logistics, security threats, training opportunities, judicial support, management quality, and external pressures such as poacher interference or organizational mistreatment.

Recurring phrases, patterns, and emergent ideas were distilled through an iterative coding process, which allowed the researchers to refine themes while preserving respondent narratives. This thematic structure provided a grounded framework for interpreting ranger perspectives and identifying both structural and motivational drivers of satisfaction and dissatisfaction.

Quantitative Instruments and Data Analysis

Job satisfaction was assessed using the Job in General (JIG) Scale, which rates overall satisfaction on a scale from 1 (very dissatisfied) to 4 (very satisfied). This instrument, developed by Ironson et al. (1989), is noted for its high internal reliability, with consistency coefficients ranging from 0.91 to 0.95.

Work motivation was examined across eight indicators: general motivation, salary, allowances, bonuses, promotions, training opportunities, communication with supervisors, and recognition. The work environment was similarly evaluated using eight other indicators, such as health support, equipment adequacy, fuel access, exposure to injuries, fatalities from armed attacks, unexplained deaths, treatment by supervisors, and legal consequences for released poachers.

Pilot testing of the instruments was conducted with 20 rangers who had undergone professional training

at Mweka Wildlife College (Tanzania), Kitabi College of Conservation and Environmental Management (KCCCEM, Rwanda), and Garoua Wildlife College (Cameroon). Cronbach's alpha confirmed the reliability of the composite variables: 0.68 for work motivation indicators and 0.71 for work environment indicators.

Quantitative data were analyzed using SPSS version 25.0 (SPSS, 2017). Descriptive statistics, such as means, frequencies, and percentages, were generated. Additionally, Chi-square tests and Pearson's Product-Moment Correlation Coefficients (PPMC) were applied to assess relationships between variables such as age, education level, years of service, residence location, secondary livelihoods, income brackets, perceived promotion prospects, and job satisfaction levels.

RESULTS AND DISCUSSION

Characteristics of Eco-guard Respondents

This study utilized a self-administered questionnaire with 37 items, structured around six thematic components: leadership style, motivation practices, reward systems, employee expectations, working environment, and job satisfaction. The Job in General (JIG) Scale (Ironson et al., 1989) was employed to assess overall job satisfaction. Demographic and occupational variables captured included age, gender, family size, education level, monthly income, and work experience (see Table 1). This methodological approach allowed for a broad yet nuanced understanding of the factors influencing ranger motivation and job satisfaction.

Table 1: Personal Characteristics of Eco-guards in the Selected Study Areas (n = 160)

Variables	Frequency	Percentage
Age (years)		
Below 30	46	28.7
31-40	70	43.7
41-50	34	21.2
Above 50	10	6.2
Gender		
Male	150	93.7
Female	10	6.2
Marital status		
Single	22	13.7
Married	138	86.2
Number of wife(ves)		
1	70	43.7
2	56	35.0
3	26	16.2
4	8	5.0
Family size		
1-5	74	46.2
6-10	58	36.2
11-15	14	8.7
16-20	14	8.7
Religion		
Islam	140	87.5
Christianity	18	11.2
Traditional	2	1.2

Variables	Frequency	Percentage
Education level		
Primary	44	27.5
Secondary	105	65.6
Advanced level	4	2.5
Diploma/Adv. Diploma level	2	1.2
Monthly income (CDF)		
125.000-150.000	88	55
151.000-200.000	20	12.5
201.00-250.000	26	16.2
251.000-300.000	9	5.6
301.000-400.000	7	4.4
401.000-450.000	5	3.1
451.000-500.000	3	1.9
> 500.000	2	1.2
Work experience (In years)		
1-5	33	20.6
6-10	36	22.5
11-15	26	16.2
16-20	22	13.7
21-25	12	7.5
Above 25	2	1.2

Job Satisfaction: Influence of Age and Service Length

Among the rangers surveyed, a significant proportion (63%, $n = 160$) reported low job satisfaction. Only 27% ($n = 33$) indicated moderate satisfaction, while a small fraction (10%, $n = 6$) expressed high satisfaction (Table 2). These findings align with the broader literature on occupational burnout and morale erosion in conservation workforces, particularly in high-risk, under-resourced contexts (Henson et al., 2016).

On average, rangers had 17 years of experience in protected areas (PAs), with individual durations ranging from 1 to 32 years. Notably, those with the longest tenures tended to express the least satisfaction, suggesting that longevity in the field may not equate to sustained motivation. This trend is also reflected in age distribution: the median age of those reporting low satisfaction was 49, compared to 44 and 43.5 for those with medium and

high satisfaction, respectively. Age and years of service were positively correlated (Spearman's $r = 0.75$, $P < 0.001$), indicating a cumulative effect of prolonged exposure to stressors over time.

Motivation Deficit: Salaries, Benefits, and Promotion Barriers

The majority of rangers (48%) cited salary and benefits as their primary motivation for entering the profession—framing the job as a “means of survival.” However, widespread dissatisfaction regarding compensation emerged (Table 2). Approximately 72% of all respondents, including all seven patrol post heads, reported that current salaries and bonuses were inadequate. These findings echo Jachmann (2008), who emphasized the critical role of financial incentives in maintaining patrol effectiveness.

Table 2: Selected PAs Overall Job Satisfaction Frequency (n = 160)

Overall job satisfaction	Level of satisfaction		
	High	Medium	Low
Frequency	16	43	101
Percentage	10	27	63

The absence of promotion opportunities was another major demotivating factor, mentioned by 96.3% of participants (Table 3). Among those who believed advancement was unlikely, 76% reported job dissatisfaction, compared to 57% of those who

remained optimistic about future promotions. Such stagnation can breed frustration and hinder long-term commitment, as suggested by Moreto et al. (2016 and Ogunjinmi et al. (2008).

Table 3: Opinion of Eco-guards on Their Work Motivation (n = 160)

Statement	Agree	Disagree
1. My salary is too poor	115(72.0)	45(28.0)
2. No bonus at the end of the year	156(97.5)	4(2.5)
3. No incentive for performance	128(80.0)	32(20.0)
4. Promotion is infrequent and not as at when due	154(96.3)	6(3.7)
5. I am poorly motivated	115(72.0)	45(28.0)
6. Allowance given is too poor relative to the hazards of the job	152(95.0)	8(5.0)
7. I am not allowed to go for further training (BSC or MSc)	152(95.0)	8(5.0)
8. Low level of communication between management and rangers	130(81.2)	30(18.8)

Intrinsic Motivation vs. Structural Challenges

Despite these setbacks, a significant proportion (64%) of rangers reported being driven by intrinsic values such as nature conservation. For 11%, this mission served as their primary source of inspiration. Additional motivators included national service (5%), professional honour (5%), and familial legacy—e.g., one ranger followed in his father's footsteps. These align with findings from Moreto et al. (2016), who noted that intrinsic motivators could enhance ranger resilience.

Nonetheless, intrinsic motivation appeared insufficient to counterbalance systemic shortcomings. A staggering 97.5% of respondents felt poorly motivated (Table 3), citing poor remuneration, insufficient allowances, lack of performance-based incentives (92.5%), and infrequent or delayed promotions (96.3%). Education and training opportunities were largely inaccessible (95%), and poor communication with PA leadership (92.5%) further eroded morale. Such structural inadequacies, highlighted in works by Spira et al. (2019) and Eliason (2011), illustrate the urgent need for institutional reforms.

Table 4: Coefficients, Standard Errors (SE) and p-values for the Final Ordinal Model with the Dependent Variable of Perceived Respect from Local Communities

Variable Significance Level	Coefficient	SE	P-Value
Local (Yes; Baseline: No)	0.15	0.08	0.07 .
Age	0.01	0	0.06 .
Education	0.63	0.18	0 ***
Training Provision	0.7	0.06	0 ***
Resource Provision	0.14	0.06	0.02 *

Table 5: Coefficients, Standard Errors (SE) and p-values for the Final Ordinal Model with Job Satisfaction as the Dependent Variable and Various Demographic and Occupational Factors as the Independent Variables

Variable Significance Level	Coefficient	SE	P-Value
Local (Yes; Baseline: No)	0.12	0.08	0.15
Gender (Female; Baseline: Male)	0.22	0.14	0.1
Education -	0.59	0.18	0 **
Marital Status (Married; Baseline: Unmarried)	0.28	0.13	0.02 *
Necessity of Ranger Work	1.18	0.15	0 ***
Effectiveness of Ranger Work	0.7	0.17	0 ***
Time Worked in Conservation Area	0	0	0.14
Hours Worked per Week	0	0	0.01 *
Satisfaction in Rewards for Ranger Work	0.9	0.12	0 ***
Training Provision	0.54	0.06	0 ***
Relations with Colleagues	1.75	0.17	0 ***
Relations with Communities	0.71	0.11	0 ***
Experience of Hostility from Community Members	0.22	0.08	0 **
Experience of Emotional and Physical Symptoms	-0.28	0.05	0 ***

Significance levels are denoted by ‘.’ for very low (0.1), ‘*’ for low level (0.05), ‘**’ for intermediate level (0.01), and ‘***’ for high level (0.001).

While rangers cited their love of nature and job enjoyment as reasons for staying, practical constraints dominated. Financial insecurity, hazardous working conditions, and family separation were key concerns. Nearly 92% had faced life-threatening situations on duty, and many reported disappointment with weak judicial responses—particularly when poachers were released post-arrest, undermining their efforts and morale. This aligns with the findings by Henson et

al. (2016), who stress the importance of judicial robustness in conservation law enforcement.

Interestingly, only 36.7% of rangers wished for their children to follow their career path, underscoring the perceived risks and low returns of the profession. Despite the honour associated with the role, prevailing conditions rendered it unattractive for future generations.

Security and Institutional Barriers to Conservation Efficiency

Field insecurity remains a significant constraint. Rangers frequently operate in remote, under-resourced patrol posts, lacking essential

infrastructure and vulnerable to attacks by armed groups. Such conditions demoralize staff and reduce patrolling efficiency. Patrol leaders emphasized the need for post-renovations and new constructions to enhance operational safety.

Compounding this is the lack of judicial protection. Rangers defending themselves against armed aggressors risk legal repercussions if injuries or fatalities occur. From 2015 to 2018, two rangers were killed and several injured. Additionally, perpetrators of environmental crimes are often released, leading to potential retaliation and social alienation—particularly when arrests involve local community members. These patterns reflect the broader governance issues in conservation enforcement (Singh et al., 2021; Woodside et al., 2021).

Suggestions for improvement included formal recognition (e.g., medals such as the International Ranger Award or Abraham Award), merit-based promotions, housing benefits, educational support for children, and retirement pensions. These align with the recommendations of Henson et al. (2016) and White et al. (2010), who underscore the need for integrated welfare strategies.

Community Relations: Education, Training, and Trust

Ranger-community dynamics are deeply influenced by demographic and occupational variables (Table 4). Rangers from local backgrounds often enjoyed stronger community rapport due to shared cultural knowledge. Trust levels rose with perceptions of adequate training, higher education, and resource availability. These same variables correlated positively with job satisfaction (Table 5).

Notably, married rangers and those perceiving their work as impactful reported greater satisfaction. Conversely, long work hours detracted from satisfaction, while peer support and performance rewards improved it. Paradoxically, recent experiences of community hostility correlated

positively with satisfaction, suggesting complex underlying dynamics.

One possible explanation is that community hostility, while emotionally taxing, may reinforce rangers' sense of purpose and validation of their conservation role, particularly when they perceive such conflict as stemming from their effectiveness. Alternatively, it may be that rangers in contentious zones receive more support or recognition from management. These nuances warrant further investigation.

Consistent with Moreto et al. (2017) and Woodside et al. (2021), sufficient training and support systems are essential for fostering mutual trust. Positive community relations can lead to greater rule compliance, improved incident reporting, and heightened ranger well-being. However, these relationships are shaped by broader political, historical, and institutional contexts (Singh et al., 2021; Dutta, 2020), highlighting the need for context-sensitive conservation approaches.

Linking Well-being to Policy and Practice: Recommendations

Job satisfaction among rangers is pivotal for conservation success (Henson et al., 2016). A younger workforce is often linked with higher morale (Miller et al., 2009), yet respondents voiced concern about extended assignments in conflict-prone, remote areas. While army-supported joint patrols exist, these can provoke community backlash, as rangers are viewed as militarized agents. Spira et al. (2017) advocate for a demilitarization of conservation enforcement, allowing rangers to refocus on ecological stewardship.

Though housing benefits are appreciated, excessive reliance on them may hinder workforce mobility and adaptability. Rangers with higher satisfaction often viewed their work as contributing to national development (Moreto et al., 2016). Instead of salary increases alone, non-financial motivators—such as effective leadership, recognition, and opportunities

for meaningful work—can yield substantial morale improvements (Henson et al., 2016; Jachmann, 2008).

Recognition systems, career pathways, and incentive-based structures are central to retention (Ogunjinmi et al., 2008). Technology tools like SMART can empower rangers if used for support rather than surveillance (Gray & Kalpers, 2005). In Ghana, incentive-driven approaches led to a 59% increase in patrol productivity (Jachmann, 2008). Ultimately, ranger welfare must be mainstreamed in conservation strategies (White et al., 2010; Judge et al., 2001).

Limitations and Future Directions

The study employed convenience sampling, which may limit the generalizability of findings to broader ranger populations. Moreover, reliance on self-reported data introduces potential bias, as respondents may overstate or understate certain aspects due to social desirability or fear of reprisal. Contradictory findings—such as the positive correlation between community hostility and job satisfaction—require further qualitative inquiry to unpack contextual variables and psychological drivers.

Future research should adopt mixed-methods approaches, integrating ethnographic and participatory techniques to deepen insights into ranger-lived experiences. Longitudinal studies could also assess the impact of proposed interventions over time.

In sum, this research highlights the complex interplay between institutional support, intrinsic motivation, community dynamics, and personal well-being in shaping ranger effectiveness. Enhancing ranger welfare is not merely a moral imperative but a strategic necessity for achieving enduring conservation outcomes.

CONCLUSION

Ranger job satisfaction is a cornerstone of conservation effectiveness, particularly in high-

biodiversity yet high-risk regions like the eastern Democratic Republic of Congo (DRC). This study reaffirms that while many eco-guards remain deeply committed to conservation ideals, systemic barriers such as inadequate pay, poor living conditions, and insufficient managerial communication significantly undermine their motivation and long-term performance. These structural challenges lead to emotional burnout, low morale, and reduced operational capacity—ultimately jeopardizing the success of conservation programs in tropical forest landscapes (Spira et al., 2019).

In alignment with the 2019 Chitwan Declaration (IRF, 2019), targeted reforms are urgently needed. Policymakers and conservation agencies must increase operational budgets to address critical shortages in health supplies, ranger housing, mobility tools, and surveillance equipment. Such investments would not only improve ranger efficiency but also signal institutional respect for their sacrifices. Furthermore, professionalizing ranger roles—akin to soldiers or emergency responders—requires formalizing recruitment, creating clear promotion pathways, and delivering regular training (Appleton, 2016; Bruner et al., 2001). These measures serve both practical and psychological needs, enhancing both competence and recognition.

Improving ranger well-being also demands a holistic approach. Beyond physical safety, ensuring access to clean water, electricity, mental health care, and family benefits (e.g., school fee subsidies or housing stipends) must become policy priorities. Formal recognition through awards or public commendations, such as those proposed in the Chitwan Declaration, can foster a culture of appreciation and boost morale among field teams. Establishing long-term incentives such as retirement packages and health insurance will help retain experienced staff and increase their commitment.

To fully understand the evolving dynamics of ranger motivation, longitudinal and cross-regional

comparative research is essential. These studies would illuminate how factors such as cultural context, leadership quality, and risk exposure interact with job satisfaction over time. Such evidence-based insights can guide the design of adaptive and inclusive conservation systems that centre human dignity alongside biodiversity goals.

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