IMPACT OF THE COVID-19 PANDEMIC ON RANGERS AND THE ROLE OF RANGERS AS A PLANETARY HEALTH SERVICE

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ABSTRACT

Rangers play an indispensable role in maintaining balance between people and the natural world by protecting and managing protected and conserved areas. Despite occupying this key role, rangers are facing many challenges across organisational, occupational and personal fronts that hinder the delivery of their duties. The COVID-19 pandemic has exacerbated these challenges and made the fight against the illegal killing of wildlife, illegal logging, illegal harvesting of non-timber forest products, encroachment, and other environmental crimes in protected and conserved areas even more difficult. 915 survey responses were generated from individual rangers from 60 countries in order to understand how they perceived the impact of COVID-19 on rangers and their work in protecting and conserving protected areas around the world. The findings indicate that different aspects of ranger work have been negatively impacted due to the pandemic and the associated actions of authorities and illegal actors. The study also reveals differing regional perceptions of the impact of the pandemic on protected and conserved areas and ranger work. The results of the survey, which provide useful insights into the challenges facing rangers during the current global crisis and indicate where actions may be required to mitigate an impending loss of biodiversity, are used to support four recommendations in the paper.

Key words: conservation areas, community, pandemic, protected areas, survey, rangers

INTRODUCTION

The COVID-19 pandemic is an example of the health repercussions that can result from imbalance between humans and nature caused by excessive exploitation (Thompson, 2013; Magouras et al., 2020). The driving forces behind outbreaks of this and similar zoonotic diseases are: destruction of, and encroachment into, wildlife habitats (Bloomfield et al., 2020; Gibb et al., 2020; Plowright et al., 2017; Loh et al., 2015; Butler, 2008; Goldberg et al., 2008; Ferreira et al., 2021 illegal wildlife trade (Aguirre et al., 2020); and consumption of wildlife meat sold in unregulated markets (Hockings et al., 2020; UNODC, 2020; UNEP & ILRI, 2020; Bisson et al., 2015).

Rangers fulfil an indispensable role in maintaining the delicate balance between humans and nature by protecting and managing natural resources, moderating human interaction with nature and providing the primary deterrence to illegal activities within protected and conserved areas (PCAs) (Rowcliffe et al., 2004; Tranquilli et al., 2014). Their role in mitigating the risks of zoonotic disease spill-over may therefore be considerable (Bergen, 2020). Previous research has

shown the organisational, occupational and personal challenges that rangers face in discharging their duties (Belecky et al., 2019; Moreto et al., 2019; Singh et al., 2020). The COVID-19 pandemic has exacerbated the struggle of rangers against the illegal killing of wildlife, illegal logging, unpermitted harvesting of non-timber forest products (NTFPs), encroachment and other environmental degradation in PCAs (Hockings et al., 2020; Waithaka, 2020; World Bank, 2020). In many parts of Asia, Africa and South America, there are reports that deforestation has increased during the pandemic (Fair, 2020), including a 77 per cent increase in global forest loss alerts recorded by Global Land Analysis and Discovery (GLAD) compared to the average from 2017-2019 (WWF, 2020).

In some countries, ranger services are considered to be essential or enabling services and rangers have therefore been expected to continue working unchanged throughout the pandemic; elsewhere, their activities have been sharply reduced because of staff cuts, re-appropriation of operational budgets, limited access to health care equipment and re-allocation to other duties to control the spread of the disease. In some cases, patrols and similar services have been withdrawn because community support is no longer available (FFI, 2020). With increased workloads and reduced resources, rangers are even less able to address the threats facing PCAs (Bergen, 2020; Hockings et al., 2020).

Rangers, occupying this role as a planetary health service, are crucial in the implementation of the 'One Health' approach, a collaborative effort of multiple health and science professions, together with their related disciplines and institutions – working locally, nationally and globally – to attain optimal health for people, domestic animals, wildlife, plants and our environment (Mackenzie & Jeggo, 2019). Given the importance of rangers in safeguarding PCAs, reducing the exploitation of wildlife and helping to maintain a healthy planet, and noting the high possibility of future pandemics, it is essential to understand the impacts of the COVID-19 pandemic on them. The purpose of this paper, the first of its kind, is to throw light on what the COVID-19 pandemic has meant for rangers and their day-to-day work through a global survey. We also provide case studies from two countries to show the impact of the pandemic at the site level. The paper provides broad recommendations and flags concerns that may arise in the future.

Ranger on patrol in India during the COVID-19 Pandemic © Prem Kawar

METHODS

Two primary data sources were used for this paper: a) a global survey; and b) case studies from independent surveys conducted in Pakistan and India.

Global Survey

This global survey was undertaken by World Wide Fund for Nature (WWF), Global Wildlife Conservation (GWC), International Ranger Federation (IRF) and the University of Florida[1]. The online survey consisted mainly of close-ended questions aimed at understanding the impact of the COVID-19 pandemic on the ranger workforce. It explicitly targeted rangers, defined as a "person involved in the practical protection and preservation of all aspects of wild areas, historical and cultural sites" (IRF, 2019). The survey was developed in English and translated into Spanish and French. The Spanish and French translations were verified by a third party. It contained 52 questions, grouped into seven areas.

Data were gathered between August and September 2020 using the online survey application 'Qualtrics'. The survey was shared through Facebook, Twitter and WhatsApp; and through emails to regional and national ranger associations, and conservation organisations that support rangers. It was also emailed to over 500 individual rangers that participated in the 9th World Ranger Congress (2019). 1,200 surveys were returned. After removing incomplete surveys from the data, 915 completed surveys were used for the present study (Figure 1).

Limitations

This global study is not without limitations. Many rangers do not possess the skills, equipment and connectivity necessary to complete an online survey.

Though it was delivered in three major languages (English, Spanish and French), not all rangers are fluent in one of these languages. While the case studies provide greater detail on how aspects of ranger work have been affected, they need further evaluation to justify broad conclusions. Some of the initiatives or programmes that may have or are currently being affected by the COVID-19 pandemic, such as budget cuts, may not have been fully implemented at the time of the survey, and therefore may not be captured. The impact of mass migration and unemployment is yet to be fully felt in protected and conserved areas.

So, while the study provides a snapshot of the current global situation, it cannot be used to draw conclusions at national levels. Moreover, because the varied sample sizes in different geographic regions may have biased the results, or not be statistically significant, any extrapolation to the regional level – which has been done at some points in discussing the global survey results below – should be interpreted with caution.

Case Study: Pakistan

A case study from Pakistan, also conducted in May and June 2020 before the online survey, aimed to provide information separate to that of the primary survey. It utilised a questionnaire which was designed to establish: (1) rangers' involvement in additional tasks besides their designated jobs, such as relief support and maintaining law and order; and (2) support- or relief-related initiatives that rangers have undertaken in their individual capacities, such as donations and relief provision for nearby local communities. The survey, which was conducted in the local language (Urdu), was delivered to 157 rangers from 33 protected areas of all kinds across the country. The questionnaire was delivered through emails to individual rangers where possible, and email groups, Facebook and other social media-based wildlife and environmental groups of Pakistan. Responses were also captured via direct phone calls by the survey team; interviewees were informed of the purpose of the interview and their verbal consent obtained.

Case Study: India

A separate and independent case study was conducted in India to capture the responses of family members of rangers who were posted at outposts during the pandemic. This used four open-ended questions: What concerns do you have about your husband/wife/son/daughter who is based in the forest during the COVID-19 pandemic? What challenges are you facing in the absence of your husband/wife/son/daughter during the COVID-19 pandemic? How do you feel about the steps taken by the government to protect rangers and their families during the COVID-19 pandemic? What do you think the government/NGOs/public can do to help rangers and their families during the COVID-19 pandemic? Fifty-two interviews were conducted in 34 protected areas in 18 states of India in September 2020, using telephone enquiries in Marathi, Hindi or English. The surveyor was briefed on the purpose and interview protocols before the administration of the survey. Before each interview, the surveyor explained the purpose of

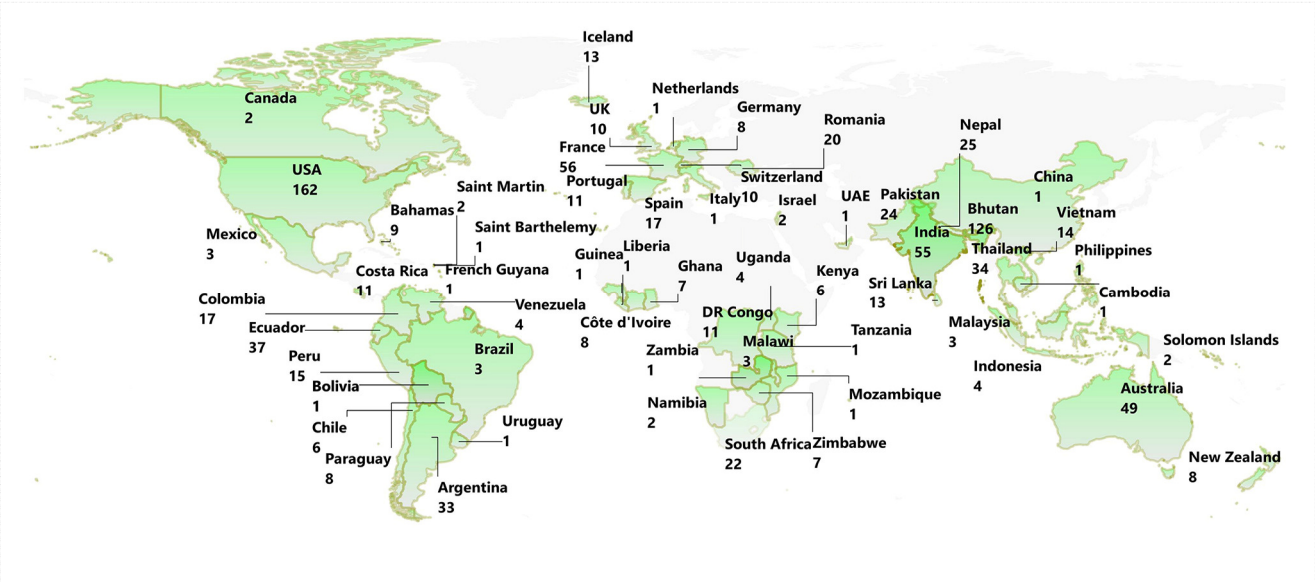

Figure 1. The countries where surveys were conducted with number of responses for each country[2]

the interview and sought the verbal consent of respondents.

RESULTS FROM THE GLOBAL SURVEY

Response rates: Responses were received from 62 countries with the USA having the most responses (Figure 1).

Demographic information: Of those respondents who indicated a gender, 79 per cent were male and 21 per cent female. The age of respondents was between 19 and 74 years-old, with ranger experience ranging from one to 40 years. The online survey was designed to target only rangers, with the very first question asking the respondent, "Are you a ranger or not?" If not, then the respondent was prevented from progressing with the survey. Therefore, 100 per cent of the responses are from rangers.

Locational information: Some 28 per cent of rangers were living and working at a remote outpost with no access to medical help during the time of the survey. More than half those in South America said they are based in a remote location, followed by Asia (40.5 per cent), Africa (38.6 per cent), Central America and Caribbean (26.9 per cent) and Europe (12.2 per cent). Very few reported being located remotely in North America and Australia / Oceania.

Threats to protected and conserved areas: While it is generally believed that threats and pressures to PCAs have increased due to the COVID-19 pandemic, respondents provided mixed responses to this question (Figure 2). Most respondents believed that the threat that had grown most was 'other pressures', for example the collection of non-timber forest products (NTFPs) and grazing: more than 58 per cent agreed that this had increased in their country of operation.

Sharp geographical variations were revealed by the data. For example, while more than half of respondents from South America, Africa, and Central America and Caribbean 'strongly agreed' or 'agreed' that subsistence and commercial hunting had increased (Table 1), fewer than 20 per cent of North American and European respondents accepted that proposition. Similar contrasts were shown in respect of illegal logging and encroachment, and other pressures. There is a stark contrast again between South America and other regions in respect of perceptions of increased rates of logging and encroachment. This reflects the different threats faced by different regions and the need for further research to understand the drivers of those threats.

Impact on protected and conserved area management activities: Key protected area conservation activities across all regions have been affected by the COVID-19

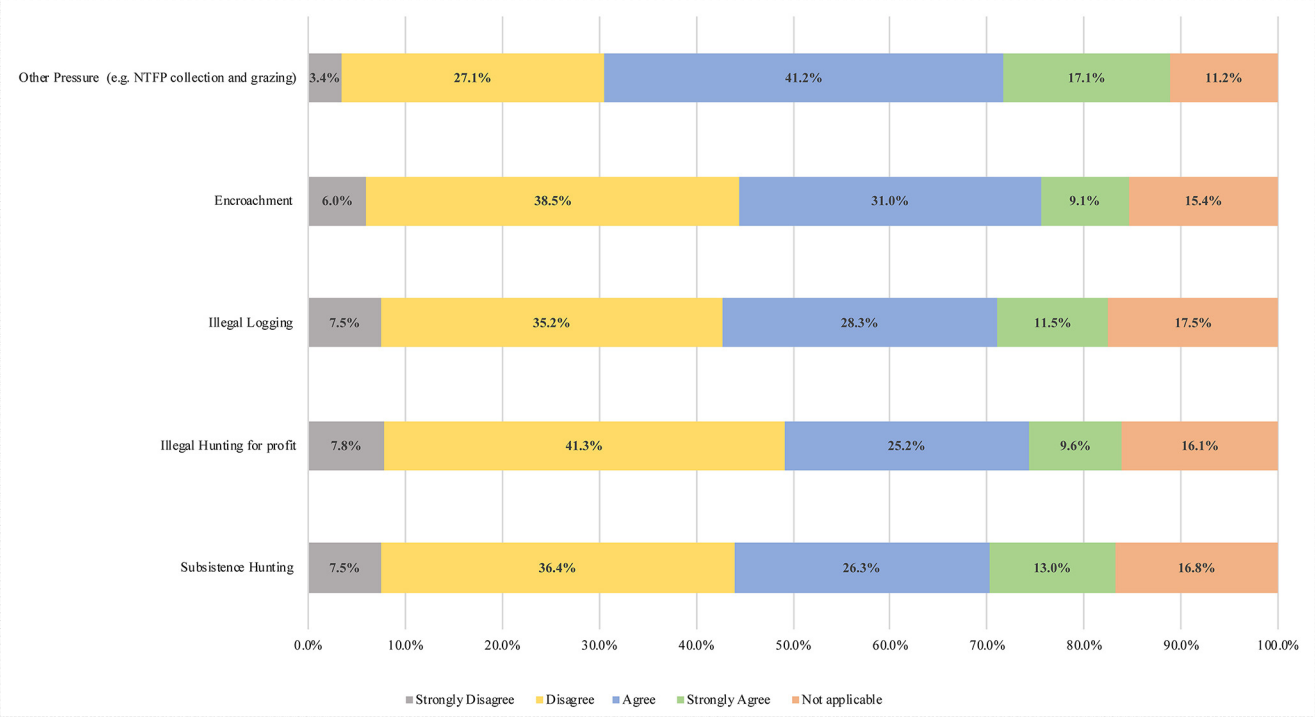

Figure 2. Responses to the question: "Since the start of the COVID-19 pandemic in your country, what threats have increased in your protected and conserved areas?"

Table 1. Percentage of rangers by region that 'Strongly agreed' and 'Agreed' with the statement: "Since the start of the COVID-19 pandemic in your country, [threat/pressure] has increased."

Region	Subsistence Hunting	Commercial Hunting	Illegal Logging	Encroachment	Other Pressure (e.g. NTFP collection and grazing)
South America	70.5%	60.0%	79.1%	80.0%	79.1%
North America	17.9%	11.5%	9.0%	39.1%	50.0%
Asia	48.1%	38.5%	47.3%	31.6%	60.8%
Africa	76.3%	68.9%	57.2%	50.7%	70.2%
Europe	8.2%	15.7%	15.7%	18.7%	41.8%
Australia & Oceania	16.3%	21.8%	49.1%	45.5%	56.4%
Central America and Caribbean	56.0%	64.0%	44.0%	36.0%	52.0%

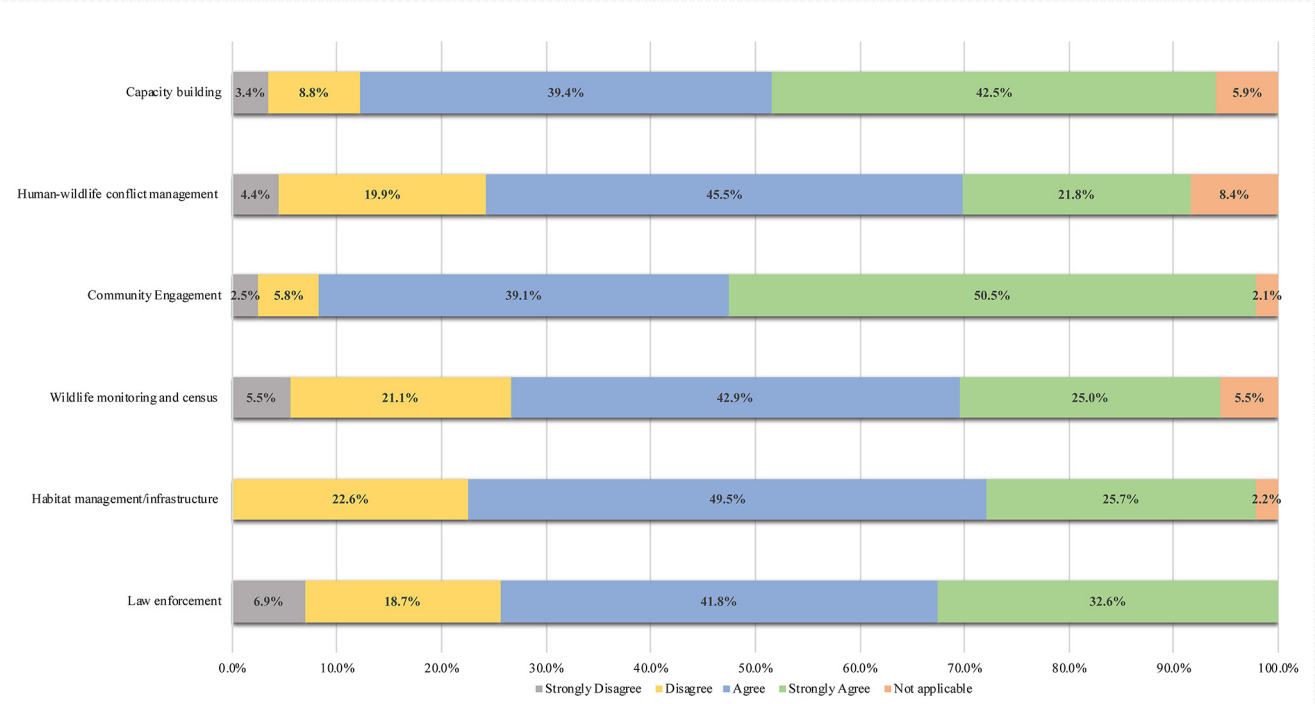

Figure 3. Responses to the statement: "COVID-19 has negatively impacted the daily operations of protected/ conservation area"

pandemic (Figure 3). Community engagement activities were often the most affected. Pandemic control measures have affected community outreach, awareness and community conservation activities. The fear among most rangers of contracting COVID-19 when interacting with members of the local community and visitors, has affected their work in community engagement. Lockdowns and movement control orders may have also had this effect. Many law enforcement activities may have been negatively impacted, with reductions in essential operation supplies needed for daily patrols, as well as the closure of courts. Wildlife monitoring is identified as the least impacted activity (Figure 3). This may be because there is seasonal variation in wildlife monitoring activities or because such monitoring is most often done in remote areas free of contact with non -rangers. It is also possible that respondents overlooked basic wildlife monitoring undertaken on regular patrols during the pandemic. Many rangers were re-assigned to other tasks related to addressing the pandemic. The additional tasks included:

- Conducting international border patrols to control the spread;
- Delivering essential goods (e.g. rations) to communities and vulnerable groups;
- Enforcement of social distancing and use of masks among park visitors and communities around the

park;
- Enforcement of social distancing and gathering rules
- Supporting homeless populations;
- Creating awareness (e.g. posting signs, educating the public) among the communities;
- National disaster service assignments (e.g. enforcement of public health orders);
- Filling in on other labour/tasks due to lack of seasonal staff;
- Providing emergency medical assistance;
- Supporting authorities in track and tracing;
- Undertaking more frequent decontamination of public use areas in the park;
- Increasing patrols to ensure social distancing and use of face masks; and
- Distributing health kits (e.g. masks, sanitisers) to local communities.

Staffing and budgets: When asked whether the COVID-19 pandemic had affected staffing and budgets, nearly a third of all rangers 'strongly agreed' that budget cuts due to COVID-19 had negatively affected their day-to-day work (e.g. less fuel and rations). This includes impacts on community engagement (over 75 per cent), law enforcement activities (over 60 per cent) and human–wildlife conflict management activities (nearly 60 per cent). Less than ten per cent of rangers from Australia / Oceania and Europe reported budget cuts; in Africa, more than half of all rangers did so.

In addition to the operational work, more than half of the rangers reported that their personal life has been impacted due to the budget cuts which led to salary delays, reductions in pay and subsequent impacts on living conditions. More than one in four rangers said that their salary has been reduced or delayed and nearly 20 per cent of rangers reported that colleagues had been laid off from their jobs due to COVID-19 related budget cuts. More than a third of all rangers in Central America and Caribbean countries reported being laid off, closely followed by South America and Africa. In Asia, the figure was one in five and in Europe less that one in ten. Respondents whose salaries had been reduced were asked to describe the reduction. Nearly a quarter (n=150) reported reductions in ranger salaries and some rangers (n=32) reported reduced allowances and benefits; however, some of these reductions were temporary and may last only for a few months.

Many conservation sites, particularly in developing countries, depend on income provided by tourism and donations from conservation organisations. We enquired as to whether study participants believed that tourism positively contributed to PCA management and almost three-quarters of respondents agreed that it did. When asked whether tourism had been negatively impacted by the COVID-19 pandemic, nearly 85 per cent of rangers agreed (Figure 4). Most also reported the negative impact of the COVID-19 pandemic on other revenue sources such as donations (Figure 4).

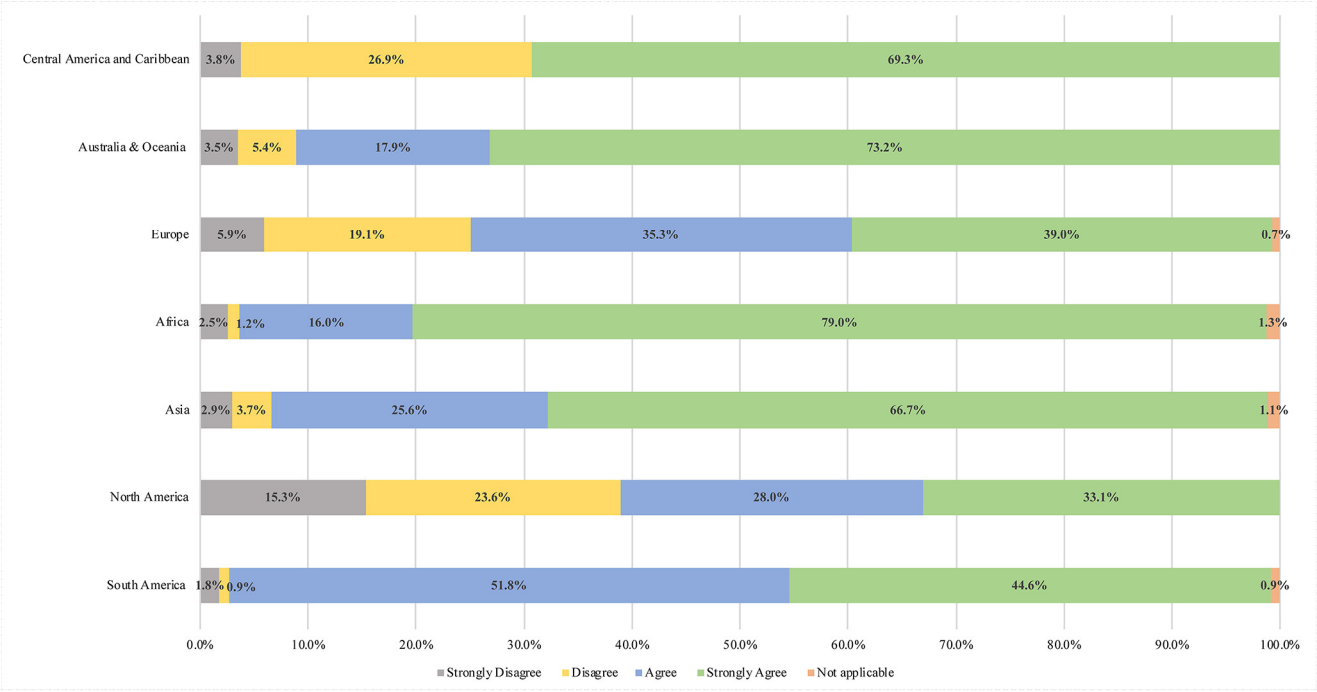

Figure 4. Responses to the statement: "In your opinion, tourism has been negatively impacted by COVID-19"

Occupational welfare: To better understand the organisational elements that may have been impacted by the COVID-19 pandemic, we examined responses related to occupational welfare. The overwhelming majority believed they received adequate information about COVID-19 from their employers, governments or other organisations as well as adequate supplies of sanitation and hygiene equipment, such as clean water, soap, face masks. However, regional differences were recorded as highlighted in Figure 5.

Five ranger casualties due to COVID-19 have been recorded from the outset of the outbreak to 30 June 2020 (IRF, 2020). More than one in four rangers said they do not have access to adequate insurance to cover the treatment of COVID-19. Africa was the region with the lowest coverage and North America reported the highest. Given the results of recent research (Belecky et al., 2019; Long et al., 2016), the low level of coverage in Africa and Asia is unsurprising (Figure 6).

Two-thirds of all rangers expressed concern about their financial well-being. This was most marked in the less wealthy regions of Africa, Asia and South America, where more than four out of five respondents were concerned about their financial well-being. This was a matter of less concern in the economically wealthier regions. However, more than three-quarters of all respondents felt that they were being supported by their organisations or employers during the pandemic.

A ranger from Kenya © Ami Vitale/WWF UK

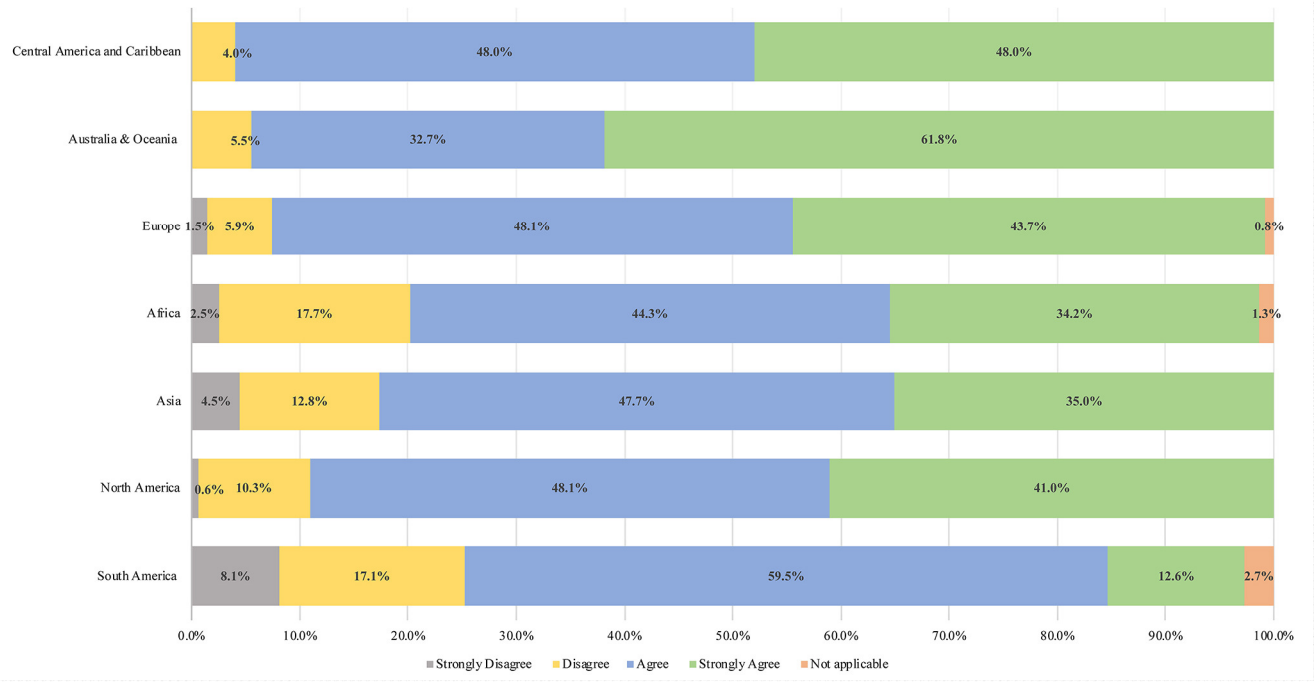

Figure 5. Responses to the question "Do you have access to adequate sanitation and hygiene equipment (e.g. clean water, soap, face masks) that is useful in preventing the spread of COVID-19?"

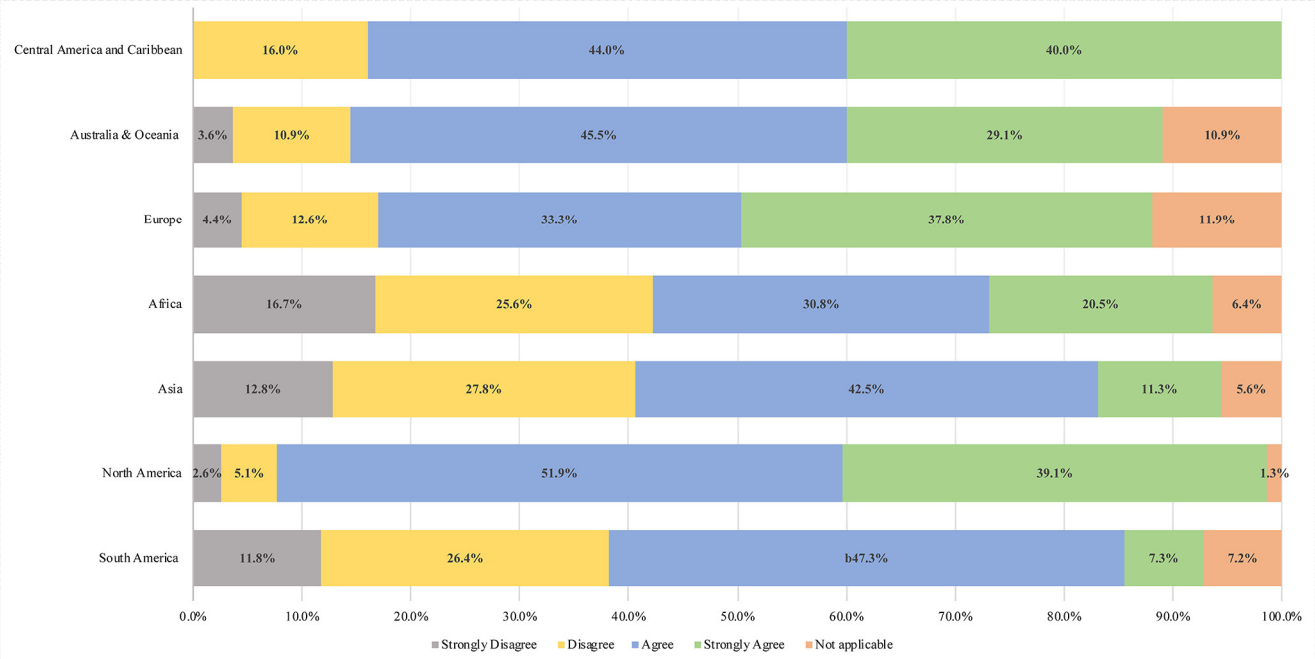

Figure 6. Responses to the question "Do you have access to adequate medical insurance that helps cover potential treatment for COVID-19?"

Rangers' personal lives appeared to have been impacted by the COVID-19 pandemic across all regions, with almost half of them agreeing that they were spending less time with their families as a result. More than 85 per cent were worried about family members contracting COVID-19 while they were away on duty. Respondents were also concerned about COVID-19 during their daily operations: more than 70 per cent of rangers reported being worried about contracting the virus during patrol and more than 80 per cent were concerned about contracting COVID-19 when they encountered suspects. Nearly 40 per cent of rangers were also worried about potentially transmitting COVID -19 to wildlife that they encountered during their work. Two-thirds of rangers had access to a COVID-19 test if needed. But, whilst more than three-quarters said that they did not have to pay for testing, access varied region by region: half of those in Africa, two-thirds of those in Asia but barely 30 per cent of those in South America were able to be tested.

The role of rangers in controlling COVID-19: When asked, "Do you believe that rangers have a role in controlling COVID-19?", four out of five respondents agreed. Ranger roles that were nominated by respondents included:

1. environmental conservation that reduces risk of zoonotic disease spillover;
2. awareness and education in relation to health guidelines (masks, social distancing etc) for:
   a. local communities
   b. visitors
3. support for others provided by:
   a. building visitor confidence to revive tourism
   b. providing food for remote and vulnerable communities
   c. assisting other agencies to protect provincial and international borders
4. providing access to natural areas to support mental and physical well-being

Those who do not believe that they have such a role in controlling COVID-19 considered that their primary role is nature protection, not health response because:

1. they do not have the right expertise, skills and legal mandate to be a respondent to health crisis;
2. their workload has significantly increased (e.g. in the USA huge influx in visitor numbers) and they do not have the time to take on additional duties;
3. Indigenous rangers have to stay away from any health risk to ensure that they do not take the virus back to their Indigenous communities;
4. rangers do not contact the public sufficiently to play a role in controlling the spread of the virus; and
5. involvement in such work should be voluntary and not mandated by managers.

There was, though, some variation between regions: the overwhelming majority of African rangers believed that they did not have any direct role in controlling the spread of COVID-19, whereas little more than half the European rangers took that view. This shows the pivotal

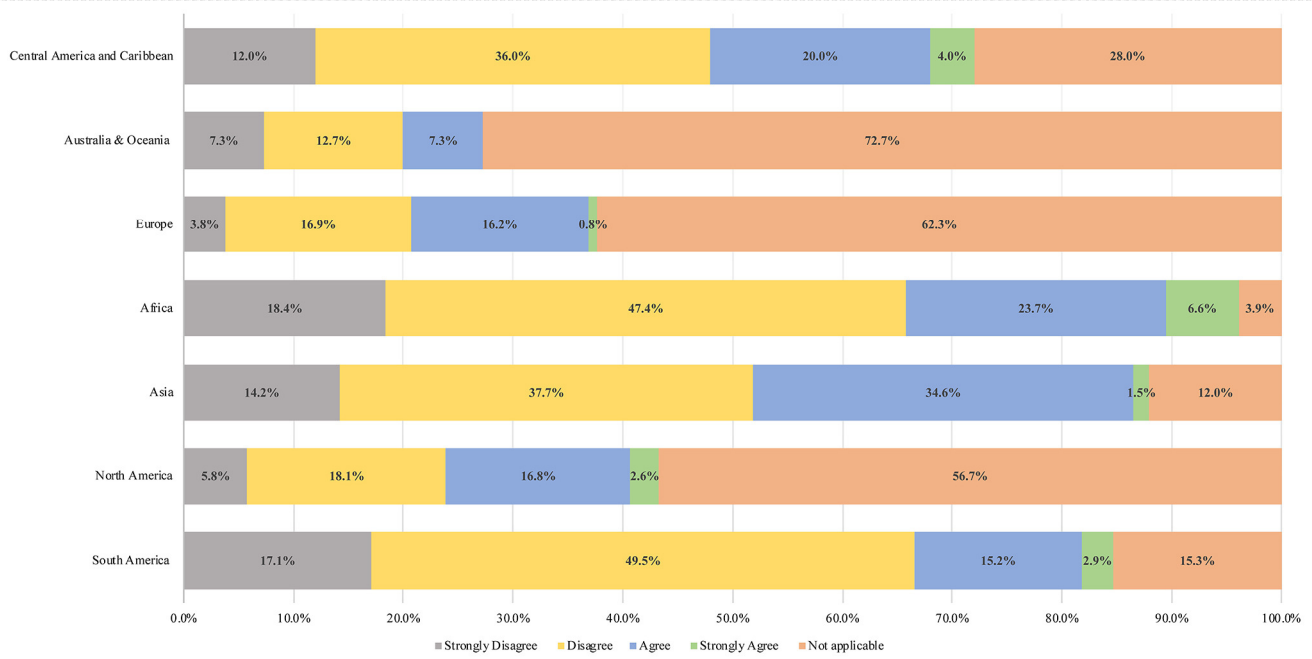

Figure 7. Responses to the statement: "Since the start of the COVID-19 pandemic, the conservation/protected area authority has sufficiently shared rations with the local communities."

need for clarity and understanding about the role of rangers, not only among the general public but also among rangers themselves.

Impact on ranger–community relationship: Half the respondents believed that the PCA authority they worked for had conducted sufficient awareness and education programmes about COVID-19 for local communities. However, nearly 90 per cent reported an impact on community engagement activities due to the COVID-19 pandemic. Lockdowns, movement control orders and fear of spreading COVID-19 may have been the reason behind the impact on community engagement activities. A quarter of all rangers interviewed have mentioned that their park authorities have shared their rations with local communities during the COVID-19 pandemic; in Asia more than a third have done this (Figure 7). Many also mentioned that they have done this in their personal capacity too.

RESULTS FROM THE CASE STUDIES

Pakistan

Supporting other agencies: 58 of the 157 rangers interviewed were partially or fully assigned with additional duties to support other government departments. These included helping to implement lockdown measures (e.g. preventing public gatherings, prohibiting the public from entering protected and conserved areas) and raising awareness regarding COVID-19 related measures.

Supporting communities: Officially no tasks were assigned to rangers regarding community support. However, rangers have been doing so in a professional and personal capacity. 118 rangers provided a portion of their salary to COVID-19 relief efforts. 125 rangers said they also helped communities by providing food, 44 helped arrange access to doctors or health care facilities during lockdown periods and 3 taught children in local communities.

India

Out of 52 respondents, 39 were female and 13 were male. When rangers were required to be absent during the COVID-19 pandemic, their family members faced challenges in procuring food, medical equipment and other daily needs. Two-thirds of female rangers found their work-life balance very challenging during the pandemic. 45 of the families surveyed were concerned about rangers contracting COVID-19 in the field and about the lack of medical support available there. Three-quarters of rangers interviewed said they received their salaries on time and were positive about the steps their respective departments were taking to support them during these challenging times. 49 of the 52 families were content that their rangers should spend more time in the field helping to control the spread of the virus.

DISCUSSION

COVID-19 has had an unprecedented impact on human health, society and the global economy, so a priority is to

understand how this and other zoonotic diseases came into being and how to prevent future zoonotic spill-over events. This pandemic is believed to have arisen from the consumption or handling of wildlife meat from an unregulated market (Bisson et al., 2015; Hockings et al., 2020). While this may never be fully verified, similar disease outbreaks have been linked to the destruction of nature, especially encroachment into wild areas (Brancalion et al., 2020; Gibb et al., 2020; Goldberg et al., 2008). Therefore, a priority is to establish preventative measures such as the protection of wildlife habitats and the reduction of unregulated and illegal exploitation of wildlife. The most effective means of habitat protection is the establishment of protected and conserved areas and other effective area-based conservation measures. 15.4 per cent of terrestrial areas and 3.4 per cent of global ocean area is under some formal protective status (UNEP-WCMC and IUCN, 2016). The key to maintaining their value and reducing the exploitation of nature is effective management, enforcement of regulations and building strong community relations. These actions all rely heavily on rangers, who are on the frontline, protecting nature from many threats – notably illegal logging, land clearing (Sodhi et al., 2004; Wilcove et al., 2013), hunting and the illegal wildlife trade (Gray et al., 2017; Harrison et al., 2016). By performing this vital task, rangers are, in turn, helping to reduce the likelihood of future pandemics of zoonotic origin (Bergen, 2020), thus delivering a planetary health service.

The results from this study suggest that a significant proportion of rangers believe the current pandemic is exacerbating threats to PCAs and negatively impacting on them and their work, which was already fraught with various organisational, occupational and personal challenges before the pandemic (Belecky et al., 2019; Singh et al., 2020). On a personal level, rangers are already burdened with long working hours and job requirements that keep them away from their families for significant periods of time. Other studies on rangers from Asia, Africa and Latin America, for example, reported that they already work an average of 105.7 hours per week and more than a quarter (26.5 per cent) of rangers spend less than five days a month with their families (Belecky et al., 2019; Singh et al., 2020). On top of this, our survey found that half of all respondents reported that the pandemic is causing them to spend less time with their families, and is causing the added stress of employment and financial uncertainty. All of these factors put the welfare of rangers at risk.

The perceived increase in threats to PCAs in some regions, particularly in South America, is in line with other research that suggests that the pandemic has resulted in more illegal killing of wildlife, logging and other environmental crimes (Badola, 2020; Waithaka, 2020; World Bank, 2020). However, our data indicate strong regional differences in rangers' perceptions, with many disagreeing that threats have increased during this period. While previous reports have uncovered an increase in logging and poaching (Hockings et al., 2020; Waithaka, 2020; World Bank, 2020), the highest perceived threat by rangers globally was NTFP collection, grazing and other similar pressure – although this was the only type of threat increase that was not corroborated by most South American rangers.

An increase in NTFP collection and grazing was reported by most rangers in North America, Asia, Africa, Australia and Oceania. This can be a significant issue in some PCAs with varied impacts on different taxa (Broder et al., 2019; Soofi et al., 2018). However, this threat is often considered less serious than illegal logging and poaching, which can rapidly impact wildlife populations (Sodhi et al., 2004; Wilcove et al., 2013). The perception that NTFP collection and grazing are the greatest threats may be a result of the high number of responses from rangers in the USA and Asia, where grazing or land use intensification (Hanberry & Abrams, 2018), and NTFP reliance (Das, 2005), are respectively common issues impacting PCAs. Despite this, the regions with the highest proportions of rangers reporting threat increases were South America and Africa, where the primary threats identified by rangers were illegal logging, encroachment and subsistence hunting – the latter more strongly reported by African rangers. These results are not surprising, given the existing reports of illegal logging and encroachment in South America (Brancalion et al., 2020; Escobar, 2020; Silva-Araújo et al., 2020) and the often poorly resourced or understaffed ranger forces in both regions. The high proportion of rangers in South America reporting an increase in encroachment (80 per cent) and the existing reports of deforestation in the region should provide renewed concern for the forests of South America. The strong link between the pandemic and increased hunting reported by African rangers is also concerning: even though the region has been the site of various zoonoses in recent decades (Marcotty et al., 2009; Asante et al., 2019), this does not seem to be deterring wildlife consumption, indeed it may even have increased. Interestingly, the responses from Asia, which has been the source of notable recent zoonoses, indicated that the pandemic had not led to more hunting, however, the threat posed by poaching and wildlife consumption is well documented in the region (Sodhi et al., 2004; Wilcove et al., 2013).

The negative impact on PCAs may be due to deteriorating socio-economic conditions around PCAs. The long-term economic and environmental consequences of pandemic-related changes – increased poverty, displacement of populations, undermining of protection from risks such as unemployment and exclusion – are unclear and will require continued attention (UNDP, 2020). Reduced ranger services may also have played a part as more than half of rangers reported that they had been assigned to additional tasks, many of which were unrelated to their regular duties.

The social and economic fallout resulting from the pandemic has led to budget cuts for PCAs, which affect their ability to operate effectively and impact on the rangers as individuals. More than half of rangers reported adverse effects on their personal lives: a quarter reported salary reductions and payment delays; 20 per cent reported losing their jobs as a direct result of the pandemic. This loss of salary and staff will put further pressure on an already overstretched and underpaid workforce (Belecky et al., 2019) with negative impacts on PCAs which are already operating below the level required for effective protection (Leverington et al., 2010). The current situation also affects ranger welfare, directly through job losses and in other ways. Recent research has shown that rangers around the world often lack adequate health insurance (Belecky et al., 2019) and with the risk of disease transmission this concern is heightened. 27.9 per cent of rangers reported a lack of insurance coverage should they contract COVID-19 and previous research indicated that half of all rangers have no access to medical facilities (Belecky et al., 2019). 82.5 per cent of survey respondents indicated a fear of contracting COVID-19 at work. Rangers who continue to deliver their duties in the field could be at significant risk.

Deputy Park Warden Anwar Rolle in the Bonefish Pond National Park in New Providence, Bahamas © Elijah Sands/Bahamas National Trust

While most rangers were fearful of contracting COVID-19 while on patrol or encountering suspects, most believed that they have a role in controlling its spread. However, strong regional differences were reported which provide some insights as to the differing perceptions of rangers about their roles. Nearly all North American rangers felt they had a role to play, while practically none of the rangers from Africa felt they had a direct role in controlling the spread of the virus. There are clearly great differences in how the importance of rangers' work is perceived in each region. This could be a result of the way that rangers' work differs in different regions or it could demonstrate that many rangers themselves are unaware of the full potential of their role.

The survey results have provided some concerning results, most notably perhaps the impact on activities relating to community engagement. This could further complicate the already problematic relationship between communities and protected and conserved areas (Anaya & Espirto-Santo, 2018), and between rangers and local communities (UN OHCHR, 2010). Given the increased rate of global unemployment (Bluestein et al., 2020), financial hardship (Nicola et al., 2020), internal migration (Dandekar & Ghai, 2020) and reliance on wildlife for subsistence (McNamara et al., 2020), a positive and mutually supportive relationship between PCA authorities and communities is more important than ever.

RECOMMENDATIONS

Rangers are among those on the frontline in managing and protecting biodiversity, along with many other stakeholders, but especially Indigenous peoples and local communities. Despite the critical role that rangers play in conservation, their work is often under-recognised and under-resourced; they are often poorly trained and equipped to address the threats facing the world's biodiversity.

The COVID-19 pandemic has further highlighted the critical role that rangers should play in preventing disease by maintaining the balance between nature and humans – in effect acting as front-line health service workers on behalf of the planet. At the same time, it has revealed that many of them have been serving their local communities at this moment of crisis. However, the COVID-19 pandemic has also made their job more difficult. The surveys have provided insights into the challenges that rangers are facing during the pandemic and their role in alleviating its impacts.

In light of our analysis, we suggest the following four recommendations to address the critical needs of rangers:

Raise the status of rangers: The unregulated harvest and trade in wildlife, illegal logging, human encroachment into wildlife habitat, unauthorised land clearance and other environmental crimes that destroy nature increasingly bring people into contact with wildlife which in turn contributes to an increased risk of zoonotic disease transmission. Through their work in protecting biodiversity, rangers play an indispensable role in limiting the likelihood that zoonotic diseases will endanger people. In countries such as India, Bhutan, Nepal and South Africa, rangers are already recognised as an essential service, meaning that their critical work continues despite lockdowns or other similar restrictions. This is not the case in many other countries, where ranger work is severely impacted during national emergencies. Recognition of rangers as an essential service by governments, to be set alongside comparable public servants such as the police, firefighters and medical health workers especially in Asia, Africa and Latin America, will benefit biodiversity conservation during the pandemic and help maintain public health.

Professionalise the job of a ranger: Recognition of the ranger profession as an essential service should lead to greater investment in professionalising the ranger sector, including through increased allocation of government resources, improved recruitment processes, better training opportunities when beginning service and throughout the duration of service. In many countries, the profession needs better career opportunities, improved working conditions and enhanced pay.

Put community relations at the heart of ranger work: More than four out of five rangers in Asia, Africa and Latin America believe that success in their jobs depends on the help of local communities, which was the aspect of ranger work most impacted by the pandemic according to this survey. While much of this may be due to a temporary reduction in contact between rangers and communities, this relationship must remain at the very top of the agenda for protected and conserved areas. Furthermore, livelihoods of local communities may have been so undermined by the pandemic that they will become more dependent on forest resources, leading to an increase of illegal activities, which could damage the often already precarious relationship between rangers and communities. The role of rangers in supporting communities and their livelihoods, by protecting the resources that communities depend upon, needs to be recognised. The current pandemic has demonstrated the crucial interdependence of these two vital partners in conservation, and consequently the mutually supportive roles of community and conservation stakeholders in the protection and management of PCAs.

Ensure sufficient resources on the ground: The pandemic has highlighted the role of rangers as planetary health workers and the crucial role they can play in supporting vulnerable communities in remote areas. Prevention of future pandemics is far less costly than managing future ecosystem service losses (IPBES, 2020; Waldron, 2020), or the pandemics and the public health crises they precipitate. In this light, the best precaution against another pandemic is to invest in the care of the natural environment so that it delivers stable ecosystem services, climate change mitigation, jobs and other benefits to society (OECD, 2020). Those making this case to governments should include the resourcing of rangers – in terms of ranger numbers, training, equipment and welfare – as a priority. Indeed, the three recommendations above all call for more support to rangers.

ENDNOTES

[1]The study, including its informed consent and anonymity protections, was approved by the University of Central Florida institutional review board (STUDY00002120)

[2]The authors of this paper do not endorse the borders of this map shown in this publication, nor any political position related to territorial claims.

SUPPPLEMENTARY ONLINE MATERIAL

Survey form – Impact of COVID-19 on ranger workforce

ACKNOWLEDGEMENTS

The survey was only possible with support from the many individuals and institutions that contributed to it. We would specifically like to thank Southern African Wildlife College, all regional chapters of the International Ranger Federation, and national and provincial ranger associations. We would also like to thank the field teams of World Wide Fund for Nature and Global Wildlife Conservation. Finally, we are also highly indebted to all the rangers who participated in the survey.

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RESUMEN

Los guardaparques desempeñan un papel indispensable en el mantenimiento del equilibrio entre las personas y el mundo natural mediante la protección y la gestión de las áreas protegidas y conservadas. A pesar de desempeñar este importante papel, los guardaparques se enfrentan a muchos retos en el ámbito organizativo, ocupacional y personal que dificultan el cumplimiento de sus obligaciones. La pandemia del COVID-19 ha exacerbado estos retos y ha hecho aún más difícil la lucha contra la matanza ilegal de la vida silvestre, la tala ilegal, la recolección ilegal de productos forestales no madereros, la invasión y otros delitos ambientales en las áreas protegidas y conservadas. Se recibieron 915 respuestas al cuestionario de guardaparques de 60 países con el fin de comprender cómo percibían el impacto del COVID-19 en los guardaparques y su labor de protección y conservación de las áreas protegidas en todo el mundo. Las conclusiones indican que diferentes aspectos de la labor de los guardaparques han tenido efectos adversos como resultado de la pandemia y las acciones relacionadas de las autoridades y los actores ilegales. El estudio también revela diferentes percepciones regionales del impacto de la pandemia en las áreas protegidas y conservadas y en la labor de los guardaparques. Los resultados del estudio, que proporcionan una visión útil de los retos a los que se enfrentan los guardaparques durante la actual crisis mundial e indican dónde pueden ser necesarias las medidas para mitigar una inminente pérdida de biodiversidad, se utilizan en el documento para apoyar cuatro recomendaciones.

RÉSUMÉ

Les rangers jouent un rôle indispensable pour maintenir l'équilibre entre les populations et le monde naturel en protégeant et en gérant les aires protégées et conservées. Alors même qu'ils occupent un rôle clé, les rangers sont confrontés à de nombreux défis sur des fronts organisationnels, professionnels et personnels qui entravent l'exécution de leurs fonctions. La pandémie de COVID-19 a exacerbé ces défis et rendue encore plus difficile leur lutte contre l'abattage illégal de la faune, l'exploitation forestière illégale, la récolte illégale de produits forestiers non ligneux, l'empiètement et d'autres délits environnementaux dans les aires protégées et conservées. Les réponses à une enquête auprès de 915 rangers dans 60 pays ont permis de comprendre comment ils perçoivent l'impact de la COVID-19 sur eux-mêmes et sur leur travail de protection et de conservation des aires protégées à travers le monde. Ces données indiquent que de nombreux aspects du travail des rangers ont souffert de l'incidence de la pandémie et des actions connexes des autorités et des acteurs illégaux. Elles révèlent également des différences régionales dans la perception de l'impact de la pandémie dans les aires protégées et conservées et sur le travail des rangers. Les résultats de l'enquête apportent un éclairage utile sur les défis auxquels sont confrontés les rangers pendant la crise mondiale actuelle et permettent de déterminer quelles actions pourraient s'avérer nécessaires pour atténuer une perte imminente de biodiversité. Les conclusions viennent appuyer quatre recommandations contenues dans l'article.