Wildlife health perceptions and monitoring in protected areas according to data managers

Diego Montecino-Latorre   Mathieu Pruvot   Sarah H Olson

Methods

We developed a web-based questionnaire aimed at protected area managers. The survey had four sections. Under section 1, we asked managers to rank their perceptions regarding wildlife health and potential consequences of pathogen transmission among wildlife, domestic animals and people.

Under section 2, we explored the overall frequency of encounters with dead, sick, or injured wildlife in the protected areas and their documentation when found during patrols

Under section 2, we explored the overall frequency of encounters with dead, sick, or injured wildlife in the protected areas and their documentation when found during patrols.

Under section 3, we asked managers to rank the importance of introduced domestic animals for the conservation goals of the corresponding protected areas. Likert scales were used in sections 1 - 3.

Under section 4, we asked about data storage practices and the current state of SMART components.

An introductory webpage explained that the survey was voluntary, anonymous, aimed at protected area managers administering SMART data. The webpage also clarified that clicking the "Start the survey" button constituted consent. The survey was built on Google Forms, which has a translation tool. We provided a tutorial on translating it into the preferred language (https://sites.google.com/wcs.org/smarttorecordwildlifehealth/home). The survey was exempt from IRB review (ref #22-53 Wildlife Conservation Society Internal Review Board).

The survey was distributed globally to the SMART Community (SMART Community Forum users https://forum.smartconservationtools.org/) by the SMART Partnership via email in October 2022, and it remained open for three months. As the closing date approached, a reminder was sent to the SMART Community three weeks in advance.

Responses could represent a single or multiple protected areas. However, our analysis focused on responses representing one or two individual terrestrial protected areas to gain insights into

specific local realities. Therefore, responses representing more than two protected areas were filtered out. The resulting dataset could have a specific protected area represented by single responses, by responses that included two protected areas, or a combination of both. We duplicated the responses that were representing two protected areas but left a single protected area for each one, so each row in the dataset implied a unique protected area. One of the responses representing the same protected area after this step were filtered out to leave a unique representation completion and consistency of answers, and respondent's alignment with the intended target audience of the survey.

The protected areas included in the responses were classified as marine or terrestrial based on the World Database on Protected Areas (https://www.protectedplanet.net/en/thematic-areas/wdpa?tab=WDPA). Marine protected areas were removed.

The questionnaire, survey data, data cleaning and filtering, and descriptive analysis scripts can be found at https://github.com/dmontecino/SMART_survey.

Results

General results

The total number of responses was 129.

Seven responses were removed because they included a given name instead of the protected area name and one response was removed because it did not have a protected area name. Twenty-four responses representing more than two protected areas were filtered out and other six were removed because they represented protected areas that were represented once already. Sixteen responses were removed because the respondent did not match the target audience.

The final dataset described below excluded four marine protected areas leading to the removal of another four responses, for a total of 76 protected areas represented by 71 answered surveys (66 responses representing a single protected area and 5 representing two protected areas) from 19 countries.

Section 1: Perceptions regarding wildlife health and potential consequences of pathogen transmission among wildlife, domestic animals and people
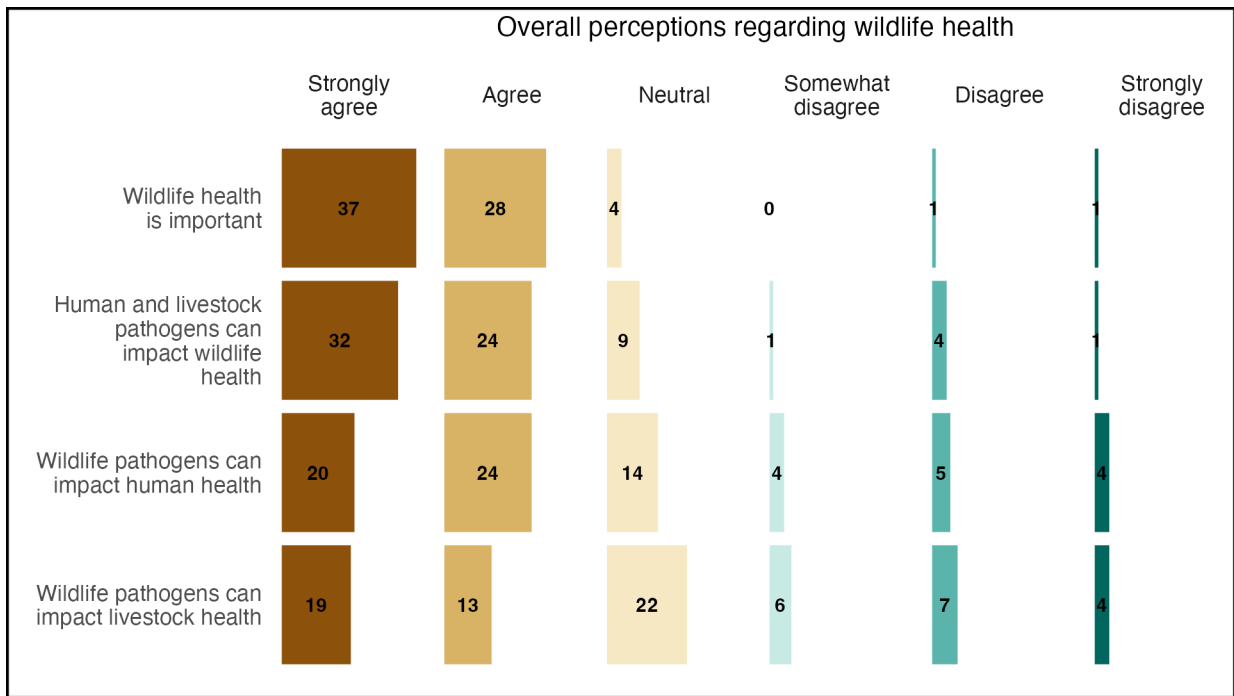

Figure 1: Distribution protected area managers responses regarding the importance of wildlife health to achieve the conservation goals of protected area(s) where they work in (row 1), human or livestock pathogens can affect wildlife populations inhabiting the protected area(s) where they work in (row 2), pathogens carried by wildlife inhabiting the protected area(s) where they work in can affect public health (row 3), and pathogens carried by wildlife inhabiting the protected area(s) where they work in can affect livestock health.

Section 2: Overall frequency of encounters with dead, sick, or injured wildlife in the protected areas and their documentation when found during patrols.

Overall dead wildlife encountering

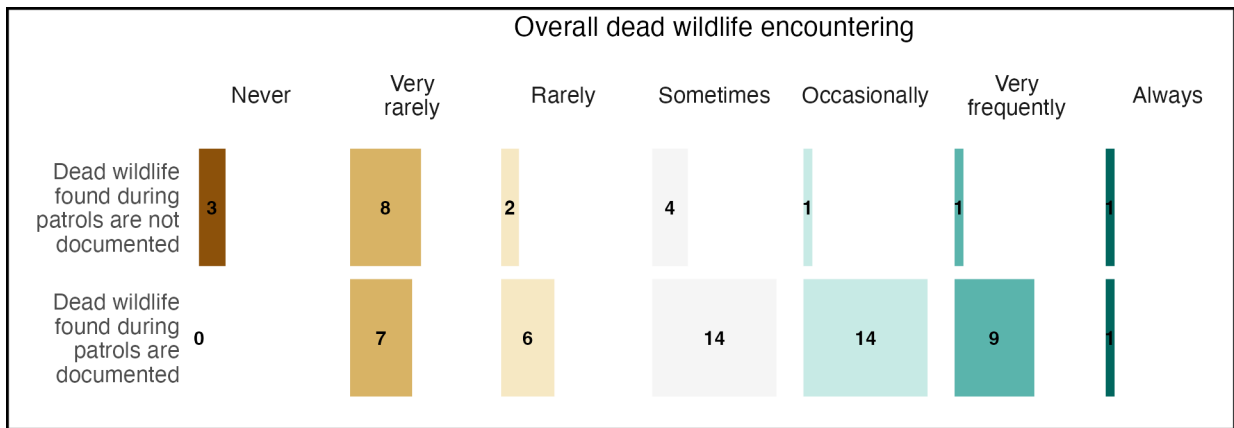|	Never	Very rarely	Rarely	Sometimes	Occasionally	Very frequently	Always
Dead wildlife found during patrols are not documented	3	8	2	4	1	1	1
Dead wildlife found during patrols are documented	0	7	6	14	14	9	1

Figure 2: Distribution of protected area managers responses regarding the recording of dead wildlife found during ranger patrols as a specific category of animals across the overall encountering frequency with dead wildlife in the protected area(s) where they work in.

Overall sick and injured wildlife encountering

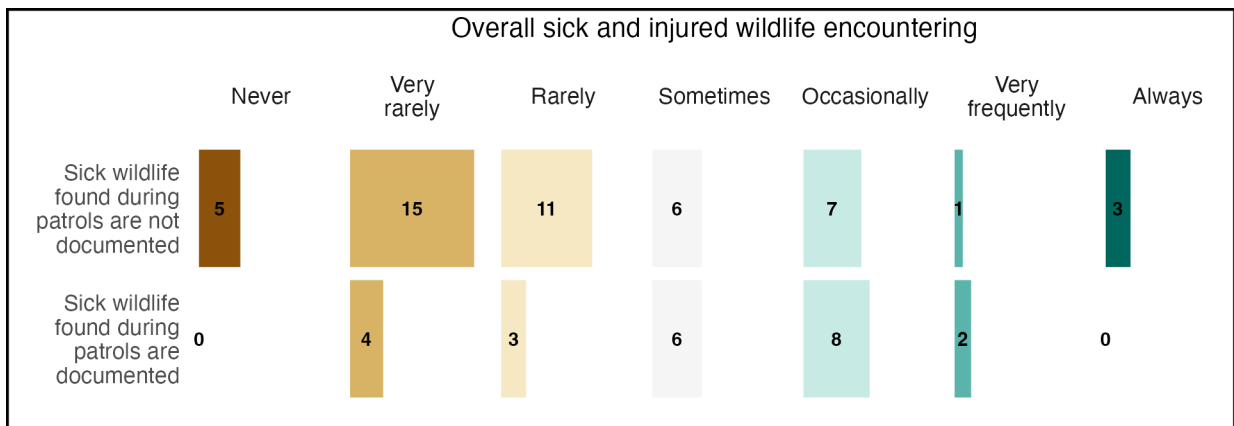|	Never	Very rarely	Rarely	Sometimes	Occasionally	Very frequently	Always
Sick wildlife found during patrols are not documented	5	15	11	6	7	1	3
Sick wildlife found during patrols are documented	0	4	3	6	8	2	0

Figure 3: Distribution of protected area managers responses regarding the recording of sick wildlife found during ranger patrols as a specific category of animals across the overall encountering frequency with sick or injured wildlife in the protected area(s) where they work in.

4

Overall sick and injured wildlife encountering

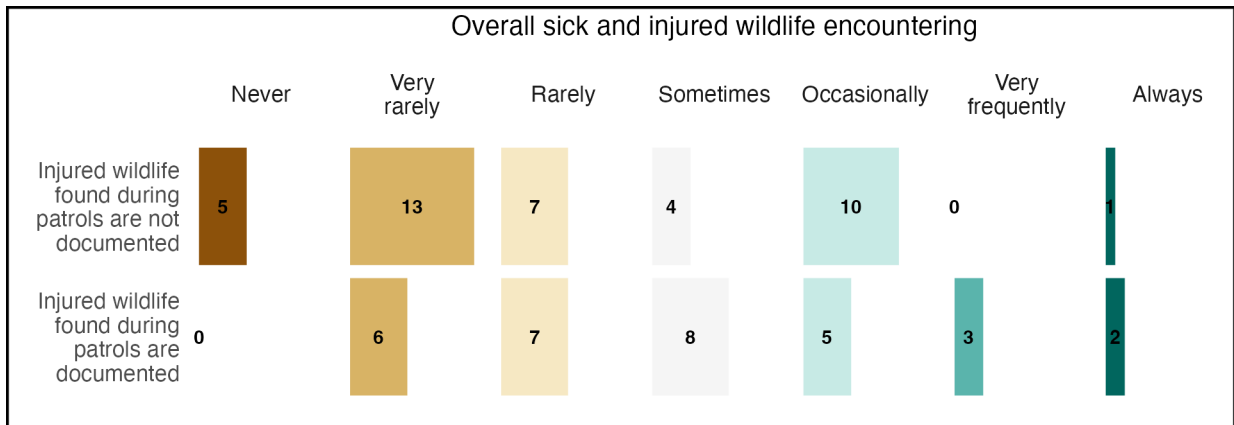|	Never	Very rarely	Rarely	Sometimes	Occasionally	Very frequently	Always
Injured wildlife found during patrols are not documented	5	13	7	4	10	0	1
Injured wildlife found during patrols are documented	0	6	7	8	5	3	2

Figure 4: Distribution of protected area managers responses regarding the recording of injured wildlife found during ranger patrols as a specific category of animals across the overall encountering frequency with sick or injured wildlife in the protected area(s) where they work in.

	Healthy wildlife	Sick wildlife	Injured wildlife	Dead wildlife
Present/absent	9	3	5	7
Part of the full count of the corresponding species	15	9	9	11
Each animal is an individual observation	16	10	16	27
Recorded in another way	7	1	1	6

Figure 5: Distribution of protected area managers responses regarding how recorded healthy, sick, injured, and dead wildlife found during patrols are actually registered.

Figure 6: Percentage of protected area managers responses regarding pieces of information colletcted (y-axis) across the different categories of wildlife health status (x-axis) for those responses that reported the recording of these animals. The size of the circles are proportional to the percentage observed.

Section 3: Importance of introduced domestic animals for the conservation goals of the protected areas
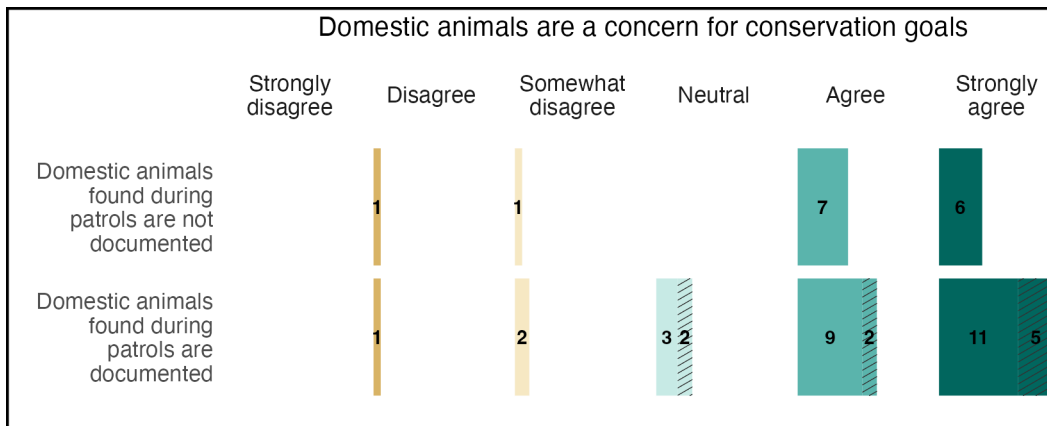

Figure 7: Distribution of protected area manager responses regarding the recording of domestic animals found during ranger patrols across their overall agreement with domestic animals as a concern for conservation goals. The dashed area of the polygons represent the subset of responses estating that the health status of domestic animals is not recorded.