Supporting Information 'Wildlife health perceptions and monitoring practices in globally distributed protected areas'

1 Survey

Use of SMART to record wildlife health information in protected areas around the world

* Indicates required question

1. **1. Please enter all the name(s) of the protected area(s) that apply.** *

   If there is more than one protected area(s) name(s), please separate them by hitting enter in the answer space below

Please read the six statements and mark how you feel about them (from "**strongly disagree**" to "**strongly agree**").

2. **2. Wildlife health, including infectious and non-infectious diseases, is important to achieve the conservation goals of the protected areas where I work** *

Mark only one oval.

- Strongly disagree
- Disagree
- Somewhat Disagree
- Neutral
- Agree
- Strongly agree

3. **3. Pathogens carried by wildlife inhabiting the protected area I work in can affect livestock health** *

Mark only one oval.

- Strongly disagree
- Disagree
- Somewhat Disagree
- Neutral
- Agree
- Strongly agree

4. **4. Pathogens carried by wildlife inhabiting the protected area I work in can affect public health** *

Mark only one oval.

- Strongly disagree
- Disagree
- Somewhat Disagree
- Neutral
- Agree
- Strongly agree

5. **5. Human or livestock pathogens can affect wildlife populations inhabiting the protected area I work in** *

Mark only one oval.

- Strongly disagree
- Disagree
- Somewhat Disagree
- Neutral
- Agree
- Strongly agree

6. **6. Introduced domestic animals (e.g., dogs, cats, cattle, pigs, cats) are a concern for the conservation goals of the protected areas where I work** *

Mark only one oval.

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Somewhat Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly agree

Please mark one of the alternatives provided to answer the following questions based on your experience

7. **7. Are dead wildlife encountered in the protected area?** *

Mark only one oval.

- ◯ Always
- ◯ Very frequently
- ◯ Occasionally
- ◯ Sometimes
- ◯ Rarely
- ◯ Very rarely
- ◯ Never

8. **8. Are sick or injured wildlife encountered in the protected area?** *

Mark only one oval.

- Always
- Very frequently
- Occasionally
- Sometimes
- Rarely
- Very rarely
- Never

9. **9. Are livestock encountered in the protected area?** *

Mark only one oval.

- Always
- Very frequently
- Occasionally
- Sometimes
- Rarely
- Very rarely
- Never

10. **10. How long, on average, are the patrols in the protected area?** *

Mark only one oval.

- Less than a day
- Between one to two days
- Between two and five days
- Between four days and a week

11. **11. On average, how many patrols are completed in the protected area in one month?** *

_____

Please respond to the following questions related to data recorded in SMART (e.g., data collected by ranger patrols, community members, or other users and managed in SMART)

12. **12. Are healthy wildlife found during patrols (rangers or others) recorded as a specific category of individuals?** *

Mark only one oval.

- ◯ Yes *Skip to question 13*
- ◯ No *Skip to question 17*

13. **12.a Please select one of the choices below to help us understand how healthy wildlife are recorded during a patrol:** *

Mark only one oval.

- ◯ Healthy wildlife are recorded as present/absent (the number of healthy individuals is not specified)
- ◯ Healthy wildlife are counted and reported as part of the full count of individuals belonging to an observed species (e.g. “3 total healthy animals of species X and 2 total healthy animals of species Y”)
- ◯ Each healthy animal is recorded as an individual observation
- ◯ Healthy wildlife is recorded in another way

14. **12.b Please indicate what type of data are recorded (check all that apply)** *

Check all that apply.

- [ ] Photographs
- [ ] Species
- [ ] Age
- [ ] Sex
- [ ] Body condition
- [ ] Other

15. **12.c Are these data entered and stored in SMART Desktop?**

Mark only one oval.

- ◯ All of these items are entered and stored in the corresponding SMART Conservation Area *Skip to question 17*
- ◯ Some of these items are entered and stored in the corresponding SMART Conservation Area *Skip to question 17*
- ◯ None of these items are recorded in the corresponding SMART Conservation Area *Skip to question 16*

16. **12.c.i If none of the items are recorded in the corresponding SMART Conservation Area where are they recorded?** *

_____

17. **13. Are dead wildlife found during patrols recorded as a specific category of individuals?** *

Mark only one oval.

- ◯ Yes *Skip to question 18*
- ◯ No *Skip to question 22*

18. **13.a Please select one of the choices below to help us understand how dead wildlife are recorded during a patrol:** *

Mark only one oval.

- ◯ Dead wildlife are recorded as present/absent (the number of dead individuals is not specified)
- ◯ Dead wildlife are counted and reported as part of the full count of individuals belonging to an observed species (e.g. “3 total dead animals of species X and 2 total dead animals of species Y”).
- ◯ Each dead animal is recorded as an individual observation
- ◯ Dead wildlife is recorded in another way

19. **13.b Please indicate what type of data are recorded (check all that apply)** *

Check all that apply.

- ☐ Photographs
- ☐ Species
- ☐ Age
- ☐ Sex
- ☐ Carcass condition
- ☐ Anomalies in carcass (if any)
- ☐ Suspect cause of death
- ☐ Other

20. **13.c Are these data entered and stored in SMART Desktop?** *

Mark only one oval.

- ◯ All of these items are entered and stored in the corresponding SMART Conservation Area *Skip to question 22*
- ◯ Some of these items are entered and stored in the corresponding SMART Conservation Area *Skip to question 22*
- ◯ None of these items are recorded in the corresponding SMART Conservation Area *Skip to question 21*

21. **13.c.i If none of the items are recorded in the corresponding SMART Conservation Area where are they recorded?** *

_____

22. **14. Are injured wildlife found during patrols recorded as a specific category of individuals?** *

Mark only one oval.

- ◯ Yes
- ◯ No *Skip to question 27*

23. **14.a Please select one of the choices below to help us understand how injured wildlife are recorded during a patrol:** *

Mark only one oval.

- ◯ Injured wildlife are recorded as present/absent (the number of injured individuals is not specified)
- ◯ Injured wildlife are counted and reported as part of the full count of individuals belonging to an observed species (e.g. “3 total injured animals of species X and 2 total injured animals of species Y”).
- ◯ Each injured animal is recorded as an individual observation
- ◯ Injured wildlife is recorded in another way

24. **14.b Please indicate what type of data are recorded (check all that apply)** *

Check all that apply.

- ☐ Photographs
- ☐ Species
- ☐ Age
- ☐ Sex
- ☐ Anomalies/signs if any
- ☐ Body condition
- ☐ Suspect cause of injury
- ☐ Other

25. **14.c Are these data entered and stored in SMART Desktop?** *

Mark only one oval.

- ◯ All of these items are entered and stored in the corresponding SMART Conservation Area *Skip to question 27*
- ◯ Some of these items are entered and stored in the corresponding SMART Conservation Area *Skip to question 27*
- ◯ None of these items are recorded in the corresponding SMART Conservation Area *Skip to question 26*

26. **14.c.i If none of the items are recorded in the corresponding SMART Conservation Area where are they recorded?** *

_____

27. **15. Are sick wildlife found during patrols recorded as a specific category of individuals?** *

Mark only one oval.

- ◯ Yes *Skip to question 28*
- ◯ No *Skip to question 32*

28. **15.a Please select one of the choices below to help us understand how sick wildlife are recorded during a patrol:** *

Mark only one oval.

- ◯ Sick wildlife are recorded as present/absent (the number of sick individuals is not specified)
- ◯ Sick wildlife are counted and reported as part of the full count of individuals belonging to an observed species (e.g. “3 total sick animals of species X and 2 total sick animals of species Y”).
- ◯ Each sick animal is recorded as an individual observation
- ◯ Sick wildlife is recorded in another way

29. **15.b Please indicate what type of data are recorded (check all that apply)** *

Check all that apply.

- [ ] Photographs
- [ ] Species
- [ ] Age
- [ ] Sex
- [ ] Anomalies/signs if any
- [ ] Body condition
- [ ] Suspect cause of disease
- [ ] Other

30. **15.c Are these data entered and stored in SMART Desktop?** *

Mark only one oval.

- ◯ All of these items are entered and stored in the corresponding SMART Conservation Area *Skip to question 32*
- ◯ Some of these items are entered and stored in the corresponding SMART Conservation Area *Skip to question 32*
- ◯ None of these items are recorded in the corresponding SMART Conservation Area *Skip to question 31*

31. **15.c.i If none of the items are recorded in the corresponding SMART Conservation Area where are they recorded?** *

_____

Please mark “Yes/No” to answer the following questions

32. **16. Are domestic animals found in the protected area (free-ranging, captive, on a farm)?** *

Mark only one oval.

- Yes *Skip to question 33*
- No *Skip to question 37*

33. **17. If observed on a patrol, is the presence of domestic animals recorded?** *

Mark only one oval.

- Yes *Skip to question 34*
- No *Skip to question 37*

34. **17.a Are these data entered in SMART Desktop?** *

Mark only one oval.

- Yes
- No

35. **18. Is the health status of the observed domestic animals recorded (healthy, sick or injured, dead) recorded?** *

Mark only one oval.

- Yes *Skip to question 36*
- No *Skip to question 37*

36. **18.a Are these data entered in SMART Desktop?** *

Mark only one oval.

- Yes
- No

37. **19. Is any other data relevant to wildlife health collected during the patrols?** *

38. **20. If no data are collected on dead, sick, or injured wildlife, please select the best explanation(s) for why this information is not collected (check all that apply)** *

Check all that apply.

- [ ] Dead, sick or injured wildlife are seldom found
- [ ] It would add too much work or time to the patrol
- [ ] Wildlife disease is not relevant in the protected area
- [ ] Lack of expertise on how to properly record this information
- [ ] Never thought about it
- [ ] We use the default SMART data model which does not include sick, dead or injured wildlife

39. **21. What version of SMART Desktop is currently used in the protected area?** *

40. **22. Is SMART Connect available to manage and transfer information between SMART Desktop and SMART Mobile?** *

Mark only one oval.

- ◯ Yes *Skip to question 42*
- ◯ No *Skip to question 41*

41. **22.a Are there plans to set up SMART Connect instance and when?** *

42. **23. Is SMART fully rolled-out in the protected area(s) you work in or is it being piloted?** *

Mark only one oval.

- ◯ Fully rolled-out
- ◯ Under pilot
- ◯ Partially rolled-out

43. **24. Would you be interested in adding a set of categories and attributes to your data model in order to facilitate the collection of wildlife health data (morbidity/mortality findings and events)?** *

Mark only one oval.

- ◯ Yes
- ◯ No

44. **25. Please select the option that best describes your position** *

Mark only one oval.

- ◯ I am directly responsible for managing SMART data in one or more protected areas
- ◯ I am a general manager or administrator of one or more protected areas that uses SMART data
- ◯ Other

2 Results of non-local responses

2.1 Perceptions regarding wildlife health importance in conservation and potential consequences of pathogen transmission among wildlife, domestic animals, and people.

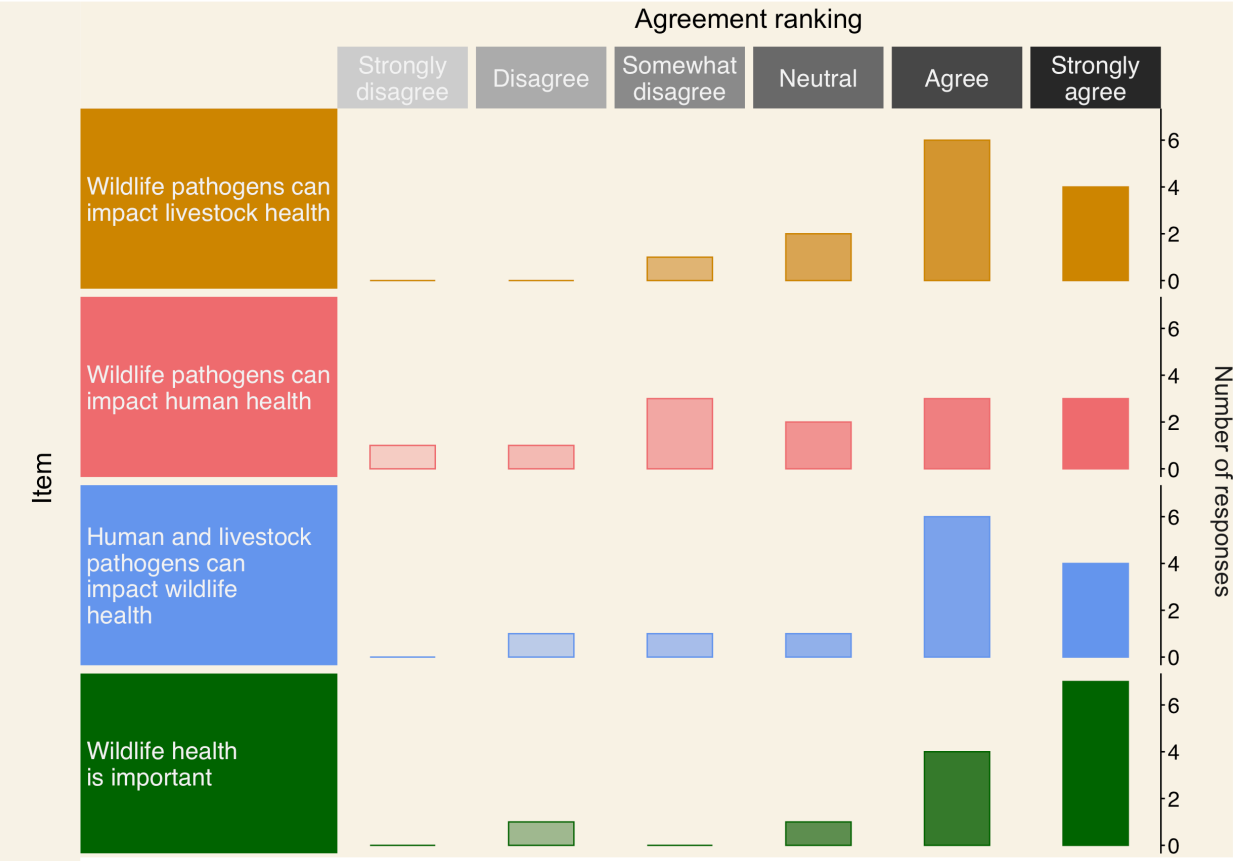


Figure S1. Distribution of the level of agreement (grey scale) among non-local protected area data managers with statements 'Pathogens carried by wildlife inhabiting the protected area(s) where I work in can affect livestock health' (brown), 'Pathogens carried by wildlife inhabiting the protected area(s) where I work in can affect human health' (red), 'Human or livestock pathogens can affect wildlife populations inhabiting the protected area(s) where I work in' (blue), and 'Wildlife health is important to achieve the conservation goals of the protected area(s) where I work' (green).

2.2 Overall frequency of encounters with dead, sick, or injured wildlife in protected areas and their documentation when found during patrols

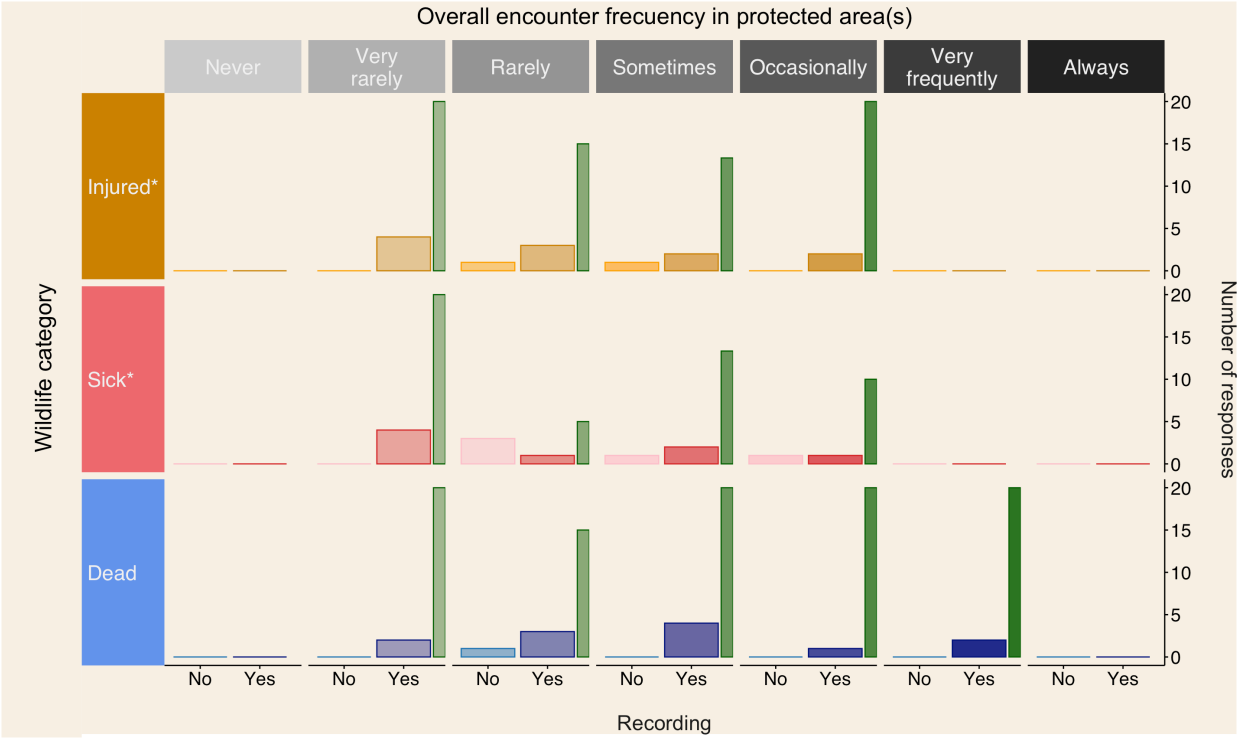
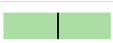
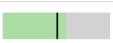
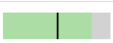
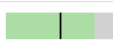
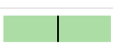
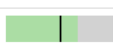
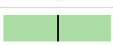
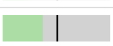
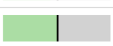
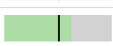
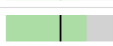
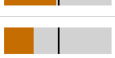
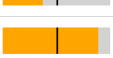
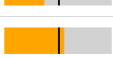


Figure S2. Distribution of non-local protected area data manager responses regarding the encounter of or injured (brown), sick (red), dead (blue) wildlife in the protected area(s) where they work and the recording (bright color) or non-recoding (pale color) of these animals when encountered. Green bars represent the proportion of responses that reported the recording of wildlife per wildlife category and encounter frequency.

Table S1. Distribution of the method of documentation to register either healthy, sick, injured, or dead wildlife found during ranger patrols reported by non-local protected area data managers ('Individual observation', 'Part of the full count', 'Present or absent', 'Another way') and the recording of specific data items for each wildlife health status across documentation methods.

Wildlife category	Documentation method used (%)	Data items recorded (%)						
		Species	Age	Sex	Condition	Anomalies	Photographs	Other
Healthy (n = 10)	Individual observation							
	Part of the full count							
	Present or absent							
	Another way							
Injured (n = 11)	Individual observation							
	Part of the full count							
	Present or absent							
	Another way							
Sick (n = 8)	Individual observation							
	Part of the full count							
	Present or absent							
	Another way							
Dead (n = 12)	Individual observation							
	Part of the full count							
	Present or absent							
	Another way							

2.3 Presence of domestic animals in protected areas, the documentation of their health status, and the perceived threats of domestic animals to conservation goals

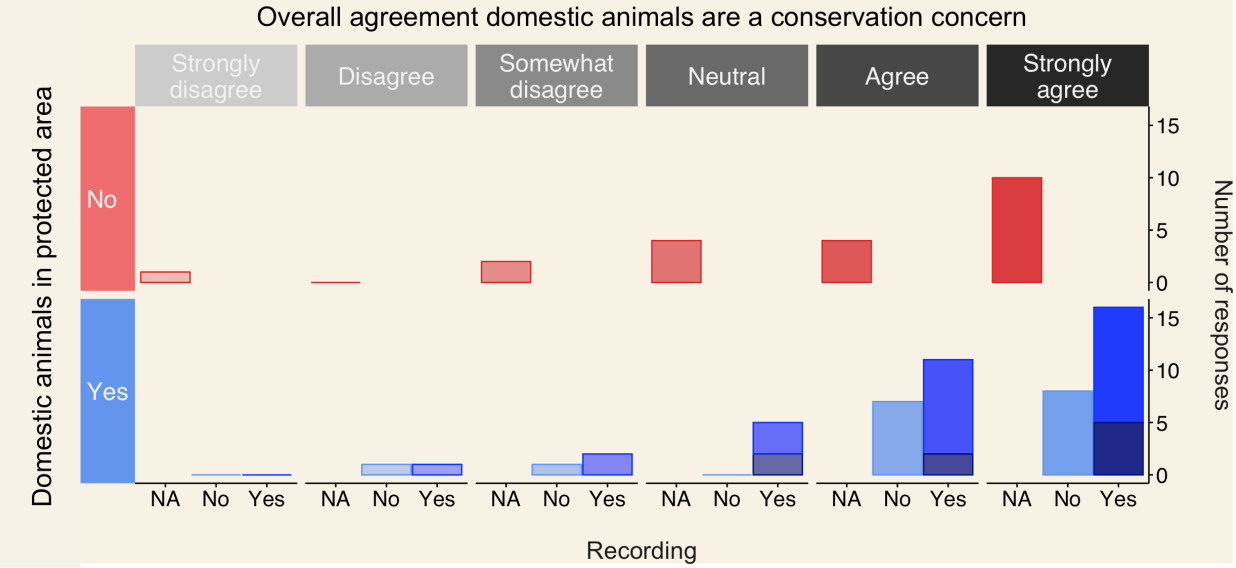


Figure S3. Distribution of the level of agreement among non-local protected area data managers with the statement 'Introduced domestic animals (e.g., dogs, cats, cattle, pigs, cows) are a concern for the conservation goals of the protected areas where I work' for the groups that reported the absence (red) and presence (blue) of domestic animals in the protected area(s) and their recording in the latter. Darker segments in the bars at the "Yes recording of domestic animals" category (x-axis) represent the number of responses that documented domestic animal health status.

3 Distribution of responses across their overall agreement with ‘human and livestock pathogens can impact wildlife health’ and ‘introduced domestic animals are a concern for the conservation goals of the protected area’

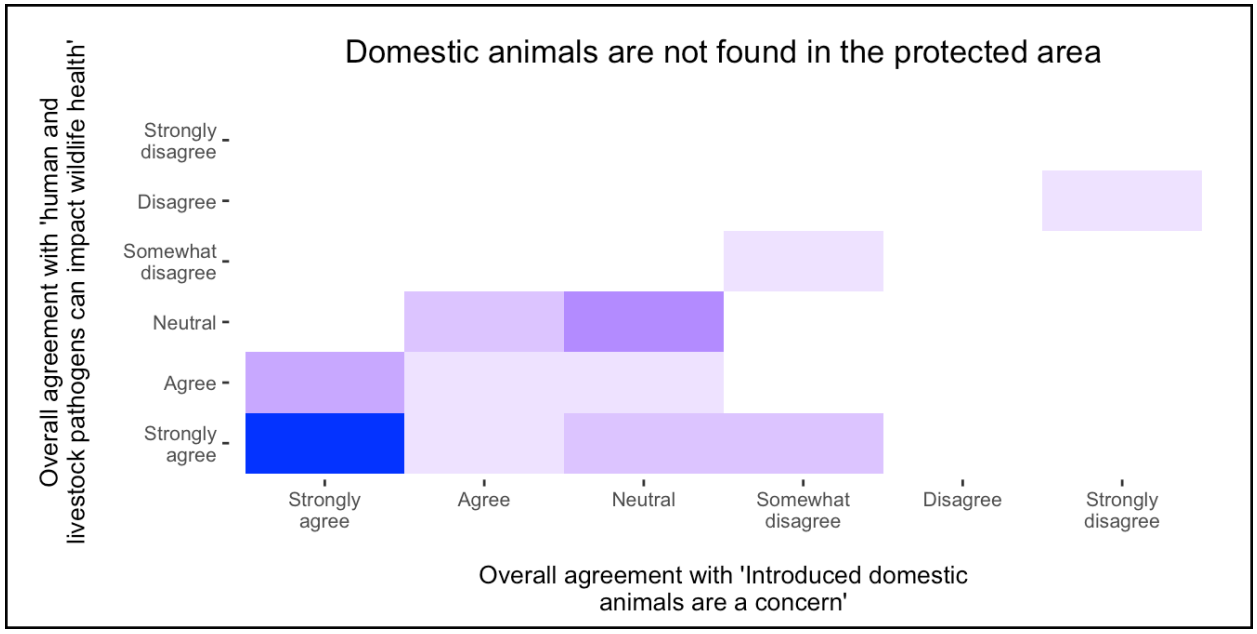


Figure S4. Distribution of protected area data managers responses across their overall agreement with ‘human and livestock pathogens can impact wildlife health’ and ‘introduced domestic animals are a concern for the conservation goals of the protected area’ for those protected area managers that reported the absence of domestic animals in the protected area.

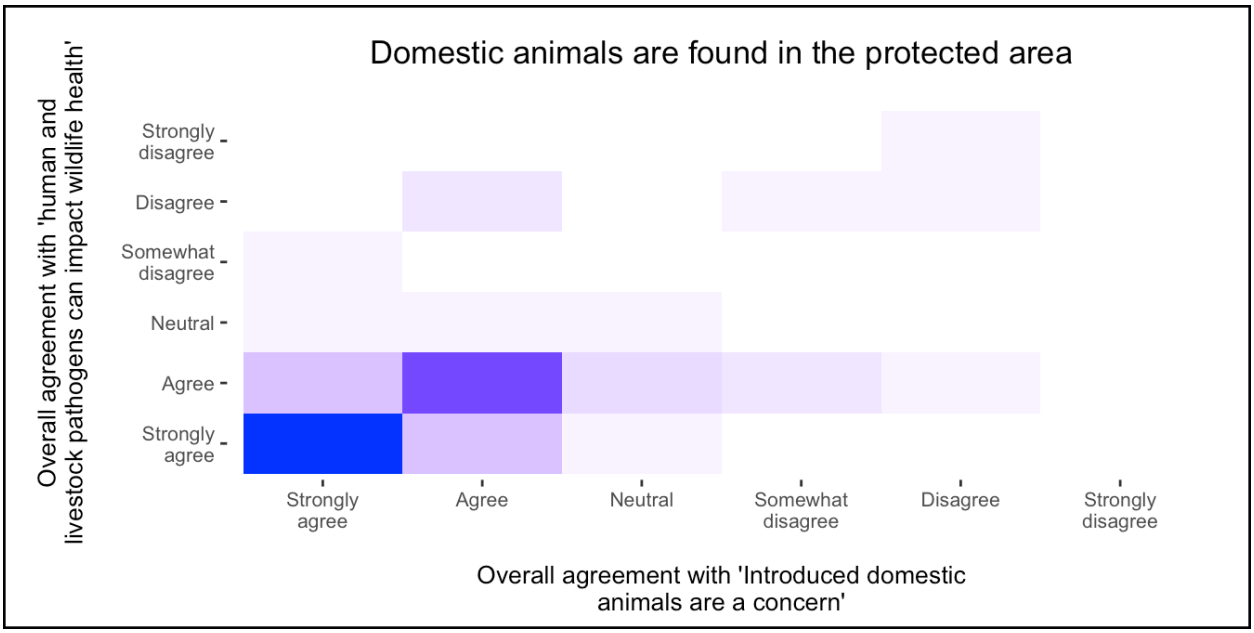


Figure S5. Distribution of protected area data managers responses across their overall agreement with 'human and livestock pathogens can impact wildlife health' and 'introduced domestic animals are a concern for the conservation goals of the protected area' for those protected area data managers that reported the presence of domestic animals in the protected area.