Evaluating the effectiveness of a public awareness campaign as a conservation intervention: the saiga antelope *Saiga tatarica* in Kalmykia, Russia

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APPENDIX 1 The attitude and perception questionnaire and basic household questionnaire used in the survey.

Attitude and perception questionnaire

Name: Age: Sex:
Occupation(s):
Education Level:
[*Using the map provided explain the following regions before commencing the questionnaire*]

Throughout this questionnaire we will refer to different geographical areas. These are:

(a) 5 km radius of your village
(b) Your raion
(c) Kalmykia/Astrakhan [*depends on location of village*]
(d) Russia

(1) Exposure to the saiga antelope and knowledge of its status

(a) When did you last see saiga in:
  (i)   A 5 km radius of this village?
  (ii) This raion?
  (iii) Kalmykia/Astrakhan oblast?

(b) On this last occasion, what were the most saigas that you saw at one time?

Numbers	Location		
	5 km radius	Raion	Kalmykia/Astrkhan
100,000			
1,000s			
100s			
100–50			
50–10			
10–0 [*ask them to be precise if possible*]			

(c) Do you think there have been changes in saigas (e.g. numbers, behaviour, migratory routes, sex ratio, etc.) in:

(i)   A 5 km radius of this village?
(ii) Raion?
(iii) Kalmykia/Astrakhan?

Area	Change	When did the changes start?	How has the change progressed over time?	Reason
5 km radius of village				
Raion				
Kalmykia/Astrakhan				

(2) General perception and attitudes towards saiga antelope

    (a) Using the scale of 1–6 below, please tell me whether you agree or disagree with the statements i–iii.

        1, Strongly agree   2, Agree   3, Neither agree nor disagree

        4, Disagree   5, Strongly disagree   6, Don't know

      (i) 'I have more important things to think about than the future of the saiga antelope.'

      (ii) 'If the saiga was lost from Russia I would not mind.'

      (iii) 'Saiga should be protected for future generations even if that means making sacrifices now.'

    (b) Has your attitude towards/opinion of saiga changed over time? If YES, how has it changed?

Before		After		Why
Time	Opinion	Time	Opinion	

    (c) Amount pledged for saiga conservation

The current saiga population is considerably smaller than historic levels and is also no longer reproducing healthily. If current levels of hunting pressure are maintained or increased in this region the saiga will be lost from Russia.

An annual household voluntary contribution has been considered as a means of raising money to support the conservation and protection of the saiga antelope.

Which of the amounts below best describes the maximum amount your household is willing to pledge, every year, through a voluntary contribution, to prevent the loss of saiga from Russia? Please think carefully about how much you can really afford and where the additional money would come from and try to be as realistic as possible.

Place a tick (√) next to the amount your household would be willing to pledge. When you reach an amount that you are not sure of being willing to pledge then leave it BLANK. When you reach an amount that you are almost certain you would not pay, then place a cross (**x**)

Roubles per year	Amount pledged
0	
50	
100	
200	
400	
800	
1,600	
3,200	
6,400	
12,800	
25,600	
50,000	
>50,000	

    (d) Follow up questions

      (i) Possible reasons why interviewee does NOT want to pledge any money (True √; False **x**)

        ● Our household cannot afford to pay

        ● I am not very interested in saiga antelope and feel that their conservation is not a priority

        ● I don't believe a contribution scheme is workable

        ● The government or international community should pay for this

        ● I need more information/time to answer the question

(ii) Possible reasons why interviewee wants to pledge an amount (True √; False **x**)
- I am interested in the saiga antelope and feel that it is important to conserve them
- I get satisfaction from giving to a good cause
- We should protect the saiga for future generations
- I feel we should protect our wildlife and environment in general

(2) Knowledge and opinion of conservation

    (a) Do you know of any saiga conservation taking place at this moment in:
- (i)   This raion?
- (ii) Kalmykia/Astrakhan?
- (iii) Russia?

Area	Where	Who	When	What/how	Opinion
Raion					
Kalmykia/Astrakhan					
Russia					

    (b) Any suggestions for how to improve the conservation of the saiga in:
- (i)   This raion?
- (ii) Kalmykia/Astrkhan?
- (iii) Russia?

(4) Knowledge and opinion of public awareness

    (a) When was the last time that you or any family members received any information about anything to do with saiga antelopes?

    (b) What was the medium through which you gained this information (e.g. tv, radio, friends, etc.)?

    (c) What was that information about? (e.g. ecology, poaching, culture, etc.)

    (d) In the last year, about how many times have you received information of any sort about the saiga, from where and what was it?

Who received information	Last time received	Medium (from whom/where from)	What (ecology, poaching, culture, etc.)	Frequency	Opinion

    (i) Do you feel that this information has altered your attitude/behaviour towards saiga and their management?
       YES/NO
    (ii) If YES, how?

    (e) Have you or someone you know received any benefits related to saiga conservation?

Who received benefits	What	From whom/where from	When	Opinion

(i) Do you feel that these benefits have altered your attitude/behaviour towards saigas and their management? **YES/NO**

(ii) If YES, how?

(5) Opinion on costs of conservation

(a) Have you or someone you know suffered any costs related to saiga conservation?

Who suffered costs	What	From whom/where from	When	How did they affect you

(i) Do you feel that these costs have altered your attitude/behaviour towards saiga and their management? **YES/NO**

(ii) If YES, how?

(b) What suggestions would you make to help to lessen these costs?

Household Questionnaire

Date: Village: Household no.:

(1) Demographics

(a) How many years have your family lived in the village?

(b) Where did your family live before?

(c) Why did your family move here?

(d) Household structure [*circle respondent*]

Relation to head	Sex	Age	Social status	Education

(2) Household income

(a) What are the dominant livelihood activities of your household in each season of the year?

(b) What income is derived from each of the activities in the different seasons?

Livelihood activity	Income

(c) Does this household receive any additional income (e.g. from family members in town, pensions)? If YES, where from?

(d) Do you own any animals? If YES, how many and what kind?

Type of animal	Income from other animal products/year (wool, milk, eggs, etc.)

(e) Does your household own any vehicles? If YES, what and how many?

Type of vehicle	Number	Year of purchase
Motorbike		
Non off-road car		
Off-road car		
Bus, minibus		
Tractor/machinery		

APPENDIX 2 Method of calculation of subjective explanatory variables

Variables

Tables A1 and A2 provide a list of the variables used in the analysis, with units, range and method of calculation.

Wealth

Wealth was calculated taking into account employment ratio, farm ownership, large livestock and poultry ownership, pensions/allowances received and vehicle ownership (Kuhl, 2008). Each subcategory was scored as in Table A2 and then the total score was added together. Wealth was then ranked according to the following 5-point scale: $1 = 1$–4 points, $2 = 5$–8 points, $3 = 9$–12 points, $4 = 13$–16 points, $5 = \geq 17$ points.

Exposure level to the saiga

Exposure level was defined as the level of exposure that individuals had to the saiga. Exposure level was calculated based on the date and location of last sighting, the number of animals seen and the total number of sightings. Each subcategory was scored as in Table A3 and the total was summed together. Exposure was then ranked on a 3-point scale: $1 = 0$–10 points, $2 = 11$–14 points, $3 = 15$–18 points.

Conservation knowledge

This was considered to be the level of knowledge regarding the number of conservation projects at the regional, republic and national scales. Respondents were scored on how many conservation interventions they knew about. The total score was summed together, viz: 1 mark for each intervention mentioned, 0.5 mark if respondents thought they had heard about a

TABLE A1 Details of explanatory variables. Age and sex were also included as explanatory variables in the models but, as they are self explanatory, they are not included in this table.

Variable	Units	Range	Calculation	Type*
Village	1 = Utta, 2 = Khulhutta, 3 = Tavn-Gashun, 4 = Bacy, 5 = Zenzeli, 6 = Molodozhnye, 7 = Erdnevskiy, 8 = Adyk			N
Intervention	1 = media campaign, 2 = social intervention & media campaign, 3 = traditional conservation		Media campaign = coverage in local & national media. Social intervention = Rotating Cows under Defra's Small Environmental Projects Scheme + detailed socio-economic questionnaire carried out in 2003 + media coverage. Traditional conservation = anti-poaching activities and no major media campaign	N
Wealth	1 = low, 5 = high	1–5	See Appendix 1	O
Formal education	1 = none/primary, 2 = full secondary, 3 = technical secondary, 4 = higher education	1–4		O
Nationality	1 = Kalmyk, 2 = Russian, 3 = Other			N
Residence time in village	1 = up to half of life, 2 = over half of life, 3 = all of life	1–3	Length of time resident in village as a proportion of life span	O
Exposure level to saiga	1 = low, 3 = high	1–3	See Appendix 1	O
Conservation knowledge	0 = none, 5 = high	0–5	See Appendix 1	O
Remembered receiving public awareness materials	0 = no, 1 = yes			N
Positive opinion change in last 3 years	0 = no, 1 = yes			N
Media format of public awareness material	1 = newspaper, 2 = television			N
Date material received	1 = 2005 or earlier, 2 = Jan.–July 2006, 3 = Aug.–Oct. 2006			N
Recalled subject of material received	1 = ecology, 2 = conservation, 3 = poaching			N
Recalled immediate effect of material received	0 = no, 1 = yes			N

*N, nominal; O, ordinal

TABLE A2 Summary of variables contributing to wealth calculation.

Variable	Scoring	Calculation
Employment ratio	1 = <1, 2 = 1.1–2, 3 = 2.1–3, 4 = 3.1–4, 5 = 4.1–5, 6 = 5.1–6, 7 = >6	Number of people per household earning a wage divided by number of dependents in that household
Farm ownership	0 = no farm, 2 = farm	Farm ownership was a significant indicator of wealth (CH, pers. obs.) and therefore the scoring system was weighted to reflect this
Large livestock ownership	0 = 0, 1 = <50, 2 = 50–100, 3 = 101–200, 4 = 201–500, 5 = >500	Respondents were asked to indicate number owned
Poultry ownership	0 = none, 1 = subsistence number, 2 = income earned (generally >50)	Respondents were asked to provide number owned. Poultry ownership was not scored as highly as large livestock ownership to reflect the greater wealth earned by large livestock farming.
Pensions/allowances	0 = none, 1 = 1 per household, 2 = 2 per household	Pensions/allowances were taken into consideration alongside employment ratio, as they were considered a source of income for the household (CH, pers. obs.)
Vehicle ownership	0 = no vehicles, 1 = one >20 years, 2 = two >20 years or one 10–20 years, 3 = one 5–10 years or two 10–20 years or three >20 years, 4 = one <5 years or two 5–10 years, 5 = one imported 5–10 years or two <5 years or three 5–10 years or four >10 years, 6 = one or two imported >10 years or three <5 years, 7 = two to four imported <5 years	Vehicle ownership was a significant indicator of wealth (CH, pers. obs.). Scoring was rated on number of vehicles owned, age of vehicles and whether they were imported (the latter cost significantly more than Russian vehicles).

TABLE A3 Summary of variables contributing to the calculation of exposure level to the saiga.

Variable	Scoring	Calculation
Date of last exposure (years)	1 = >20.01, 2 = 10.01–20.00, 3 = 5.01–10.00, 4 = 2.01–5.00, 5 = 1.01–2.00, 6 = 0.51–1.00, 7 = 0.11–0.50, 8 = 0.00–0.01, 0 = never	Respondents were asked to recall date when they last saw a saiga. More recent dates were given a higher rating in terms of exposure because it was assumed that the more recent the sighting the greater its effect on the respondent.
Location of last sighting	0 = no sightings, 1 = outside the republic, 2 = raion (local administrative area)/republic, 3 = village	Interviewees stated where their last sighting was. Higher scores were given to those who had sighted saigas locally. It was assumed that seeing animals close to home would have a greater influence as it would have a more immediate effect.
Number of animals in last sighting	0 = no animals, 1 = 0–10, 2 = 10–50, 3 = 50–100, 4 = 100s, 5 = 1,000s, 6 = 100,000	Respondents were asked to recall approximately how many animals they had seen in their last sighting. Greater numbers were awarded higher scores as it was assumed that seeing many animals (such as large herds) would have a more dramatic effect.
Number of sightings	0 = no sightings, 1 = 1, 2 = 2, 3 = 3	Interviews were scored on whether they had seen saigas in all three locations: village, raion/republic and outside the republic. Larger numbers of sightings were not used as it was not felt that recall was accurate enough.

TABLE A4 Reasons for decline and increase as assessed by an in-country expert (A.A. Lushchekina).

Reasons given for decline	Reasons given for increase
Anthropogenic	
Overhunting & poaching	Chernye Zemli Biosphere Reserve & other protected areas to cover the migration routes & rutting/lambing areas
Lack of protection from the government	
Rangers: do not have necessary funding to do their job; dishonest, failing to do their job	Social improvements
Poverty, lack of alternative livelihoods	Total control of poachers & ban of hunting up to restoration of saiga numbers
Extensive irrigation channel network such as the Volga water channel, which interferes with migration routes	
Uncontrolled increase of livestock & overgrazing of pasture-land both artificial and natural reducing food available for saigas	
Ecological	
Changing conditions due to desertification, cold winters & summer drought, fires, decreasing capacity of grasslands	Improving habitats by restoration measures
Wolves	
Migrational changes	

specific intervention but were not 100% sure (this was only awarded if they were in fact correct), and 1 extra mark for mentioning an intervention not in the local vicinity or district but either elsewhere in the republic or in Russia.

Population knowledge

Population knowledge was an individual's level of knowledge regarding the direction, timing and reasons for population fluctuations. Reasons for decline and increase were assessed against information from an in-country expert (A. Lushchekina, pers. comm.) and are given in Table A4. Respondents were marked on their knowledge of reasons why the saiga population had declined or increased, with one mark for each correct reason given from Table A4. They were then marked on their knowledge of the direction and timing of any changes, with marks awarded for accuracy, based on Table A5. The mark scheme in

TABLE A5 Scoring sheet for accuracy of knowledge regarding saiga population trends over time. Based on data in Milner-Gulland et al. (2001).

Year	Decline	Increase
1978	0.5	0
1979	1	0
1980	2	0
1981	2	0
1982	2	0
1983	1	0
1984	0.5	0
1985	0	0.5
1986	0	1
1987	0	1
1988	0	1
1989	0.5	0.5
1990	1	0
1991	1	0.5
1992	1	1
1993	0.5	2
1994	0.5	2
1995	1	2
1996	2	1
1997	2	0.5
1998	2	0
1999	1	0
2000	0.5	0
2001	0	0
2002	0	0.5
2003	0	1
2004	0	1
2005	0	1
2006	0	0.5
1980s	1	0.5
1990s	1	1
2000s	0	0.5

Table A5 was constructed based on population data gathered since 1978. For example, there was a recorded decline in the population in 1981. Any respondent who mentioned this decline was awarded 1 mark. They were then awarded subsequent marks for their accuracy surrounding the timing that they stated the decline occurred. Therefore anyone who stated 1980–1982 was awarded 2 marks, either 1979 or 1983, 1 mark, and 1978 or 1984, 0.5 marks.