Revealing research preferences in conservation science

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Supplementary Table 1 Pattern matrix of factor solution, showing a six-factor solution.

|	Factor					
	1	2	3	4	5	6
Nature begins where society ends.	.719					
I see nature as clearly distinct from society.	.692					
It makes sense to research natural and social systems as independent entities.	.495					
The reality that I observe is unique to me.		.529				
Reality is constructed in the minds of individual humans at given times and places.		.519				
All research is ultimately subjective.		.459				
The primary goal of my research is to understand humans and their institutions better. (-)			.743			
In my research, I am primarily interested in the dynamics of animals, plants and their ecosystems.			.694			
Conservation research should focus more on humans than ecosystems. (-)			.474			
I find the details of specific research sites more interesting than general trends.				.859		
I am more interested in broad scale processes than I am in what happens in particular cases. (-)				.426		
Synthesis research provides important insights for conservation. (-)				.324		
In carrying out my research, I would be most satisfied when I bring about conservation outcomes.					.626	
In carrying out conservation research, I am mostly driven by achieving impact.					.537	
I think conservation research should always mobilise action.					.495	
I would refuse to work on conservation research involving collaborators that I disagree with.						.520
The inefficiencies of collaborative research often outweigh its benefits.						.456
I am willing to work with stakeholders that I disagree with in order to achieve conservation outcomes. (-)						.453
The demands and expectations of stakeholders can compromise the integrity of research.						.316
Eigenvalues	2.093	1.437	1.141	.921	.854	.599
% of Variance	11.015	7.564	6.004	4.849	4.494	3.154
α	.677	.519	.677	.490	.507	.476

SUPPLEMENTARY TABLE 2 Overview demographics of questionnaire respondents showing scientific identity, education*, gender and world region of home institution.

Scientific identity and education	Respondents
Natural scientist	117
Education: Natural and physical sciences	(107)
Education: Social sciences and humanities	(9)
Education: Interdisciplinary fields	(17)
Social scientist	22
Education: Natural and physical sciences	(9)
Education: Social sciences and humanities	(12)
Education: Interdisciplinary fields	(13)
Both of the above	52
Education: Natural and physical sciences	(38)
Education: Social sciences and humanities	(15)
Education: Interdisciplinary fields	(21)
None of the above	9
Gender	
Woman	117
Man	80
Other	0
World region of home institution	
Africa	26
Asia	27
Australasia	4
Europe	123
North America	6
South America	11
Prefer not to say	3

*Education fields were self-reported and placed into categories by the authors, which included traditional natural and physical sciences (biology, botany, computer science, ecology, mathematics and zoology), traditional social sciences and humanities (including anthropology, business and management, economics, history, indigenous knowledge, law, philosophy, political science, psychology and sociology), and interdisciplinary fields (including conservation, environmental sciences, forestry, geography, sustainability, veterinary science and wildlife management). Where two or more educational backgrounds were reported, they were counted in all relevant categories.

SUPPLEMENTARY MATERIAL 1 Workshop plan

1.   Participants receive an invitation to the workshop based on their self-identification or supervisor identification of them as a 'conservation' researcher or someone with research related activities.

2.   Participants are asked to complete the questionnaire in advance either on an online form or on paper. Both group and individual results are calculated by the facilitator and brought to the workshop as spider diagram profiles. If this is not possible, individuals can complete a self-score questionnaire (Supplementary Material 3.) themselves at the start of the workshop.

3.   In the opening of the workshop, the facilitator(s) provides some contextual background as to the nature, overview and selection process for the participants. Before delving into the individual results related to the preference tool, the facilitation guides the participants through some group socialisation activities that highlight that different and similarity exist in many ways in groups, and that allow people to start engaging in discussion about these things on non-personal topics. For example, the group may be asked to break into randomly assigned groups and do word association activities with things such as 'science', 'impact', 'conservation' and then discuss what the different ideas, definitions, issues put us under each idea mean for how similar or dissimilar people view the world. In this way, the group begins to engage in reflective dialogue around less-personal topics and starts to develop interpersonal rapport.

4.   During the workshop, participants are given their spider diagram questionnaire results profiles, showing both individual and group results, but these are not shown to the whole group. Individuals are asked to individually reflect on their results and ask any clarifying questions. They are also encouraged to engage in facilitated dialogue if the questions lead to more general group discussions. Participants are not encouraged to disclose their results, but are also not prohibited from doing so if they feel comfortable.

5.   Participants are then invited to participate in an activity. A line is drawn in the centre of the room or flipcharts placed in differ places in the room. For each factor, the two extremes of each factor are assigned to different ends of that line or a differing flip chart. Participants are then asked to position themselves along the line corresponding to their numerical result for that factor (Supplementary Fig. 1). The facilitator(s) highlight that that group already has many differences and similarities based on the first round of exercises, and that the preferences tool helps to describe these but NOT prescribe them. Careful attention must be paid to the group dynamic and moderated based on group cohesion, expressed sentiments and non-verbal cues.

6.   As individuals or in groups, participants along the line are then requested to explain to those at the other side of the room about why they thought their preferred approach to each factor was important. They can also ask each other any questions about the research approach at the other extreme of the factor. The dialogue is facilitated to find a balance between individual reflexivity and peer-to-peer dialogue, questioning and group learning. The facilitator should ask participants to reflect on what this means for the work and how they might take these insights into their future work and research.
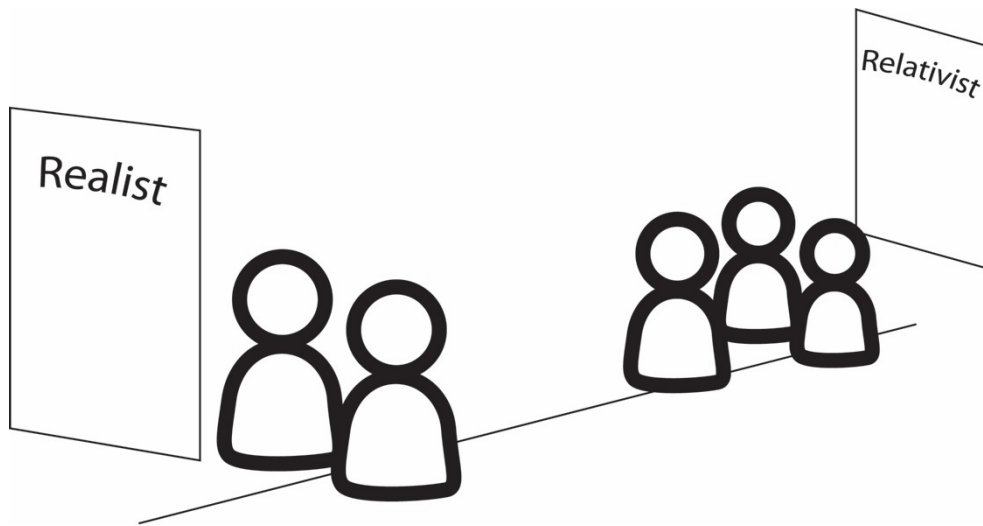
SUPPLEMENTARY FIG. 1 An illustration of an activity to engage respondents in dialogue about the different research preferences that are identified through the questionnaire.

NOTES The questionnaire is not intended to create new dualisms between the extremes of different factors. The results of the questionnaire are intended to be indications of fluid tendencies within researcher preferences that can and will change over time. It is for this reason that the results are displayed as numerical positions in a spider diagram, along a spectrum, rather than assigned as a fixed category. The contested nature of concepts and terms used in the questionnaire may also lead some respondents to feel like the factors do not accurately reflect their worldviews or that they change over time. Such reflections are perfectly valid. Facilitation is critical and the group cohesion, dynamics and verbal as well as non-verbal cues should be carefully monitored and moderated.

SUPPORTING MATERIAL 2 Self-scoring questionnaire.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree	SCORE
All research is ultimately subjective.								A
In carrying out conservation research, I am mostly driven by achieving impact.								B
Conservation research should focus more on humans than ecosystems.								C
I am more interested in broad scale processes than I am in what happens in particular cases								D
I am willing to work with stakeholders that I disagree with in order to achieve conservation outcomes.								E
Nature begins where society ends.								F
I find the details of specific research sites more interesting than general trends.								G
I think conservation research should always mobilise action.								H
I would refuse to work on conservation research involving collaborators that I disagree with.								J
The demands and expectations of stakeholders can compromise the integrity of research.								K
In my research, I am primarily interested in the dynamics of animals, plants and their ecosystems.								L
It makes sense to research natural and social systems as independent entities.								M
Reality is constructed in the minds of individual humans at given times and places.								N
Synthesis research provides important insights for conservation.								P
In carrying out my research, I would be most satisfied when I bring about								Q

conservation outcomes.	
The inefficiencies of collaborative research often outweigh its benefits.	R
I see nature as clearly distinct from society.	S
The primary goal of my research is to understand humans and their institutions better.	T
The reality that I observe is unique to me.	U

SELF SCORE INSTRUCTIONS

For each question, provide a score based on each answer, using the following guide:

Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
-3	-2	-1	0	1	2	3

Individual factor scores can then be calculated by hand using the formulae below. To assist with the calculations of the Final Score, two quick guide tables are provided on the next page. Using your Final Score you will then be able to draw a personal profile of your results.

Impact and outcome driven

Q + B + H = Score 1

Score 1 / 3 = FINAL SCORE

Local specifics perspective

G - D - P = Score 1

Score 1 / 3 = FINAL SCORE

Autonomous idealist

J + R + K - E = Score 1

Score 1 / 4 = FINAL SCORE

Human-focused research

L - T - C = Score 1

Score 1 X -1 Score 2 / 3 = FINAL SCORE

Relativism

U + N + A = Score 1

Score 1 / 3 = FINAL SCORE

Nature and society separation

F	+	S	+	M	=	Score 1

Score 1	/ 3 =	**FINAL SCORE**

QUICK GUIDE TABLES FOR CALCULATIONS

9 / 3 = 3
8 / 3 = 2.67
7 / 3 = 2.33
6 / 3 = 2
5 / 3 = 1.67
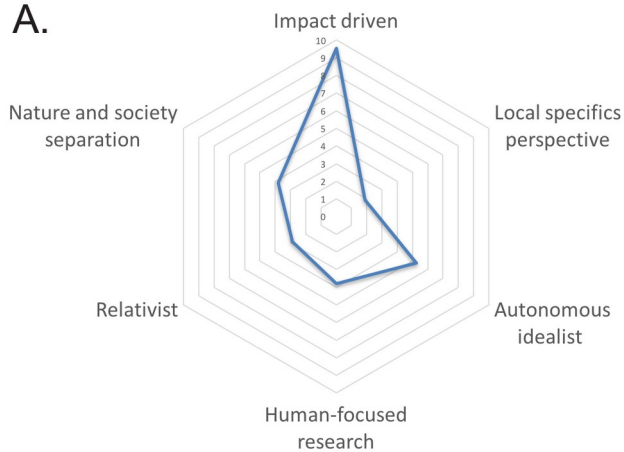4 / 3 = 1.33
3 / 3 = 1
2 / 3 = 0.67
1 / 3 = 0.33
0 / 3 = 0

12 / 4 = 3
11 / 4 = 2.75
10 / 4 = 2.5
9 / 4 = 2.25
8 / 4 = 2
7 / 4 = 1.75
6 / 4 = 1.5

5 / 4 = 1.25
4 / 4 = 1
3 / 4 = 0.75
2 / 4 = .5
1 / 4 = 0.25
0 / 4 = 0

PERSONAL PROFILE INSTRUCTIONS

Take the final score from each category and mark the diagram with a dot on each axis. Once all axes are marked, you can complete the diagram by drawing a line between the dots to create a circle. Two example diagrams (A and B) are provided below to illustrate.

A.

Impact driven
Local specifics perspective
Autonomous idealist
Human-focused research
Relativist
Nature and society separation

B.

Impact driven
Local specifics perspective
Autonomous idealist
Human-focused research
Relativist
Nature and society separation