AMBIO

Electronic Supplementary Material

This supplementary material has not been peer reviewed.

Title: Exploring conservation discourses in the Galapagos Islands: a case study of the Galapagos giant tortoises

Table S1. Q methodology data collection process (step by step)

Step and definition	Data collection in the Galapagos Islands, Ecuador

Concourse
The body of information about a research topic
	• Collected throughout:
	  o 54 interviews (Table S2) conducted in Spanish (the mother tongue of the researcher and the official langue Galapagos, Ecuador) in the four inhabited Islands;
	  o Gray and scientific literature revision (Table S3)
	• After transcribing the interviews and analyzing the reviewed literature, a total of 420 statements were gathered.

Q-sample The final and reduced concourse capturing specific issues that could be viewed differently among stakeholders	• A structured approach to reduce the concourse (SARC) from 420 to 60 statements was used. • Six separate dimensions within which opinions about the role of the Galapagos giant tortoise for the conservation and development of the archipelago had been brought up: (i) science-conservation, (ii) conservation-tourism, (iii) tourism-economy, (iv) community involvement, (v) policy and management, (vi) giant tortoise typology/representation • The final 'Q-sample' contained 60 statements selected and were test-piloted with Charles Darwin Foundation staff (academic and linguistic staff, and doctoral students from Galapagos). The wording of some statements was modified to improve clarity (Watts and Stenner 2012).
Q-participants A deliberative selection of participants to reflect the widest range of opinions in order to identify all factors that exist in relation to the topic of research	• Q participants were selected based on the relevance of their viewpoints regarding our research questions (role of giant tortoises in conservation and development in the archipelago) and based on their availability while in the Galapagos Islands. • Having conducted the stakeholder analysis (SAN) and interviews for collecting the concourse made the identification of Q-participants straightforward. • The total number of Q-participants that took part in the research was 28 (n=28).
Q- sort Ranked statements of the *Q-sample* according to specific instructions	• Each participant was asked to rank each Q-statement in accordance with her/his preferences (agreement or disagreement) over a quasi-normal distribution (-6 to +6) over a pyramidal shape.
Post-sorting interviews Facilitates the interpretation of the identified factors by adding the comments of those individuals whose Q-sorts correlated significantly with the discourse being described	• Upon completion of the Q-sorts, each participant was asked to explain her/his reaction to the statements that they most agree or disagree on, and to particular statement(s) that they wished to discuss. • We audio-recorded the responses and finished by asking demographic information.

Table S2. Identified stakeholders in Galapagos and number of interviewees by institution and inhabited island. A stakeholder analysis (SAN) approach was used to identify relevant groups of participants that could capture the spectrum of ideas occurring the four inhabited islands, we. Each interview lasted between 45 to 90 minutes. Interviews were transcribed and used to generate the concourse statements. This approach also allowed identifying relevant Q-participants for the Q-sorting phase of the methodology.

Institution	**Number of interviewees per island**				
	Santa Cruz	San Cristobal	Isabela	Floreana	Total
Ministries					
• *Urban development and livelihood (MIDUVI)*	1				1
• *Agriculture, farming and fisheries (MAGAP)*	1				1
• *Social inclusion (MIES)*	1		1		2
• *Tourism*			1		1
GNP officers		1	2	1	4
Tourism chamber	1				1
Galapagos biosecurity agency (ABG)	1	1	1	1	4
Port captaincy	1	1	1	1	4
Parrish board	1			1	2
NGOs					
• *Conservation International (CI)*	1				1
• *World Wild Fund for Nature (WWF)*	1				1
• *FUNDAR*	1				1
• *Isabela Oceanographic Institute (IOI)*			1		1
Education centres					
• *High school Nacional Galapagos*	1				1
• *High school Amazonas*			1		1
• *High school Ignacio Hernandez*		1			1
• *School Santa Maria*				1	1
• *University San Francisco de Quito (USFQ)*		1			1
Galapagos Governing Council (GGC)		1	1		2
Municipalities	1	1	1		3
Locals					
• *Educator/artist*	1				1
• *Farmers*			4	1	5
• *Independent*	1				1
• *Giant tortoise touristic ranches*	2		1		3
• *Foreign scientist giant tortoise*	1				1
• *Local scientist*	1				1
• *Retired scientist giant tortoise*	1				1
• *Fishermen*			1	1	2
• *Fishermen association*		1			1
• *Tourism guide*			1		1
• *Former park ranger*	1				1
• *Park ranger/Artisan*				1	1
• *Mayor candidate*			1		1
Total of interviewees	**20**	**8**	**18**	**8**	**54**

Table S3. Literature revision of gray and scientific literature

Reference	Document type	Journal name or publisher
Kenchington 1989	PRP	Environmental Conservation
Milinkovitch et al. 2004	PRP	Proceedings of the Royal Society of London
Chambers 2006	BK	Oxford University Press
Marquez et al. 2007	PRP	Oryx
Rusello et al. 2007	PRP	Current Biology
Gibbs et al. 2008	PRP	Restoration Ecology
Gibbs et al. 2010	PRP	Biotropica
Blake et al. 2012	PRP	Journal of Biogeography
Blake et al. 2013	PRP	Journal of Animal Ecology
Edwards et al. 2013	PRP	Biological Conservation
Froyd et al. 2014	PRP	Ecology Letters
Hennessy 2013	PRP	Geoforum
Nicholls 2012	PN	Nature news
Cayot 2008	LJ	Galapagos Research
Jiménez-Uzcátegui et al. 2007	LR	Galapagos Report
Atkinson et al. 2008	LR	Galapagos Report
Galapagos Conservancy 2008	LR	Annual Report
Grenier 2010	LR	Galapagos Report
MAE, 2012	WP	Ministry of Environment of Ecuador
Wang 2012	PN	Yalle daily news
Welsh 2012	PN	Life science
Nava 2010	WP	James Nava
El Comercio 2012	WP	El Comercio Peru
El informador 2013	WP	El Informador

Document type: peer reviewed publications (PRP), book (BK) local journals (LJ), local reports (LR), press news (PN), web pages (WP)

Table S4. Un-rotated factors with Eigen values (EV) >1

Q-sort	F1	F2	F3	F4	F5	F6	F7	F8	F9
1	0.27	0.50*	0.10	-0.14	0.11	-0.04	-0.37	0.19	-0.05
2	0.39	0.30	-0.09	0.51*	0.01	0.15	-0.08	-0.08	-0.25
3	0.28	0.49	0.16	-0.19	-0.07	0.15	-0.50	-0.08	0.32
4	0.28	-0.05	0.15	0.50	-0.40	-0.12	0.06	-0.41	0.22
5	0.53	-0.14	0.30	-0.39	0.04	-0.19	-0.08	0.13	-0.28
6	0.42	-0.52*	0.14	-0.39	0.18	-0.19	-0.18	-0.16	0.03
7	0.21	0.44	0.48	-0.05	-0.02	-0.11	0.38	0.23	0.09
8	0.49	-0.06	0.13	0.30	0.14	0.45	-0.15	0.16	0.26
9	0.35	-0.05	0.52*	-0.06	0.14	0.29	0.32	0.25	0.21
10	0.51	0.16	0.23	-0.36	0.05	-0.29	-0.03	-0.10	-0.08
11	0.29	0.08	0.62*	0.11	-0.39	0.04	-0.09	0.01	0.14
12	0.57	-0.31	-0.32	-0.03	-0.31	-0.05	0.06	0.29	0.27
13	0.59	-0.35	-0.30	0.23	-0.12	0.34	-0.13	0.07	-0.24
14	0.60	-0.30	0.02	0.01	0.13	-0.32	0.32	-0.01	0.16
15	0.59	-0.23	0.08	-0.12	0.42	0.18	-0.01	-0.28	-0.07
16	0.55	0.27	-0.28	-0.19	-0.30	-0.13	0.21	-0.02	-0.18
17	0.63	0.06	-0.26	0.01	-0.08	0.03	0.19	-0.21	0.08
18	0.13	0.31	0.25	0.36	0.51	0.15	0.24	-0.12	-0.29
19	0.71*	0.13	0.02	0.02	-0.03	-0.10	-0.27	-0.03	-0.24
20	0.40	0.05	0.00	-0.43	-0.22	0.49	0.15	-0.26	0.03
21	0.34	-0.03	0.27	0.56*	0.01	-0.38	-0.12	-0.06	0.01

Table S4. Un-rotated factors with Eigen values (EV) >1

22	0.37	0.26	-0.37	-0.14	0.22	0.06	0.03	0.33	0.15
23	0.53	-0.47	0.02	0.24	0.07	0.04	0.07	0.30	-0.12
24	0.60	-0.36	0.09	0.13	-0.20	-0.08	-0.19	0.27	-0.14
25	0.65★	-0.27	-0.06	-0.14	0.22	0.04	0.00	-0.34	0.20
26	0.59	0.41	0.03	-0.13	-0.35	0.14	0.19	-0.04	-0.31
27	0.55	0.33	-0.22	0.18	0.33	-0.15	-0.11	0.01	0.17
28	0.53	0.48	-0.45	0.08	0.08	-0.21	0.13	0.02	0.20
EV	6.60	2.65	2.01	2.01	1.49	1.30	1.19	1.10	1.04
% Var	23.56	9.4	7.18	7.2	5.3	4.7	4.3	3.9	3.7
HRE	**0.46**	**0.26**	**0.32**	**0.29**	0.17	0.22	-0.19	-0.14	0.09

Table S5. Parallel analysis takes into account that the first, second and third factors usually are the biggest and calculates EVs that would result from our data set even if all the participants had configured their Q-sorts in an entirely random way (Horn 1965). If the observed EVs exceed the 95th percentile (in this case the forth factor), EVs have less than 5% chance to occur in circumstances where there are, in reality, no factors in our data set (Watts and Stenner 2012). Hereafter, we extracted the first four factors considered that they would best represent an emerging pattern of responses for a particular point of view.

Factor	Actual EV observed	Mean EV for 1000 ramdom data sets	95th percentile EV for 1000 random sets
1	6,60	2,56	2,32
2	2,65	2,29	2,11
3	2,01	2,08	1,92
4	**2,01**	**1,92**	**1,78**
5	1,49	1,19	1,65
6	1,30	1,77	1,54
7	1,19	1,64	1,43
8	1,10	1,52	1,32
9	1,04	1,41	1,23
10	0,98	1,31	1,14

Table S6. Varimax rotated factor matrix. * indicates Q-sorts loading with a factor at > ±0.33, significant at a level of *p <0.01*

	Loadings			
Q-sort	F1	F2	F3	F4
1	-0.1243	0.3956	0.4291	0.0245
2	-0.0006	0.4101	-0.0012	0.5840
3	-0.0997	0.3566	0.4877	-0.0076
4	0.1698	-0.0001	0.0054	0.5724*
5	0.5362	0.0587	0.4750	-0.1508
6	0.7121*	-0.1308	0.1596	-0.2558
7	-0.1308	0.0961	0.6377*	0.1859
8	0.3521	0.1340	0.1184	0.4339
9	0.3055	-0.1395	0.5078*	0.1740
10	0.3159	0.2636	0.5357*	-0.1067
11	0.1521	-0.1632	0.5587	0.3505
12	0.6201*	0.3268	-0.1872	0.0138
13	0.6179*	0.2804	-0.2795	0.2651
14	0.6330*	0.1462	0.0731	0.1563
15	0.5988*	0.1490	0.1908	0.0470
16	0.2372	0.6420*	0.1412	-0.0659
17	0.4074	0.5389	0.0229	0.1281
18	-0.1701	0.0862	0.2369	0.4588*

19	0.4212	0.4591	0.2846	0.2319
20	0.3203	0.2751	0.3027	-0.2724
21	0.1844	-0.0268	0.0927	0.6785*
22	0.1078	0.5823*	-0.0091	-0.0982
23	0.6650*	-0.0103	-0.1037	0.3243
24	0.6586*	0.0561	0.0518	0.2704
25	0.6690*	0.2486	0.0916	0.0090
26	0.1695	0.5621	0.4319	0.0913
27	0.1437	0.6106*	0.0814	0.2973
28	0.0384	0.8325*	-0.0002	0.1559
%Variance	17	13	9	8

Table S7. Factors Z-scores correlation, % variance explained, number of Q-sorts loading on each factor at p <0.01 level.

Z-scores	**F1**	**F2**	**F3**	**F4**	**Variance explained (%)**	**Number of Q-sorts loading**
F1	1. 00	0.30	0.23	0.23	17	8
F2		1.00	0.25	0.18	13	4
F3			1.00	0.21	9	3
F4				1. 00	8	3

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