

What constitutes a successful biodiversity corridor? A Q-study in the Cape Floristic Region, South Africa

Article (Accepted Version)

West, Simon, Cairns, Rose and Schultz, Lisen (2016) What constitutes a successful biodiversity corridor? A Q-study in the Cape Floristic Region, South Africa. *Biological Conservation*, 198. pp. 183-192. ISSN 0006-3207

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1 **What constitutes a successful biodiversity corridor? A Q-study in the Cape Floristic Region,**
2 **South Africa**

3
4 Simon West^{a*}, Rose Cairns^b, Lisen Schultz^a

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6 *Corresponding author: simon.west@su.se, Tel: +46 70 191 7902

7 ^a Stockholm Resilience Centre, Stockholm University, Kräftriket 2B, 10405 Stockholm, Sweden

8 ^b SPRU – Science Policy Research Unit, University of Sussex, Falmer, Brighton BN1 9RH, UK

9
10 **Abstract**

11 ‘Success’ is a vigorously debated concept in conservation. There is a drive to develop quantitative,
12 comparable metrics of success to improve conservation interventions. Yet the qualitative, normative
13 choices inherent in decisions about what to measure – emerging from fundamental philosophical
14 commitments about what conservation *is* and *should be* – have received scant attention. We address
15 this gap by exploring perceptions of what constitutes a successful biodiversity corridor in the Cape
16 Floristic Region, South Africa, an area of global biodiversity significance. Biodiversity corridors are
17 particularly illustrative because, as interventions intended to extend conservation practices from
18 Protected Areas across broader landscapes, they represent prisms in which ideas of conservation
19 success are contested and transformed. We use Q method to elicit framings of success among 20
20 conservation scientists, practitioners and community representatives, and find three statistically
21 significant framings of successful corridors: ‘a last line of defence for biodiversity under threat,’ ‘a
22 creative process to develop integrative, inclusive visions of biodiversity and human wellbeing,’ and ‘a
23 stimulus for place-based cultural identity and economic development.’ Our results demonstrate that
24 distinct understandings of what a corridor *is* – a planning tool, a process of governing, a territorialized
25 place – produce divergent framings of ‘successful’ corridors that embody diverse, inherently
26 contestable visions of conservation. These framings emerge from global conservation discourses and
27 distinctly local ecologies, politics, cultures and histories. We conclude that visions of conservation
28 success will be inherently plural, and that in inevitably contested and diverse social contexts success on
29 any terms rests upon recognition of and negotiation with alternative visions.

30
31 **Keywords:** *Biodiversity corridors; Cape Floristic Region; conservation success; values; framings; Q*
32 *method*

61 1. Introduction

62 Success is a vigorously debated concept in conservation science and practice (Stern, 2001; Kapos et al.,
63 2008; Howe and Milner-Gulland, 2012). Success is particularly pertinent because the rapid and
64 continued disappearance of species and habitats undermines one of the most oft-cited rationales for
65 conservation – the protection of biodiversity – and appears to suggest that many conservation
66 interventions, particularly protected areas (PAs), are ‘failing’ (Kareiva et al., 2011). This perception of
67 failure, and the need to spend the “limited resources available for conservation” wisely, has prompted
68 widespread efforts to devise common frameworks and standard lexicons by which to assess
69 conservation success (Kapos et al., 2008: 155; Sutherland, 2005; Salafsky et al., 2008). These
70 initiatives rest on the premise that precise, objective, and quantitative measures of success – generally
71 equated with biological and ecological indicators – will enable the design of more effective
72 conservation interventions (Salafsky et al., 2002). But while quantitative measures are surely
73 important, these attempts often fail to make explicit the normative, qualitative choices that lie behind
74 quantitative indicators, emerging from inherently contestable philosophical commitments about what
75 conservation *is* and *should be* (Sandbrook 2015). Indeed, failure to recognize the diverse ways in which
76 participants in conservation interventions may judge success has led to conflict in both conservation
77 research and practice (Stern, 2001; Axford et al., 2008; Tallis and Lubchenco 2014). Murray (2005:
78 903) notes that neglect of the multifaceted ways in which conservation success is judged may be “more
79 likely to compromise the conservation of biodiversity than promote it by ignoring – or intentionally
80 deemphasizing – critical aspects of social process and social context.” Therefore, an equally important
81 yet less widely acknowledged endeavour is to clarify plural notions of success among diverse
82 conservation actors. This paper contributes to the literature on conservation success by exploring
83 stakeholder perceptions of what constitutes a successful biodiversity corridor in the Cape Floristic
84 Region (CFR), South Africa. The CFR is especially important because of its global significance for
85 biodiversity conservation, and biodiversity corridors are particularly illustrative because, as
86 interventions intended to extend conservation practices from PAs to broader landscapes, they represent
87 prisms where ideas of conservation success are contested and transformed.

88
89 Many potential criteria for conservation success have been proposed. Karp et al. (2015) identify seven
90 broad conservation objectives, including extinction risk, extirpation risk, evolution, naturalness, and
91 provisioning, regulating and cultural services, each with a number of possible indicators of success.
92 Murray (2005: 889) and Brechin et al. (2010) identify a range of economic, political and social
93 conservation goals, including poverty alleviation, empowerment of marginalized communities, and
94 participatory and inclusive processes. The criteria for success selected in any particular conservation
95 intervention represent, on the one hand, valued outcomes by particular people in particular contexts,
96 and on the other hand, normative assumptions about desirable or actual relationships between people
97 and nature. For instance, Mace (2014) shows how four framings of conservation, ‘nature for itself,’
98 ‘nature despite people,’ ‘nature for people,’ and ‘people and nature,’ produce very different metrics for
99 measuring success. Mace notes that these framings exist alongside each other (often in the same
100 organization, government department, or citizen group), complicating conservation interventions. A
101 particularly visible expression of the conflict that may occur between competing framings is the
102 contemporary debate between ‘people-centred’ and ‘traditional’ conservationists. Kareiva et al. (2011)
103 advocate a “new,” people-centred conservation that protects biodiversity as a means to ameliorate
104 human poverty and generate economic growth, while Soulé (1985, 2013) argues for conservation
105 motivated by the intrinsic value of biodiversity and based on the “mainstream” metrics of, e.g.,
106 endangered species listings. Despite the clear link between qualitative framings of conservation and
107 quantitative criteria for success, the two debates have rarely been empirically linked.

108
109 In this paper we link these debates by exploring framings of successful biodiversity corridors.
110 Biodiversity corridors have been identified as “cornerstones of modern conservation,” widely
111 employed by conservation practitioners, communities, policy-makers and land-managers (Chetkiewicz
112 et al., 2006: 318). As initially formulated in the 1960s and 70s, biodiversity corridors constituted linear
113 strips of habitat that would supposedly enable direct dispersal of species - largely fauna – between PAs,
114 thus improving the “conservation status of otherwise isolated populations” (Bennett, 2003: 7).
115 Successful corridors were framed as linking habitat islands in ‘inhospitable seas’ of human activity
116 (e.g. Gilpin and Diamond, 1980). However, the core assumptions underlying this approach – that
117 ‘natural’ habitats are spatially homogenous and temporally constant compared to an apparently
118 heterogeneous, fragmented matrix hostile to biodiversity – have been widely challenged (e.g. Haila,
119 2002; Bennett, 2003; Chetkiewicz et al., 2006). Contemporary fragmentation research suggests that all
120 habitats, whether considered ‘natural’ or ‘human-influenced,’ are fragmented in particular ways, and

121 that each particular kind of fragmentation has uneven consequences for biodiversity (Fahrig, 2003;
122 Fischer and Lindenmayer, 2007). Corridors have been subsequently incorporated into a wider discourse
123 around ‘connectivity conservation,’ where success is framed in terms of the effectiveness of various
124 habitat patterns to ensure particular types of ecological connectivity for particular species, communities
125 and processes (Crooks and Sanjayan, 2006). This framing has removed the sharp distinction between
126 ‘natural’ and ‘human-influenced’ habitat, and, by recognizing connectivity in the landscape as a
127 relation between human practices and ecological patterns, corridors have subsequently become vectors
128 for imagining manifold forms of “economic, institutional, and cultural” as well as ecological
129 connectivity (Bennett, 2003: x).

130
131 These expanding interpretive possibilities reflect the corridor’s intuitive conceptual and metaphoric
132 appeal. This ambiguity can be seen in positive or negative lights. For some the corridor concept has
133 become vague, related more to the human attraction to ‘pathways’ through the landscape than to the
134 ecological requirements of species or habitats, while for others it is precisely this heuristic
135 attractiveness that enables the corridor to perform the role of a ‘boundary-object’ – facilitating the
136 coordination of disparate groups acting in the landscape (Star and Griesemer, 1989; Evans, 2007). In
137 this paper, we contribute to the debate on conservation success not by producing a consensus
138 framework or metric, but by clarifying the diverse ways in which successful corridors are framed in the
139 CFR. In contrast to dominant approaches in conservation science, but common to those in the social
140 sciences, we do not treat the term biodiversity corridor (or indeed conservation) as a pre-existing object
141 about which an objective definition can be derived; rather, we treat corridors as discursive phenomena
142 employed by different actors, in different contexts, to undertake particular kinds of work (e.g. Cairns
143 and Stirling, 2014). We use Q method to explore framings of success in CFR biodiversity corridors
144 among 20 conservation scientists, practitioners, and community representatives. This interpretive
145 approach is novel – to our knowledge Q method has not previously been used to examine framings of
146 biodiversity corridors – and contributes to growing efforts to expand social science, and particularly
147 interpretive, contributions to conservation science (Newing, 2010; Sandbrook et al., 2013; Moon and
148 Blackman, 2014).

149 150 *1.1. Framing ‘successful’ biodiversity corridors in the Cape Floristic Region*

151
152 The high stakes of contrasting perspectives on conservation success are starkly outlined in efforts to
153 conserve biodiversity in the Cape Floristic Region (CFR), at South Africa’s southwestern tip. The CFR
154 is one of 35 global ‘biodiversity hotspots’ identified by Myers et al. (2000) and subsequently
155 Conservation International (<http://www.conservation.org/How/Pages/Hotspots.aspx>) in an attempt to
156 prioritise areas for biodiversity preservation. Biodiversity hotspots are representative of a perspective
157 that associates conservation success with the protection of high levels of species and habitats (Fisher
158 and Christopher, 2007). The CFR has exceptionally rich biodiversity – for instance, 70% of the CFR’s
159 9000 plant species are endemic (Goldblatt and Manning, 2002). Yet the CFR, particularly the Cape
160 Town metropolitan area, is also presented as a potential biodiversity ‘mega-disaster’ area, with 1406
161 plant species in the Red Data Book of endangered species (Cowling et al., 2003). Holmes et al. (2012a)
162 identify habitat loss and fragmentation as the major threats to CFR biodiversity, driven by, among
163 others, rapid urbanization, agriculture, invasive alien species and inappropriate fire regimes.
164 Conservation biologists and planners have identified biodiversity corridors as a means to successfully
165 prevent a “mega-disaster” by preserving ecological connectivity in the CFR (Cowling et al., 2003;
166 Holmes et al., 2012a). However, the apparent ‘threats’ of urbanization and agriculture to conservation
167 success reflect the diversity of imperatives in the CFR. Land-use and extant biodiversity patterns in the
168 CFR reflect the fractured histories of apartheid, including exclusionary public policy and planning,
169 high poverty and inequality (Graham and Ernstson, 2012). Consequently, increasingly diverse goals
170 and criteria have entered into the discourse around biodiversity corridors.

171
172 Corridors are a key component of both the regional Cape Action for People and the Environment
173 (CAPE) strategy and the City of Cape Town’s strategy to integrate the preservation of ecologically
174 functioning networks of remnant indigenous vegetation with urbanization and development imperatives
175 (Younge and Fowkes 2003; Holmes et al., 2012a, 2012b). The South African National Parks authority
176 (SANParks) envisages biodiversity corridors as a means of demonstrating how biodiversity
177 conservation can be “an instrument for rural and regional [economic] development” in the CFR,
178 including job creation, improved rural living standards, and broad-based economic participation,
179 inclusion and empowerment (Harrison, 2013). Meanwhile, the World Wildlife Fund (WWF) views
180 corridors as essential to enable CFR biodiversity to adapt to climate change (Pence, 2009), while

181 various private landowner and conservancy initiatives, such as the Biodiversity and Wine Initiative, the
182 Agulhas and Langeberg biodiversity initiatives, and the organization Conservation at Work, view
183 corridors as a way to integrate biodiversity conservation and agricultural production. These diverse
184 criteria make Cape conservation frequently fractious, with different stakeholder groups establishing
185 (not always explicitly) inherently normative orderings of the ‘means’ and ‘ends’ of conservation. While
186 these controversies are on the one hand decidedly local, emerging from the specific social-ecological
187 histories of particular places in the Cape, they also connect to global conservation discourse and action.
188 For example, Fisher and Christopher (2007) highlight the high degree of overlap between the list of
189 global biodiversity hotspots and widespread poverty in an attempt to broaden the terms on which
190 success is judged in hotspot conservation interventions.

191 **2. Method**

192 We used Q method to examine framings of successful biodiversity corridors in the CFR. Q method is a
193 form of discourse analysis first developed in psychology to study subjective understandings of
194 particular phenomena (Stephenson, 1953), and increasingly applied in conservation science and
195 environmental management (Cairns et al., 2013; Frantzi et al., 2009; Webler et al., 2009). Q method is
196 an intensive ‘small n’ methodology in which a targeted group of participants – usually between twenty
197 and forty people – individually rank order a series of statements about a particular topic in a numbered
198 grid (Watts and Stenner, 2012). These rankings, or ‘Q sorts,’ are then analysed using factor analysis to
199 identify groups of similarly completed sorts; these clustered areas of ‘common ground’ represent
200 shared framings of the phenomena in question. Q method generally proceeds through three primary
201 stages. First, statements about the phenomena in question are collated in a ‘concourse,’ before a smaller
202 number of statements are selected in the ‘Q sample’ to be sorted by participants. Second, participants
203 are identified and perform the Q sort. Third, the Q sorts are statistically analysed and interpreted.

204 **2.1. Collating the concourse and the Q sample**

205 Following standard practice in Q methodological research (e.g. Webler et al., 2001) we gathered
206 statements about ‘success’ in biodiversity corridors from a wide range of sources, including seven
207 semi-structured interviews with conservation practitioners, scientists, landowners, and community
208 representatives; observational data from CFR biodiversity corridor workshops and meetings; scientific
209 conference presentations and discussions at the 2013 Fynbos Forum and the 2013 International
210 Sustainable Development Research Conference; published scientific articles; corridor newsletters,
211 work plans and promotional material; and newspaper reports. The aim was to develop a comprehensive
212 concourse that captured the diversity of opinions about success in CFR biodiversity corridors (Brown,
213 1993). There were 160 statements in the final concourse, by which point ‘saturation point’ was reached
214 and new statements became repetitious.

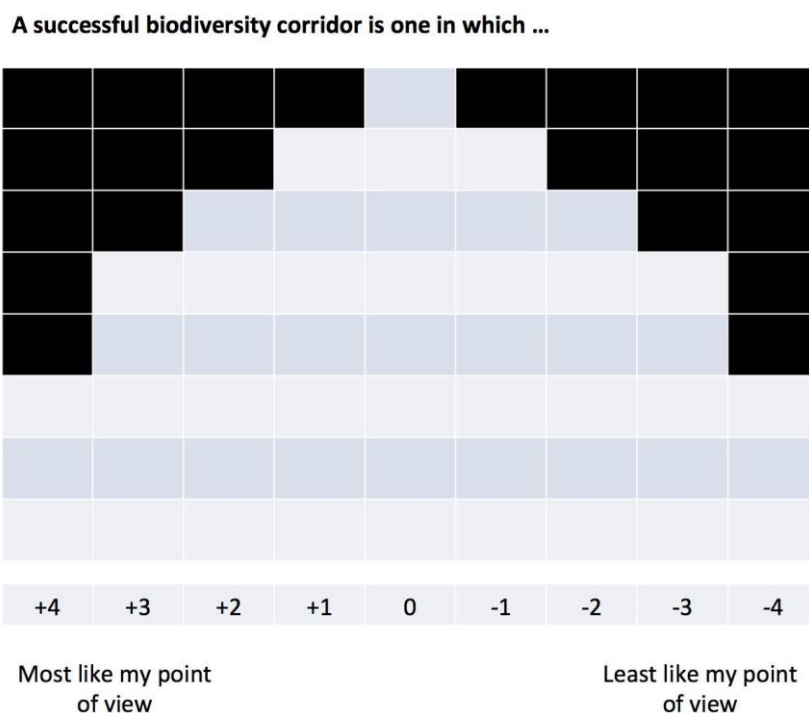
215 A sample of 50 statements were selected from the concourse to form the ‘Q sample’ to be sorted by
216 participants. The Q sample was produced through a semi-structured process drawing on previous
217 empirical studies of conservation success (Axford et al. 2008), in which the entire concourse of
218 statements were coded into the following categories: (1) ingredients for success (subdivided into broad
219 categories such as ‘rights and incentives,’ ‘participation and involvement,’ and ‘messaging and
220 visions’), and (2) pictures of success (subdivided into categories such as ‘ecological process and
221 function,’ ‘governance,’ ‘society and economy’). This categorization was not intended to represent any
222 authoritative delimitation of ingredients for and pictures of success, but to ensure that an appropriate
223 range of statements were included in the Q sample. Finally, we took into account the advice of Webler
224 et al. (2009: 9) to select statements that carry “excess meaning” (that can be interpreted differently by
225 different participants), and that accurately reflect what is said in the concourse (even if such statements
226 link multiple concepts). We selected an approximately even spread of statements across our categories
227 for the final Q sample of 50 statements.

228 **2.2. Participant selection and performing the Q sorts**

229 In Q method, the aim is not to select participants based on their imagined representativeness of a wider
230 population, but rather to strategically select participants whose viewpoints “matter” in relation to the
231 subject at hand, and who are likely to express “a particularly interesting or pivotal point of view”
232 (Watts and Stenner, 2012: 71). Nevertheless, representativeness is important in the sense that the
233 researcher usually aims to select a participant group that will express a diverse range of opinions about
234 the subject at hand. In this study, we targeted key sectors and stakeholder groups responsible for
235 designing, implementing, and participating in CFR biodiversity corridors: local and provincial
236 government bodies, NGOs, landowners, and community representatives. To maximise the diversity of
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241 opinions, we ensured that participants were chosen from a range of landscape types, including urban,
 242 peri-urban and rural. Moreover, as attitudes to conservation in South Africa have been reported to
 243 diverge between ethnic and cultural groups (e.g. Graham and Ernstson 2012) we sought to ensure
 244 diversity in our participant group. We complemented this targeted approach with snowball sampling by
 245 encouraging participants to recommend other potential participants with different opinions, to ensure
 246 that a wide range of perspectives were included in the study.
 247

248 All Q sorts were performed during audio recorded, face-to-face interviews, at locations chosen by
 249 participants. The researcher explained that the exercise was designed to elicit subjective opinions about
 250 success in CFR biodiversity corridors, and presented participants with the Q sample of 50 statements,
 251 all of which were formulated to complete the sentence ‘*a successful biodiversity corridor is one in*
 252 *which...*’ Participants were then instructed to sort the statements into a pyramidal or ‘quasi-normal’
 253 grid, see Figure 1, numbered on a scale from +4 (“most like my point of view”) to -4 (“least like my
 254 point of view”). Participants were asked to order the statements onto the grid based on their personal
 255 opinions about biodiversity corridors in the CFR in general, taking into account their own experiences
 256 with corridors, but not attempting to replicate their organization’s official position. While Brown
 257 (1980: 288-9) points out that the effects of the distribution matrix on the statistical results of a Q study
 258 are “virtually nil,” use of a quasi-normal grid is widespread because it encourages participants to think
 259 carefully about the positioning of the statements and to express their preferences more clearly (Webler
 260 et al., 2009). In order to ease the potential concerns of participants about ranking statements, it was
 261 made clear that the scale is purely relative and used for heuristic reasons (Watts and Stenner, 2012: 78-
 262 9); for instance, ranking a statement at -4 does not necessarily mean the participant ‘disagrees,’ but
 263 simply that they apportion less importance to the statement than -3. Likewise, a statement ranked at 0
 264 does not necessarily signify participant indifference, but may represent a “meaningful hub or centre
 265 from and around which positive and negative salience, the meaning of the Q sort and the variability of
 266 the distribution *distend*” (Watts and Stenner, 2012: 79). While some participants found ranking
 267 difficult, none expressed a wish to move away from the forced distribution. Many reported that the
 268 forced distribution helped them to clarify their perspective on corridors. The researcher encouraged
 269 participants to explain their reactions to statements during the exercise, and to explain their final
 270 ranking of statements. Q sorts generally took between 1 and 1½ hours to complete.
 271



272
 273 **Figure 1:** The sorting grid. Participants were unable to place statements in black grid squares,
 274 encouraging participants to prioritise and express their preferences more clearly.
 275

276 **2.3. Analysis and interpretation**

277 Q sorts were analysed with PQMethod software (Schmolck, 2002). Correlating each Q sort with all
 278 other sorts generated a correlation matrix, and bundles of similarly performed sorts were identified
 279 using a principal components analysis. A varimax rotation was then applied to these bundles, which
 280 represented ‘factors’ or shared framings of success. We sought a solution that maximised the
 281 simplicity, clarity, distinctness and stability of the factors (Webler et al., 2009), and used a mix of both
 282 qualitative and quantitative criteria to select the final factors to report. On the quantitative side, we only
 283 accepted factors upon which two or more participants placed statistically significant loadings (Brown
 284 1980), that had eigenvalues greater than 1, and that explained significant degrees of variance (Watts
 285 and Stenner 2012). On the qualitative side, we chose the final factors based on their distinctness to each
 286 other, their internal coherence, and their relevance to existing discourses in the Cape and conservation
 287 discourses more broadly. Correlation between an individual sort and shared factor was considered
 288 significant at the $p < 0.01$ level if it exceeded a factor loading of ± 0.36 , according to the equation: 2.58
 289 $\times (1 \div \sqrt{n})$, where n = the number of statements in the Q sample, $2.58 \times (1 \div \sqrt{50}) = 0.3648$ (Brown
 290 1980: 222).

291
 292 Idealised sort patterns for each factor were produced using the weighted average of individual Q sorts
 293 significantly correlated with that factor (see Table 2). We used Watts and Stenner’s (2012) ‘crib sheet’
 294 technique to interpret the factors. The crib sheet is intended to provide a systematic, methodical and
 295 data-driven approach to factor interpretation that can be applied consistently to each factor. First, the
 296 idealised sort patterns of each factor were systematically compared and contrasted using a crib sheet
 297 (Appendix A), and consensus statements were examined to draw out similarities and differences
 298 between the factors. The meanings of the statements are not fixed, but rather constructed by
 299 participants in the context of the sorting exercise. It was therefore important at this stage to interpolate
 300 the idealised sort patterns with the interview transcripts, to ensure these meanings were appropriately
 301 captured and represented. Second, extended narrative descriptions of each factor were produced,
 302 incorporating circa 40 statements from the Q sample and interview data (Appendix B). Third, concise
 303 summaries of these extended descriptions were produced. Both extensive and condensed descriptions
 304 were then sent to participants, who were invited to comment, clarify and potentially dispute our
 305 descriptions. These comments were subsequently used to improve the validity of the final narrative
 306 descriptions.

308 3. Results

309 Ten men and ten women from a variety of cultural and ethnic backgrounds completed a Q sort (the
 310 sectors of each participant are provided in Table 1, names have been removed to protect anonymity).
 311 Three factors emerged from the statistical analysis. The idealised sort patterns for each factor are
 312 provided in Table 2, and the correlations between each factor are shown in Table 3. The condensed
 313 summary narratives of each factor are presented below, with the numbers in brackets representing the
 314 number of the statement in Table 2. The three factors represent different framings of successful
 315 biodiversity corridors. They reflect social rather than psychological phenomena, and as such we do not
 316 presume that individual participants are inherently or irrevocably tied to a particular frame. Rather, we
 317 understand frames to correspond to relatively stable societal discourses that participants may move
 318 between depending on the context of the Q sort, perceived or enacted role and, potentially, mood or
 319 experience.

Sector	Number of Participants
Local government department (Conservation)	4
Private landowner	3
Community representative	3
Regional government agency (Conservation)	1
Local government department (Environmental education)	1
International NGO (Conservation)	1
Regional NGO (Conservation)	1
Local NGO (Sustainable development)	1
Independent consultant	1
Academic (Natural sciences)	1
National research institute (Natural sciences)	1
National research institute (Social sciences)	1

321 *Table 1:* Participant sectors
 322

Statement	Idealised sort pattern		
	1	2	3
1. The historic scenery of the Cape is protected: people do not come here from around the world to see urban sprawl but to see the amazing natural scenery	1*	-2*	3*
2. Biodiversity conservation is mainstreamed into the spatial development plans and integrated development plans of municipalities	4	3	0*
3. It is demonstrated that communities in and around the corridor have an improved quality of life	-1*	2*	4*
4. Alien invasive species are eliminated from the corridor	4*	1*	-2*
5. Local people are trained to start up and run their own businesses	-2*	-1*	1*
6. Connections between fynbos islands are created amongst hostile seas of human activity	1*	-3	-2
7. Biodiversity is seen as an asset and is used as an engine of economic growth	-1	-1	4*
8. A shared vision for the future is established between all the different communities who live and work in the area	0	4*	0
9. Areas of critically endangered vegetation - as identified through the BioNet and other biodiversity planning instruments - are locked up for conservation at as little cost as possible	3*	1*	-1*
10. Habitat patches are linked together so that genetic exchange can take place between populations of species and allow rare species to persist and evolve	3	4	-1*
11. Stakeholders in the landscape just talk a bit more to each other and increase understanding a bit more	0	-1	0
12. Industrial development is prevented and restricted	2*	-2*	-3*
13. A social movement is created through new interpersonal relationships between communities, landowners, and government	-2*	1	0
14. Economic development is limited to very low impact activities such as high-value ecotourism, as fynbos is too ecologically sensitive to allow much else without damaging the ecosystem	2*	-1	-1
15. Clear economic incentives are provided to landowners, as participation and stakeholder buy-in really depend on whether it makes people better off financially	0	-3*	0
16. The design is based around the movements of large and charismatic wild animals like leopards and honey badgers	0*	-3	-3
17. The economy is transformed to create decent work	-3*	0*	1*
18. The corridor doesn't try to be all things to all people and simply focuses on the central goal of nature conservation	3	-4*	2
19. The corridor is designed to provide a pathway for plant and animal species to move to cooler places in the landscape as the climate warms	1	2	2
20. The corridor ensures the continued provision of ecosystem services to people in the Cape, in particular water filtration and natural aquifers (20)	2*	3	4
21. Activities are geared towards fulfilling the strategic development priorities of the national government	-2*	0*	-4*
22. The celebration of all the different cultures of an area, for instance the struggle heritage, indigenous history and Afrikaner culture, is used to say 'No' to the separation of apartheid	-4	1*	-2
23. Land parcels are locked up for conservation, ensuring there is no drastic land-use change in the future	4*	1	1
24. Support is given to private landowners who do much for conservation without expectation of reward and recognition, but just for a love of the land	2	-1	1
25. Landowners' property rights are strengthened and invasion of land by illegal farmers or settlers is prevented	-1	-3	-3
26. Educational activities are used to create pride among local communities in their natural heritage and the cultural value of place-based biodiversity is raised in the eyes of the people	1	2	2
27. Conservationists embrace an ethic of a lived-in worked-in landscape	-1*	3*	1*
28. Individual landowners begin to see the whole landscape as their resource to be	0	3*	1

managed collectively, rather than limiting their vision to their own plot of land			
29. The concept of the corridor works primarily as a networking platform	-2	-2	-1
30. As much habitat is preserved as possible, nevermind scientific data. We have got to the stage here where we need to conserve all the habitat we can, and while corridors might not work for all species, they are a pragmatic way of conserving at least something	2*	-1	-2
31. We try to figure out how to help heavy industry such as mining to become more biodiversity-friendly, for instance through offsets	-1	-2	-3*
32. The huge informal biodiversity economy in the Cape, for instance traditional medicine, is recognized and promoted	-3	1*	-3
33. A spirit of entrepreneurialism, innovation and self-reliance is fostered	-3*	0*	0
34. Linkages are created between rich and poor	-4*	0*	2*
35. Poor communities are invited onto the corridor steering committee and to take part in decision-making	-1*	2	3
36. Fire management of fynbos and renostervelt is improved and learning is generated about appropriate fire regimes	3	0*	2
37. Big game such as eland is re-introduced to the landscape	1*	-2*	-4*
38. We contribute to South Africa meeting its legally-binding commitments under international law to preserve biodiversity	2*	0	-1
39. Democratic institutions are strengthened through systematic capacity-building for local municipalities	-2	0	-1
40. Windfarms are rejected - they encourage road building, introduction of invasive alien species, and prevent fire necessary for fynbos regeneration	3*	-2*	-4*
41. "The book is put away" and people think creatively about how to make life better for each other	-2	2*	-1
42. All the stakeholders in and around the corridor feel able to share their stories with each other and feel listened to	0*	3	3
43. Participants are carefully and strategically selected, as many people do not have the capacity to participate effectively and can disrupt the whole thing	-1	-4*	-2
44. The messaging is layered - for instance green jobs, climate change, international commitments - to achieve political buy-in	0*	2*	-2*
45. Access for the public to land in the corridor is controlled, not open	0*	-4*	3*
46. Chronic hunger among children is reduced and food security is improved	-4*	0	0
47. Strictly planned land-use is avoided, because in the context of climate change the balance of desirable land-use may change	-3*	-1*	0
48. Environmental education programmes are rolled out in schools - young people won't defend biodiversity if they don't know about it	1	4*	1
49. Green energy is produced through biomass pellets	-3	-3	2*
50. Uncertainty is embraced - the unpredictability of biodiversity means we will not know if the corridor is a success for many years	<i>1</i>	<i>1</i>	<i>3</i>

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Table 2: Idealised sort patterns for each factor. Asterisks represent the statement scores that were significantly associated with a particular factor. Scores in italics represent consensus statements.

	Factor 1	Factor 2	Factor 3
Factor 1	1	0.0622	-0.0104
Factor 2		1	0.2855
Factor 3			1

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Table 3: Correlations between factors

3.1. Factor 1: 'A successful biodiversity corridor is one in which ... a last line of defence is provided for biodiversity under threat.'

The sorts of six participants were significantly correlated with Factor 1, including three participants from local government departments (conservation), two private landowners and one participant from a national biodiversity research institute with a natural science background.

342 *A successful biodiversity corridor is one that is focused on preserving a representative sample of CFR*
343 *biodiversity (18, Interviews). We are losing species and habitats at rapid and depressing rates (9).*
344 *Corridors provide a last defense against hostile human activities (6) and invasive alien species (4) and*
345 *help South Africa meet its international, legally binding biodiversity targets (38). A corridor is*
346 *successful not by embracing a lived-in, worked-in landscape (27), but by locking-up land and*
347 *controlling access (23, 47), restricting development (12), and regulating unsustainable human*
348 *activities (32). Biodiversity is inherently valuable and it is dangerous to see it as an asset or an engine*
349 *of economic growth (7, 49). Nevertheless, biodiversity does provide multiple values and services (20)*
350 *and layering the message is an unfortunate necessity to get political and social buy-in (44). However,*
351 *the ‘politics-speak’ of creating jobs (17), reducing chronic hunger (46), challenging apartheid (22) and*
352 *making linkages between rich and poor (34) has little to do with the core business of protecting*
353 *biodiversity, and risks creating excessive expectations of corridors (18). Indeed, communities and*
354 *politicians often have quite different understandings to scientists about corridors, and listening to all*
355 *stakeholders (42) and developing shared visions (8) may not be achievable or even desirable.*
356 *Corridors need expert scientific input, and their success should not be based on the participation of*
357 *poor communities in decision-making (Interviews, 35). While it is essential that corridors are informed*
358 *by science, biodiversity is unpredictable and there is no guarantee that corridors will successfully*
359 *protect it (50). In the context of overwhelming pressures on biodiversity, never mind the science –*
360 *corridors are a pragmatic way of preserving at least something (30).*

361
362 **3.2. Factor 2: ‘A successful biodiversity corridor is one in which ... a creative process develops**
363 **integrative, inclusive visions of biodiversity and human wellbeing.’**

364 The sorts of six participants were significantly correlated with Factor 2, including one community
365 representative, one representative of a regional government agency (conservation), one academic with
366 a natural science background, one independent consultant, one representative from an international
367 conservation NGO and one from a national biodiversity research institute with a social science
368 background.

369
370 *A successful biodiversity corridor recognizes the multiple, diverse values that ecosystems provide to*
371 *society (20), and pursues social as well as ecological goals (3, 10, 19). If you perceive human activities*
372 *to be ‘hostile’ to biodiversity you have shot yourself in the foot from the beginning (6, Interviews).*
373 *Conservationists need to embrace an ethic of a lived-in, worked-in landscape (27). A successful*
374 *corridor is a creative, catalytic process that generates a shared vision for the landscape from all*
375 *stakeholders (Interviews, 8), and establishes new forms of connectivity between ecological, social,*
376 *governance and economic spheres (44, 6, 27). Environmental education programmes are essential for*
377 *transforming mindsets, improving knowledge and nurturing pride in natural heritage (48, 26).*
378 *Corridors have multiple values and the message should be layered to unlock these values in all areas*
379 *of society (44). Biodiversity conservation is about equity (34), jobs (17), and human wellbeing (41, 46),*
380 *and extends across multiple scales, from local (3), to national (21), to international (38). This*
381 *multidimensionality means that it is dangerous to see biodiversity purely as a financial asset and an*
382 *engine of economic growth (7). Corridors cannot work by excluding, restricting and controlling human*
383 *activities like industrial development (12), windfarms (40) and the collection of medicinal plants (32).*
384 *While some land will need to be preserved for conservation (2, 9, 23), a successful corridor will not*
385 *build the barriers ever higher through, for instance, restricting public access (45) or strengthening*
386 *property rights (25). The ideal situation is that individuals will begin to envision the whole landscape*
387 *as a resource to be managed collectively (28). In order to stimulate these collective visions there needs*
388 *to be input from all areas of society, especially poor communities (35), and everyone needs to feel able*
389 *to share their stories and be listened to (42, 43). The open-ended nature of a successful corridor means*
390 *that uncertainties of all kinds are ever-present and must be embraced (50). In order to negotiate a*
391 *long-term vision for a landscape in the context of such uncertainty, you need to have social ties that*
392 *bind – if you invest in people, and get the right processes and systems in place to bring people together,*
393 *then the rest will follow (Interviews).*

394
395 **3.3. Factor 3: ‘A successful biodiversity corridor is one in which ... the local landscape fuels place-**
396 **based cultural identity and economic development.’**

397 The Q-sorts of five participants were significantly correlated with Factor 3, including one private
398 landowner, two community representatives, one representative of a local sustainable development
399 organization, and one participant from local government responsible for environmental education.

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401 *A successful corridor harnesses the cultural and natural heritage values of local scenery to create*
402 *decent work for local communities (1, 17). A corridor cannot be all things to all people – it has to*
403 *promote nature conservation as a means to improve the quality of life of all those who live nearby (18,*
404 *44, 3). The Cape has always been lived-in and worked-in and conservationists need to embrace this*
405 *(27). Practically, this means supporting jobs based on local identity, such as nature walks, honey and*
406 *jam production, and mountain bike trails (Interviews). It also means that success should not be based*
407 *on complete eradication of invasive alien species – they provide a crucial source of income for locals*
408 *(4, 49, interviews). A successful biodiversity corridor is all about treating biodiversity as an asset and*
409 *using it as an engine of economic growth (4, 49). However, this is not primarily about contributing to*
410 *national development agendas or international legal commitments, but about safeguarding ecosystem*
411 *services like natural aquifers for the people of the Cape (21, 38, 20). To be sustainable, conservation*
412 *must come from the people themselves, so education is essential to give communities and young people*
413 *pride in their natural assets (26, 48). But while a love of the land is vital, a corridor also needs to*
414 *provide financial incentives, as participation really depends on whether it makes people better off –*
415 *local communities need to put bread on the table! (24, 15, interviews). In order to leverage these assets*
416 *public access to land needs to be controlled, not open (45). However, this should be a collective form*
417 *of control, where the communities themselves take ownership (25, 28). A successful corridor is one*
418 *where all stakeholders feel able to share their stories and be listened to, and where poor communities*
419 *are invited onto the steering committee (42, 35, 43). It is through wide participation that linkages will*
420 *be established between rich and poor, that will create opportunities like training local people to open*
421 *up their own businesses (34, 5, 33). The reality in the Cape is that there are huge discrepancies*
422 *between rich and poor, and a corridor will only be successful if the benefits from biodiversity are*
423 *shared equally (Interviews).*

424
425 **4. Discussion**

426 These three framings of success are not in any sense definitive or final, but rather they are heuristically
427 valuable – offering a means to think through contemporary conservation concerns in the CFR and
428 beyond. Here we explore some important tensions and differences between the framings in relation to
429 a) conceptions of human-nature relationships, b) understandings of biodiversity corridors, and c) the
430 implications of these varied understandings for visions and measures of conservation success (Table 4).
431 We unpack these differences with reference to two contemporary global discussions in conservation:
432 firstly the attempt to devise measures and metrics of conservation success, and secondly the on-going
433 debate between various conservation paradigms, especially ‘protectionist’ and ‘people-centred.’

	Perspective on nature	Perspective on corridor	Visions of success	Illustrative measures and metrics of success
Factor A: ‘A successful biodiversity corridor is one in which ... a last line of defence is provided for biodiversity under threat.’	Biodiversity	Planning tool	<ul style="list-style-type: none"> - Protection of endemic species - Protection of endangered species - Elimination of invasive species - Legal protection and government control of biodiversity-rich sites 	<ul style="list-style-type: none"> - Biodiversity lists and metrics (e.g. species richness, Biodiversity Intactness Index, endangered species lists) - Proportion of land under legal protection for biodiversity (e.g. Convention on Biological Diversity targets)
Factor B: ‘A successful biodiversity corridor is one in which ... a creative process develops integrative, inclusive visions of biodiversity and human wellbeing.’	Humans-in-ecosystems	Governance process	<ul style="list-style-type: none"> - Improved ecosystem functioning - Enhanced provision of ecosystem services - Improved human wellbeing and quality of life 	<ul style="list-style-type: none"> - Ecosystem services metrics (e.g. stocks and flows, access to benefits) - Functional diversity - Learning metrics (e.g. convergence of views, enhanced care for nature) - Metrics of good governance (e.g. accountability, legitimacy, representation)

<p>Factor C: ‘A successful biodiversity corridor is one in which ... the local landscape fuels place-based cultural identity and economic development.’</p>	<p>Cultural-historical scenery</p>	<p>Territorialized place</p>	<ul style="list-style-type: none"> - Protection of culturally valuable landscapes and species - Creation of economic opportunities for local communities - Socially inclusive, local control of ecological assets and services 	<ul style="list-style-type: none"> - Involvement of communities in decision-making and agenda-setting - Employment figures - Poverty rates - Equality indexes
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Table 4. The three factors frame nature and biodiversity corridors in different ways, and consequently prioritise different visions and measures of success. This table is merely illustrative, and should not be taken to mean that the categories are necessarily mutually exclusive or oppositional.

4.1. Nature as biodiversity, humans-in-ecosystems, cultural-historical scenery

Nature is framed differently in each factor. Participants loading on Factor 1 discussed nature in terms of biodiversity, emphasizing concepts widespread in traditional conservation biology discourse, including biomes, the red data list of endangered species, representative samples of biodiversity, and centres of endemism (e.g. Soulé 2013). Biodiversity was framed primarily in terms of species rarity, with participants frequently highlighting the high number of endemic species in the CFR. However, while participants noted the special biodiversity of the CFR, this was an abstracted biodiversity particularly valuable at the global scale. As one participant commented, “it is phenomenal biodiversity, and the sense of obligation to the global arena is significant.” Human activities were viewed as external, hostile threats to biodiversity and participants frequently deplored the “depressing” loss of habitats and species to human residential and industrial development, particularly in and around Cape Town. This perception of existential threat and sense of loss was often coupled with an emphasis on the inherent ‘rights of nature’ as a basis for the preservation of biodiversity: “biodiversity is there, it’s inherent ... [and has] as much of a right on this planet as we do.” Despite this emphasis on the inherent rights of biodiversity, the Factor 1 perspective equated conservation with “scientific stuff” – in opposition to the perceived “political” statements referring to, for instance, the creation of jobs. As one participant clarified (indicating the highly ranked statements), “that’s all the scientific stuff, and that’s why we do conservation – we don’t do conservation for the people! I mean we buggered up biodiversity and we need to fix our problems.” This sense of immanent threat, together with a belief in the intrinsic value of biodiversity, help explain the willingness of Factor 1 participants to pursue corridors in the face of scientific uncertainty as a ‘pragmatic way of preserving at least something.’ Participants appeared to envisage science as an instrumental means to achieve the ultimate end-goal of the preservation of species.

Participants loading on Factor 2 framed nature in what they saw as the broader terms of ecological functioning: “Because we can lose some species ... the focus is on ecosystem functioning and ecosystem health. It’s a more holistic way of looking at it.” Factor 2 participants considered humans to be intricately enmeshed within ecosystems, and concepts of ecosystem health and ecosystem services – incorporating ecological, cultural and social services – were used to illustrate the links between human wellbeing and biodiversity. Factor 2 participants tended to adopt a multi-scalar “landscape perspective” as a means of connecting what they saw as the “more important” local issues to global imperatives. Several Factor 2 participants explicitly framed their sorts in opposition to statements they associated with Factor 1 type perspectives, such as the idea of human activities as necessarily ‘hostile’ or an external ‘threat’ to biodiversity: “I think if you start off seeing ‘hostile seas of human activity’ then you won’t get a successful corridor, do you see what I mean? I mean if you believe it – just seeing the world in that way is going to shoot yourself in the foot before you’ve even started!” In contrast to the Factor 1 perspective, then, Factor 2 participants were not primarily motivated by a sense of loss, but by a perceived need to find ways to bring together humans and biodiversity: “it’s not about biodiversity for or against communities, but biodiversity with communities.” While Factor 1 participants tended to frame their perspective as ‘pragmatic’ about human-nature relationships, Factor 2 participants were more likely to frame their response as ‘visionary.’ For instance, several participants argued for a “complete shift in how we think about conservation,” towards a paradigm where ecosystem health is

482 understood as central to human wellbeing. “I think that is the message – that conservation can work for
483 you.”

484
485 Factor 3 participants framed nature in terms of cultural-historic scenery and landscape. Nature was
486 discussed in decidedly local terms and as inherently tied to, even generative of, place. Participants
487 often emphasized their long personal and family histories in the Cape and their pride in the Cape
488 landscape and flora. Humans were considered part of the landscape, and the nature of the CFR as
489 expressive of human histories of conflict, identity and belonging. Therefore, in direct contrast to Factor
490 1, conservation was seen as explicitly political. One community representative described his motivation
491 for engaging in conservation: “I’ve been involved with politics since school. My passion is working
492 with people ... I’ve been staying in Chatsworth for twenty years now, like in the bush, and I just love
493 it. I love working with the people, I love nature.” Participants frequently emphasized the flora of the
494 CFR, in contrast to fauna and particularly big game, which was associated with exclusionary
495 conservation practices. This sensitivity to perceived elitist and exclusionary conservation practices was
496 reflected in the way that participants would often compare the flora of ‘lived-in, worked-in’ CFR
497 landscapes favourably to iconic South African sites associated with biodiversity, such as the Kruger
498 National Park and Kirstenbosch Botanic Gardens. Participants frequently argued that local
499 communities and landowners should be empowered to capture the value of what they perceived as *their*
500 *own* landscapes – that ecosystem services should be preserved for the people of the Cape. In
501 comparison to the ‘pragmatists’ of Factor 1 and the ‘visionaries’ of Factor 2, participants loading on
502 Factor 3 portrayed themselves as ‘local heroes’ – keen to ensure that local communities capture the
503 values of their natural heritage as a source of self-determination and autonomy.

504 505 **4.2. The biodiversity corridor as plan, process, place**

506 These three different understandings of nature presaged different understandings of the biodiversity
507 corridor. Factor 1 participants framed the corridor as a conservation planning tool and a scientific
508 concept, intended to restrict human activities in parts of a landscape to preserve particular species and
509 ecological processes. The corridor in this sense provides a barrier against encroaching ‘hostile’ human
510 activities and represents a last refuge for biodiversity. This framing was particularly evident among
511 participants emphasizing conservation in Cape Town: “In 1970 Cape Town flipped between being a
512 whole lot of little suburbs inside natural fynbos to being lots of little patches of fynbos, and now there’s
513 few patches of fynbos beside the human environment.” For one participant, this rapid loss of fynbos
514 revealed a “misconception” about corridors: “When people talk about corridors they think you are
515 creating something. Actually, you’re cutting away stuff so you’re left with a little, narrower piece. A
516 corridor is there, it’s just getting ever smaller.” Factor 1 participants therefore rejected the idea of a
517 corridor being judged on the basis of ‘putting the book away’ and thinking creatively; instead they
518 framed success in terms of vigorously implementing land-use plans and regulations in order to ‘lock-up
519 land for biodiversity.’

520
521 For Factor 2 participants, the biodiversity corridor was a very different entity. Rather than a strict plan
522 for protection, the corridor was framed as a multifaceted governance process that mobilizes society to
523 come together and develop a common vision for the landscape. The corridor in this sense constitutes a
524 “messy space” where multiple goals, such as ecological health and functioning, economic
525 development, and so on, are negotiated and ‘traded off’ against one another. In the words of one
526 participant, a corridor is a “fulcrum institution, bringing people together, bringing systems together,
527 creating a market or creating a dialogue around a table.” This requires “collective visioning and
528 collective action, which means dissolution of boundaries – social boundaries, economic boundaries,
529 political boundaries and governance systems – and reformation of them.” Therefore, rather than
530 constituting a boundary between humans and the landscape, the corridor in Factor 2 is “about
531 movement and flow, and that includes people.” Factor 2 participants frequently rejected ideas that
532 corridors entail control and planning, instead embracing the corridor as a means of fostering flexibility
533 and creativity:

534
535 “There is no book. There is no recipe on how to do this stuff, so it has to be a living process.
536 You can’t do it out of a textbook, it will be dead before it is started ... Because it’s true, you
537 know, that thing about ‘uncertainty is embraced’ – we’re not controlling these things, we’re
538 working with what ‘is,’ in the moment, at both a social and an ecological level.”

539
540 While participants loading on Factor 2 viewed the corridor as a process of “visioning” and bringing
541 people together, Factor 3 participants viewed the corridor as very tangible, territorialized place – a

542 material landscape lived-in and regularly traversed. One participant described how she became
543 involved in a particular CFR corridor project: “I was born here.” In direct contrast to Factor 1,
544 participants loading on Factor 3 *did* view the corridor as creating something in the landscape (rather
545 than stripping something away). For one, a corridor was a means to create a “destination” and an
546 “identity” for a landscape: “There must be a lab [laboratory], or a monument, or something that ensures
547 that [the] corridor is going to be there for a lifetime. Something to be built ... that cannot be changed.”
548 For another, “I see the corridor as something like Kirstenbosch [Botanic Gardens], as the heritage of
549 the people – you know like when you fly over Amsterdam in flower season and you see the carpet of
550 tulips in one big trail across the landscape – that is what the corridor should be like.”

551 **4.3. Contested visions of conservation success and links to global conservation debates**

552 The three framings of human-nature relationships and the biodiversity corridor also lead to quite
553 different visions of success, and consequently what metrics to use in assessing progress. According to
554 Factor 1, success is determined by the preservation of particular species, habitats and ecological
555 processes, and is a product of, for example, the ability of a particular meter width of a corridor to
556 sustain a particular species. From this perspective, quantitative metrics of success should be based on
557 changes in the number of endangered species, and the percentage of land “locked up” under formal
558 protection. Because the corridor is framed as a science-based tool to exclude harmful human activities,
559 public participation is considered as a “nice to have” related to implementation rather than design, and
560 as something to be arranged, if at all, *after* land has become legally protected. While Factor 1 suggests
561 that human behaviour towards biodiversity is generally motivated by financial interest, it argues that
562 financial incentives for biodiversity protection will undermine biodiversity’s intrinsic value, and
563 subsequently supports government regulation of human behaviour. In this framing, the provision of
564 economic opportunities and skills becomes “politics-speak” – portrayed, at best, as an unfortunate but
565 necessary way of selling the ‘real’ (scientific) work of biodiversity preservation to politicians and local
566 communities or, at worst, a distraction from or even in direct conflict with the central tenets of
567 conservation. As one participant put it (indicating the lower-ranked statements): “This is totally
568 irrelevant [to a corridor] as far as I’m concerned – it might sell it to a politician, it might make a few
569 poor communities feel good, but it’s meaningless.”

570 The closely linked commitments in Factor 1 to the intrinsic value of biodiversity, faith in control-
571 oriented politics, and the importance of scientific understandings of biodiversity, resemble ‘traditional’
572 or ‘protectionist’ conservation biology perspectives – characterized by Mace (2014) as a ‘nature for
573 itself’ or ‘nature despite humans’ framing. Soulé (1985: 731) identifies a belief in the intrinsic value of
574 biotic diversity as the “most fundamental” normative postulate of conservation biology. Factor 1
575 participants rejected what they saw as a “social science” or “economic” turn in conservation thinking
576 towards a prioritisation of instrumental value, present in South Africa and beyond:

577 “I think we’ve seen [this] even internationally with the change in the IUCN – it got high-
578 jacked from being conservation for conservation’s sake and science, so we could understand
579 the ecosystem and protect it and manage the ecosystems of the earth, to an economic
580 opportunity. And if it can’t pay for itself then it doesn’t exist. So the economists have got in
581 and have highjacked the whole programme as far as I’m concerned.”

582 This perspective echoes Soulé’s (2013: 895) rejection of the ‘new conservation,’ characterized as
583 promoting “economic development, poverty alleviation, and corporate partnerships as surrogates or
584 substitutes for endangered species listings, protected areas, and other mainstream conservation tools.”
585 Soulé (2014: 637) claims that a ‘consensus viewpoint’ of conservation biologists is a “gloomy vista” in
586 which “for the foreseeable future, biodiversity (flora, fauna, and ecosystems) will continue on a
587 downward, dissipative slope.” While this claim to consensus might be challenged, Soulé’s “gloomy
588 vista” certainly reflects the general pessimism of Factor 1, with participants speaking of mounting a
589 “rearguard action,” and of conservation as “depressing stuff, but we do what we can.”

590 In the factor 2 framing, a successful corridor preserves ecological functioning while simultaneously
591 meeting a range of social goals, such as improving local communities’ quality of life. Quantitative
592 metrics of success here would differ quite radically from Factor 1, including monitoring ecosystem
593 functioning and the provision of ecological “services” to different social groups. Because the corridor
594 is framed as an on-going process of negotiation and making ‘trade-offs,’ public participation is
595 reframed from a “nice to have” to a critical measure of success. Factor 2 suggests that human
596 behaviour towards nature is rooted in the pursuit of wellbeing (defined broadly to include health and
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602 happiness), rejecting financial interest as the primary determinant. Consequently, Factor 2 is averse to
603 top-down control – both over land in the corridor (which should enter into more collective ownership)
604 and over the planning process (which should be an open process of “collective visioning”) – and
605 instead argues that a successful corridor will emerge from self-organization. Participants acknowledged
606 the intrinsic value of biodiversity, but maintained that a successful corridor will appeal to multiple
607 values, including the instrumental value of biodiversity to human wellbeing and economic
608 development. Consequently, the “politics-speak” of Factor 1 is, for Factor 2, a crucial means to
609 “unlock” these values and make conservation, as one participant put it, “something everyone does.”
610

611 The emphasis in Factor 2 on humans as “embedded” within ecosystems indicates clear affinities with a
612 social-ecological systems (SES) perspective (Berkes et al. 2003), or what Mace (2014) identifies as a
613 ‘people and nature’ framing. Indeed, the priority afforded to shared visions, participation and
614 simultaneous achievement of multiple goals reflects the managerial, consensus orientation of SES
615 research (c.f. Swyngedouw 2009). Factor 2 participants experienced ambiguities in the politics of this
616 approach. On the one hand, participants viewed the statements relating to linkages between rich and
617 poor and the heritage of apartheid as “overtly political” and “narrower” perspectives than, for instance,
618 developing a shared vision: “we are working across all levels of society, not just rich and poor. There’s
619 gender issues, there’s age issues, there’s urban-rural divide issues, there’s race issues ...” Yet on the
620 other hand participants often framed their own perspective as an explicit challenge to traditional
621 conservation approaches that they linked to apartheid-era South African governance, and even to
622 particular South African conservation organizations. The Factor 2 insistence that successful
623 biodiversity corridors must address a range of goals, including poverty alleviation, indicates some
624 similarity to the ‘new,’ people-centred conservation. However, participants were uneasy about
625 statements reflecting the corporate focus of new conservation. As one explained, “I do think that
626 [biodiversity] is an asset, but what worried me about that is in terms of the engine of economic growth.
627 It’s not just about growth – it’s about jobs, it’s about equity, sustainability ...” Another argued for a
628 “humanitarian” rather than an economic conservation paradigm, suggesting that this approach “doesn’t
629 speak to money and it doesn’t speak to government, it speaks to society...” Framing nature to include
630 humans and ecological functioning, rather than biodiversity *per se*, means that Factor 2 appears more
631 optimistic than Factor 1. As one participant remarked, “The statement about corridors being a
632 ‘pragmatic way of preserving at least something’ is a defeatist way of thinking ... I just don’t think like
633 that.”
634

635 Factor 3 articulates a more explicitly politicized and localized vision of a successful biodiversity
636 corridor that highlights some of the ambiguities in the more generalized visions of Factors 1 and 2.
637 Factor 3 frames nature in terms of cultural-historical landscape and scenery, and the corridor as a
638 tangible, lived-in place. A successful corridor creates “a destination across a landscape,” as a basis for
639 inclusive and sustainable economic development. From this perspective, a quantitative metric might
640 include the protection of culturally valuable sites, together with employment figures, economic output,
641 and measures of social inclusion. Specific examples of success provided by participants, such as honey
642 making and the commercial harvesting of invasive alien vegetation, conflict with Factor 1. For
643 instance, one Factor 1 participant responded that honey-making is “very problematic for conservation
644 areas as we have many endemic bee species that are outcompeted by Cape Honey bee if it is introduced
645 in artificial hives.” From the Factor 3 perspective, a corridor is a mechanism to address the historic
646 social exclusion of poor and marginalised communities, so participation is a key aspect of success.
647 However, the specific emphasis on the empowerment of marginalised communities stands at odds with
648 Factor 2’s embrace of participation as a means to achieve broadly defined shared visions:
649

650 “But ... communities must be more important than the other stakeholders. Because you must
651 know communities are there, they need to put bread on the table, they need to create
652 businesses. If you get linkages between rich and poor you will get rich people coming here
653 and seeing that this person needs financing to start his business, they [the rich] will start
654 buying into this thing.”
655

656 Factor 3 evinces a determination to harness intrinsic, cultural value in biodiversity as a means to gain
657 access to instrumental economic values. Participants rejected open access to land, which was associated
658 with community disenfranchisement — either at the hands of powerful actors such as government or
659 multinational corporations, or at the hands of illegal “squatters” and plant harvesters: “Once you’re
660 going to open your land in the corridor - it must be controlled! Otherwise people are just going to
661 come, take all your plants, and that is actually, at the end of the day, there’s not going to be your

662 heritage anymore!” Participants were keen to point out that control should be exercised through
663 collective forms of community ownership, rather than top-down government intervention, or through
664 private property rights (associated with exclusionary practices of big game reserves).

665
666 The Factor 3 emphasis on community empowerment, control over land, and histories of
667 marginalization and disenfranchisement, reflect to some extent the concerns of the environment and
668 development and political ecology literatures (e.g. Leach et al. 2010; Robbins 2012). Unlike these
669 literatures, however, Factor 3 located the basis of empowerment in an embrace of biodiversity as an
670 asset. This dovetails with Mace’s (2014) ‘nature for humans’ framing and, to some extent, new
671 conservation perspectives. But while participants were keen to stress that a successful biodiversity
672 corridor delivers economic development to local people, they were equally keen to point out that a
673 desire for financial gain alone was not the main driver for their interest in conservation. Rather than the
674 corporate investments and partnerships of new conservation, Factor 3 vehemently lays claim to
675 biodiversity as a community asset, rooted in local pride and sense of place. Therefore, education was a
676 crucial measure of success: “Education is also absolutely essential for creating the sense of place in a
677 biodiversity corridor – so the children can understand what the corridor is and know what it is to be
678 part of one.”

679
680 Taken together, these framings reflect a diversity of ways in which a CFR biodiversity corridor may be
681 judged to be successful. While the framings relate to existing perspectives such as ‘protectionist’ and
682 ‘new’ conservation, they cannot be reduced to them – suggesting that real-world cases are composed of
683 complex mixes of positions, values and criteria for success. In their call for inclusive, pluralistic
684 conservation, Tallis and Lubchenco (2014: 28) call for an end to the philosophical ‘fighting’ and a
685 move towards “rigorous assessments of the effectiveness of actions.” But our results show that
686 understandings of effectiveness emerge within particular value-based perspectives on desirable means
687 and ends. This implies that practical manifestations of inclusive conservation may not be simply about
688 ‘ending the fighting,’ but rather about making it productive. Facilitating modes of management and
689 governance where diversity is recognized and the connections between alternative framings and
690 concurrent indicators of success may be explicitly negotiated is critical. This includes discussing the
691 values embedded within particular types of intervention – e.g. national parks, corridors, biosphere
692 reserves – and also recognizing that different actors will have legitimately different understandings of
693 what any of these are or should be in a particular ecological, political and historical context. Some
694 values may be reconciled and others may not, but making them explicit encourages the development of
695 context-sensitive metrics that capture the diverse dimensions along which success may be judged.

696 697 **5. Conclusions**

698
699 Debates about conservation success have been dominated by requests for quantitative and comparable
700 metrics. But while quantitative metrics are essential, it is also essential to unpack the inherently
701 normative, contested choices about what to measure. This paper has contributed to this research field
702 by exploring what participants perceive to constitute success in biodiversity corridor projects in the
703 Cape Floristic Region. The paper has identified three framings that each emphasizes a different set of
704 criteria for a successful biodiversity corridor, and has demonstrated that behind these framings lie
705 contrasting – inherently normative – ideas about conservation, including diverse perspectives on
706 human-nature relationships, economics, control over land, and the boundaries between science and
707 politics. While each of our identified framings relate to and appear to be informed by global
708 conservation discourses, they are also influenced by distinctly local dynamics. This suggests that while
709 global discourses certainly influence local perceptions of success, they are also contested and
710 transformed by the intricacies of local conservation contexts. Moreover, the results support recent calls
711 for recognition of plurality and reflexivity in conservation (i.e. awareness of how contestable value
712 commitments underlie ideas of success), in the context of increasingly fractious global debates and
713 high-stakes local imperatives (Tallis and Lubchenco 2014).

714
715 This paper contributes to efforts to expand social science contributions to conservation science. While
716 it might be argued to fit in the broad category of research *on* conservation, rather than research *for*
717 conservation (Sandbrook et al. 2013), the paper provides a useful demonstration of the mutually
718 constitutive nature of research on and for conservation – and demonstrates how both are essential for
719 improving conservation practice. Research on conservation may transform what conservation is
720 considered to *be*, thus affecting the nature of research *for* conservation. For instance, if research *on*
721 conservation highlights the normative choices embedded in quantitative metrics of success, research *for*

722 conservation may expand to include research on how negotiation of these choices might be most
723 productively facilitated. This may result in the design of conservation interventions that simultaneously
724 address multiple objectives prioritised by different actors. For instance, Karp et al. (2015) argue that it
725 is essential to make underlying value commitments explicit if multiple conservation objectives are to
726 be met in a single intervention. Discussions of what constitutes success are necessary for any such
727 vision to be successful, when contrasting perspectives are inevitable and constitutive of the social
728 context in which conservation action takes place. It is in this sense that intrinsic, even philosophical
729 discussions about conservation can also be instrumentally useful – and it is here that social sciences
730 have much to offer the science and practice of conservation.

731 732 **Acknowledgments**

733
734 Simon West and Lisen Schultz acknowledge the financial support of Vetenskapsrådet (VR) and the
735 Swedish Foundation for Strategic Environmental Research (Mistra). Lisen Schultz was also funded by
736 Ebba och Sven Schwartz Stiftelse.

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