1 **Perception of and attitudes towards a new Swiss Biosphere Reserve – a**

2 **comparison of residents' and visitors' views**

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4 Karthäuser, Johanna Maria[1], Filli, Flurin[2], Mose, Ingo[3]

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8 [1]The Royal Society for the Protection of Birds, RSPB South Essex Marshes, Wat Tyler Country Park,

9 Pitsea Hall Lane, Basildon, Essex, SS16 4UH, UK, e-mail: *Johanna.Karthauser@rspb.org.uk*

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11 [2]Swiss National Park, Chastè Planta-Wildenberg, CH-7530 Zernez, e-mail: *Flurin.Filli@nationalpark.ch*

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13 [3]Oldenburg University, Institute for Biology and Environmental Sciences, Regional Sciences Working

14 Group, D-26111 Oldenburg, e-mail: *Ingo.Mose@uni-oldenburg.de*

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30   Abstract

31   Almost all protected areas nowadays rely on sound support of the local population. More than for

32   every other type of nature reserve this is the case for UNESCO Biosphere Reserves. A participatory

33   and transparent approach taking into consideration views of all stakeholders involved is crucial for the

34   successful progress of the project. In 2007 we interviewed 191 residents and 178 visiting tourists in

35   the Val Müstair (Canton of Grisons, Switzerland) with standardized questionnaires to analyse

36   acceptance of the – at the time of data collection – planned Biosphere Reserve. Both groups

37   perceived the landscape of the study region very similar but had different demands regarding the

38   Biosphere Reserve. Whereas tourists had a rather emotional approach, residents clearly had more

39   hopes on economic benefits generated through the project. However, the way the residents intend to

40   reach these benefits matches well with the ideas of sustainable tourism promoted by Biosphere

41   Reserves. Therefore, we consider this gap to be bridged easily and in mutual agreement between

42   both groups indicating a successful regional marketing for the Biosphere Reserve Val Müstair – Parc

43   Naziunal.

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58 Introduction

59 Until well into the 1970s and 1980s nature conservation in Europe was characterized by protecting

60 pristine landscapes far away from human settlements. This changed in the 1990s with the adoption of

61 Agenda 21 at the UN summit in Rio de Janeiro in 1992. The term "sustainability" was on everyone's

62 lips, involving local people in nature conservation approaches became more and more important. With

63 the adoption of the Sevilla Strategy in 1995 (UNESCO 1996), the establishment of a new generation

64 of protected areas was initiated. Since then, UNESCO Biosphere Reserves consist of three different

65 zones with decreasing levels of anthropogenic influence (core zone, buffer zone, and transition zone)

66 (UNESCO 1996). They are seen as ecological model regions with the local people playing an integral

67 role in the new reserve concept (Hammer 2003). The support of the resident human population is

68 indispensable for the success of protected areas (Mose & Weixelbaumer 2007), particularly Biosphere

69 Reserves which are aimed at a balanced relationship between the interests of people and wildlife.

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71 Lucke (1995) defines acceptance as the chance to receive approval for certain opinions, measures,

72 proposals and decisions from an identifiable group of people. Designation of nature reserves always

73 requires convergence of different parties; each one having individual interests in the area in question.

74 Therefore, an integrated approach taking all ideas and interests into account is much needed

75 (Wiersbinski et al. 1998). Backhaus et al. (2007) state that considering all existing views facilitates

76 identification of similarities between stakeholder groups, and the clarification of controversial issues in

77 discussions. Socioeconomic interviews are an important tool to adapt planning to existing perceptions

78 and attitudes (Buchecker et al. 2003, Höchtl et al. 2005).

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80 The aim of our study was to evaluate i) differences in the perception of the Val Müstair region of local

81 residents and visitors and ii) attitudes towards the – at the time of data collection – planned Biosphere

82 Reserve. Is there broad consensus between both groups and if so, on what do they agree? To know if

83 a Biosphere Reserve is viewed differently by residents and people from regions further afield is

84 important for the project initiators, especially during the planning stage. If expectations match between

85 the two groups, the image transported to both groups concurs. This enables regional marketing

86 strategies to be easily adapted accordingly (Mose 2007): Local people produce and deliver what

87 visiting tourists and other external stakeholders demand and require. If expectations do not match

88   between the groups, the resulting gap has to be overcome, otherwise the regional marketing will

89   hardly be able to strengthen the local economy.

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91   Study area

92   The UNESCO Biosphere Reserve Biosfera Val Müstair – Parc Naziunal (center at 46°38'N, 10°18'E,

93   Fig. 1) covers 361 km^2 between 1250 m to 3180 m above sea level and has ca. 1600 inhabitants. It is

94   situated in the Canton of Grisons, in the Rhaeto-Romanic speaking part of Switzerland. The core zone

95   constitutes the Swiss National Park (Fig. 1). The neighbouring valley Val Müstair with its six

96   settlements (Tschierv, Fuldera, Lü, Valchava, Santa Maria, and Müstair) functions as transition zone

97   and the small secluded uninhabited valley Val Mora as buffer zone.

98   The Swiss National Park is dominated by pristine forest and high-mountain ecosystems (30% Spruce,

99   Larch and Swiss pine forest, 20% alpine meadows, 50% vegetation free rock and rock debris and

100   open water, Robin 2004). Land use on the territory of the National Park ceased with its designation in

101   1914, with the exception of low-level tourism. The Val Müstair is a remote high-altitude valley situated

102   at the southern main slope of the Alps. Land use is rather extensive and restricted to forestry, dairy

103   and arable farming.

104   The idea of integrating the existing National Park into the Biosphere Reserve was first proposed to the

105   residents of Val Müstair by the Swiss National Park administration in the year 2000. At that time, the

106   people of Val Müstair already thought of new ways for the future of their valley. Modernisations in

107   agriculture and forestry, migration of young people, job cuts in the public sector and economic

108   stagnation caused difficulties for the peripheral region (Corporaziun regiunala Val Müstair & Swiss

109   National Park 2005). A definite unified position had to be chosen to be able to keep pace and bear up

110   with other competing tourist destinations. The up to now extensive land use practices ought to be

111   retained while strengthening the local economic situation at the same time. Thus, committed residents

112   welcomed the vision of a joint Biosphere Reserve with the neighbouring National Park.

113   In 2005 89% of the Val Müstair residents voted for pursuing the plans to establish a Biosphere

114   Reserve (Corporaziun regiunala Val Müstair & Swiss National Park 2005). In November 2007 79%

115   agreed to adopt the charter for a Regional Nature Park Val Müstair (Corporaziun regiunala Val Müstair

116   2007) (in Switzerland, a Regional Nature Park marks the first step on the way to designate an area as

117   Biosphere Reserve (see Swiss Federal Department of Environment, Transport, Energy and

118   Communications (UVEK) 2007)). Finally, in summer 2010 the UNESCO preliminarily accepted the

119 application for a UNESCO Biosphere Reserve and in January 2011 the Swiss Federal Office for the

120 Environment (BAFU) approved the Regional Nature Park status (Swiss Federal Office for the

121 Environment 2010a & 2010b). The UNESCO's final decision is subject to two important adjustments

122 that have to be met to fulfil the recently modified criteria for Biosphere Reserves: Since 2008, core

123 zones have to be surrounded by a buffer zone (Madrid Action Plan, UNESCO 2008). This and a

124 common management plan for all three zones are yet to be realised in the Biosphere Reserve Val

125 Müstair – Parc Naziunal.

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Material and methods

Study design

129 A survey using quantitative interview methods was carried out in summer 2007. 191 residents and 178

130 tourists were interviewed face-to-face using standardized questionnaires containing a set of open and

131 closed questions. Open questions were used to identify lack of knowledge, misunderstanding and

132 unexpected associations regarding the Biosphere Reserve. In two questions (i.e. personal importance

133 of different characteristics of the region) residents and tourists were asked to assign predefined

134 attributes to Likert scales (Likert 1932). When composing the questionnaires relevant questions for

135 answering the research questions were collated and assembled to five thematic blocks: state of

136 knowledge of the interviewees regarding the Biosphere Reserve, evaluation of Val Müstair region,

137 evaluation of the Biosphere Reserve, expectations regarding the Biosphere Reserve, and

138 demographic information of the interviewees. Phrasing the questions was done in a non-suggestive,

139 short and straightforward way avoiding foreign words were possible. If several answers were possible

140 always negative and positive options as well as the option "other" were available. Two pre-tests were

141 conducted and the questionnaires adapted accordingly.

142

143 With 1605 residents (Maissen & Chiotopulus 2006) the population of Val Müstair provided a promising

144 environment for gaining a large enough sample size. We aimed at interviewing 163 residents (10% of

145 the population) using quota sampling (Atteslander 2006). We stratified the population according to

146 gender, age and place of residency (six villages) and used four age groups: under 19 years old, 20–

147 39, 40–64 and 65+ years old. The interviews were conducted on the doorsteps from 9:30–11:30 a.m.

148 and 2:00–6:00 p.m. over a period of 30 days between 04 May and 14 July 2007.

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150   Although we did not use a randomized sampling strategy, the rather large sample size of 10% of all

151   residents and the strict stratification suggest representative results. However, potential bias could

152   have been introduced by interviewing people at their doorsteps because people living in remoter areas

153   were less likely to be approached than people living in the village centres. Nevertheless, this interview

154   method was the only one that allowed face-to-face contact with the Val Müstair residents thus giving

155   immediate insight in the perception of the Biosphere Reserve project. Also, minor bias resulting from

156   pseudoreplication might have influenced result quality, as sometimes more than one member per

157   household was interviewed. However, gathering only independent observations was not practicable as

158   this would have led to a very small sample size for the smaller villages. As a matter of courtesy it was

159   not possible to terminate interviews with residents who obviously were not needed anymore for

160   reaching the quotas of the sampling design. Therefore, all residents willing to complete the

161   questionnaire where included in the survey increasing sample size to 191 compared to the calculated

162   163 (10%). This extended the sample size to 12% of the total population.

163

164   Tourists were interviewed at eleven, selectively chosen and for visitors attractive sites across the

165   valley using accidental (haphazard) sampling (Bortz & Döring 2002). We chose various areas to reach

166   different interest and age groups comprising visitors interested in culture, sports

167   (hiking/mountainbiking), nature and wildlife. The interviewees were approached when passing by and

168   the questionnaire filled in together with the surveyor. We aimed at gaining a sample size comparable

169   to the one of the resident survey, and not at a representative sample of all tourists visiting the region.

170   The interviews with tourists were conducted on 13 days. On average 14 tourists were interviewed per

171   day between 29 June and 14 July 2007.

172   Response rates were high in both surveys with 73% among residents and 84% among tourists.

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174   Data analysis

175   To facilitate quantitative analysis, every possible answer was allocated a numerical value. Where

176   multiple answers were possible every answer was treated as separate question which either could be

177   ticked (= 1) or not ticked (= 0). To analyse open questions a system of categories was created out of

178   the answers given allocating each answer a certain numerical value.

179   For each question the number of valid answers was calculated. Illegible or ambiguous answers were

180   discarded, thus sample size differs between questions.

181 Where Likert scales were used mean and standard errors were calculated assuming that the scales
182 were roughly interval scaled, i.e. distances between scale items were equal (Clason & Dormody
183 1993). We tested for differences in means using nonparametrical two-sample Wilcoxon tests.
184 Furthermore, we used correlation analysis to test how well perception and attitudes coincided between
185 residents and visitors. All statistical analyses were conducted in R 2.12.2 (R Development Core Team
186 2010).

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188 Results

189 Acceptance of the project was high among both interviewed groups: 63% of residents (n = 191) and
190 81% of visiting tourists (n = 178) evaluated potential changes resulting from the reserve
191 implementation as positive (Fig. 1).

192 While the majority of the residents associated the term "UNESCO Biosphere Reserve" with
193 sustainable regional development, the interviewed tourists mostly linked it to nature and biodiversity
194 conservation (Fig. 2). Remaining associations were spread similarly in both groups, and possible
195 restrictions arising from the designation were linked to a lesser extent to the term "Biosphere
196 Reserve", although from twice as many residents as visitors (Fig. 2).

197 Residents and visitors had similar expectations regarding potential developments in the Val Müstair
198 generated through its designation as UNESCO Biosphere Reserve (Fig. 3) again indicating high
199 overall acceptance. Only few interviewees expected negative developments to occur. Differences
200 between both interviewed groups were obvious regarding tourism and sustainable land use.
201 Expectations concerning improvements on the local labour market and regarding an increased
202 community spirit across the villages in the valley matched closely (Fig. 3).

203

204 Asked for their favourite aspect of the Val Müstair, the characteristic alpine landscape was named by
205 the majority of residents (67%, n = 180) and tourists (53%, n = 173). The personal feeling of well-being
206 was rated highly by both groups: 82% (n = 187) of the residents and 97% (n = 155) of the visitors
207 declared to feel "very well" and "well" in the Val Müstair. The tourists' sense of wellbeing was reflected
208 by the fact that 99% (n= 173) stated they wish to visit the area again.

209 There was a strong and highly significant correlation (Spearman's r = 0.90, p<0.0001) in residents'
210 and tourists' perception of the regional identity of the Val Müstair (Fig. 4A). Only life quality was, on
211 average, ranked higher by residents compared to tourists (Table 1). Tourists ranked rural character,

212   nature conservation and attractiveness for tourism significantly higher than residents (Table 1). Asked

213   for personal importance, there was a weak and nonsignificant correlation (Spearman's r = 0.54,

214   p=0.09) between the ratings of residents and tourists (Fig. 4B). Most attributes were ranked more

215   important by residents, except rural character, remoteness and significance for nature conservation,

216   which were ranked significantly more important by tourists (Table 2).

217

218   Discussion

219   Results of this study show that a broad majority of both interviewed groups favoured the

220   implementation of a Biosphere Reserve in the Val Müstair region in 2007. Both interviewed groups

221   had big expectations regarding the development of the region Val Müstair once the Biosphere

222   Reserve is established (Fig. 4). Overall, tourists and residents perceived the Val Müstair and the

223   Biosphere Reserve very similarly. By taking a closer look, important differences became evident.

224   Residents had more hopes in opportunities connected with economic improvements such as

225   upgrading existing tourist infrastructure, more events offered for tourists, a bigger market for local

226   goods and an increase of overnight stays. Whereas tourists favoured development opportunities

227   connected with a focus on sustainable land use, nature conservation, conservation of traditionally

228   managed landscapes and local traditions. When it comes to developing the region, tourists tended to

229   see more the emotional values while residents rather hoped for options bringing economic growth.

230   The residents' functional approach was obvious again when analysing the interviewees' associations

231   with the term "UNESCO Biosphere Reserve" (Fig. 3). Residents primarily linked regional development

232   with it while tourists mainly thought of nature conservation. This is quite typical how results of a

233   socioeconomic study in the Biosphere Reserve Grosses Walsertal show (Coy & Weixelbaumer 2006).

234   There, the majority of residents also associated the term Biosphere Reserve with development and

235   cooperation.

236   While different given attributes were related very similar to the region Val Müstair by both tourists and

237   residents (Fig. 5A) answers of both groups significantly differed when asked to state the personal

238   importance of each of these attributes (Fig. 5B). These results indicate a very similar perception of the

239   landscape of the Val Müstair region among residents and visitors but differing needs regarding the

240   ecosystem services provided by the Val Müstair landscape among both groups. Residents had rather

241   rational, economic demands compared to the more emotion-driven demands of the tourists.

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242 These findings resemble results of Gehring et al. (2004) who studied residents' and tourists'

243 perception of landscape and land use in two other regions in the Canton of Grisons. They concluded

244 that residents had a rather functional approach to "their" landscape which they mainly perceived as

245 space for living and for cultural identity. Whereas tourists spending their holidays in the same area

246 wished it to be as alpine idyllic and different from their (mostly) urban home region as possible

247 (Leitungsgruppe des NFP 48 2007).

248 Satisfaction with being (living and visiting) in the Val Müstair was high among residents and tourists.

249 In both groups the landscape of the Val Müstair region was attributed a key role for the individual well-

250 being. Mai (1989) states that people who are happy with their living conditions and who are committed

251 to contribute to the development of their home region are most likely to develop a strong local identity

252 to their home region. This indicates a profound acceptance of the Biosphere Reserve in the Val

253 Müstair.

254 Overall acceptance of the Biosphere Reserve was even higher among tourists. This is thought to be

255 due to the fact that people visiting the region just in their holidays are not immediately affected by the

256 Biosphere Reserve in their daily life and therefore have fewer constraints about potential negative

257 impacts. This confirms the results of earlier studies, i.e. Schenk et al. 2007 and Stoll 1999.

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259 Conclusions

260 Since the Seville Strategy, Biosphere Reserves are seen as promising instruments for regional

261 development while contributing to nature and biodiversity conservation at the same time. Meeting

262 these requirements is a complex task and utterly dependant on the long-term participation of its

263 residents. The Biosphere Reserve Val Müstair – Parc Naziunal was supported by sound shares of

264 residents and visitors. Residents and visitors perceived the landscape and the Biosphere Reserve in a

265 similar way. Differences between both groups became obvious when comparing personal approaches

266 to the landscape and assessments of potential economic benefits generated through the Biosphere

267 Reserve. However, the differences between residents' and visitors' attitudes are reasonable and

268 rather logical as the residents have to make their living in Val Müstair region whereas the visiting

269 tourists earn their money elsewhere. Clearly, the unspoiled character was seen as the unique selling

270 point of the Val Müstair region by both residents and tourists. Thus, the residents know and

271 understand what the visiting tourists ask for. Regional marketing strategies can hence be implemented

272 pursuing the same ideas in both directions. New offers introduced for tourists (i.e. "Hay Flower

273   Greetings") match well with the ideas of promoting sustainable tourism through Biosphere Reserves.

274   Therefore we evaluate the chances for regional marketing in the Biosphere Reserve Val Müstair –

275   Parc Naziunal as very promising.

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277   The findings of the study to hand provide information about the support of the Biosphere Reserve in

278   the local population and among visiting tourists at the time of its designation. Expectations linked with

279   the new reserve were evaluated and compared between both interviewed groups. This presents a

280   basis for future studies on perception and attitudes regarding the Biosphere Reserve Val Müstair –

281   Parc Naziunal and shows quantified trends for Biosphere Reserve projects in other regions.

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283   Acknowledgements

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395 Tables

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397 Table 1: Ranking of various attributes assigned to the Val Müstair by residents and visitors. Question:

398 "Which of the given attributes do you connect with the Val Müstair?". Interviewees were asked to rank

399 the predefined attributes on a four item Likert scale, ranging from 1 = not at all, to 4 = entirely.

400 P-values refer to the results of Mann-Whitney-U-tests, comparing Likert scale item means for

401 residents and visitors for every attribute separately.

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	N (residents)	N (visitors)	mean. ± standard deviation		p	level
			residents	visitors		
High life quality	188	130	3.24±0.76	3.60±0.59	<0.001	***
Good transport connections	185	131	2.90±0.93	2.78±0.91	0.286	n.s.
Good infrastructure	186	123	3.15±0.79	3.06±0.74	0.321	n.s.
Pristine nature	190	150	3.90±0.30	3.89±0.40	0.542	n.s.
Rural character	189	152	3.93±0.25	3.85±0.37	0.023	*
Peacefulness & remoteness	189	145	3.79±0.44	3.78±0.47	0.955	n.s.
Varied leisure facilities	185	115	2.97±0.79	2.79±0.83	0.103	n.s.
Existing local traditions	188	103	3.34±0.66	3.36±0.71	0.694	n.s.
Sufficient education facilities	184	97	2.03±0.76	1.90±0.75	0.182	n.s.
Importance of nature conservation	188	118	3.57±0.56	3.37±0.63	0.007	**
Attractiveness for tourism	187	136	3.59±0.56	3.34±0.70	0.001	**

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416   Table 2: Ranking of the personal importance assigned to various predefined categories describing the

417   Val Müstair by residents and visitors. Question: "How important are the given attributes for you

418   personally?". Interviewees were asked to rank the personal importance of the attributes on a four item

419   Likert scale, ranging from 1 = not important, to 4 = very important.

420   P-values refer to the results of Mann-Whitney-U-tests, comparing Likert scale item means for

421   residents and visitors for every attribute separately.

	N (residents)	N (visitors)	mean ± standard deviation		p	level
			residents	visitors		
High life quality	191	146	3.70±0.52	3.39±0.79	<0.001	***
Good transport connections	189	144	3.34±0.73	3.16±0.81	0.048	*
Good infrastructure	187	141	3.35±0.57	3.04±0.77	<0.001	***
Pristine nature	190	150	3.79±0.47	3.97±0.44	0.880	n.s.
Rural character	189	147	3.32±0.78	3.49 ±0.72	0.027	*
Peacefulness & remoteness	190	145	3.21±0.83	3.45±0.74	0.007	**
Varied leisure facilities	187	143	3.09±0.68	2.85±0.80	0.007	**
Existing local traditions	189	143	3.15±0.69	2.90±0.81	0.005	**
Sufficient education facilities	175	126	3.56±0.66	3.08±0.78	<0.001	***
Importance of nature conservation	190	148	3.33±0.66	3.63±0.55	<0.001	***
Attractiveness for tourism	188	132	3.22±0.71	2.98±0.77	0.010	*

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Figures
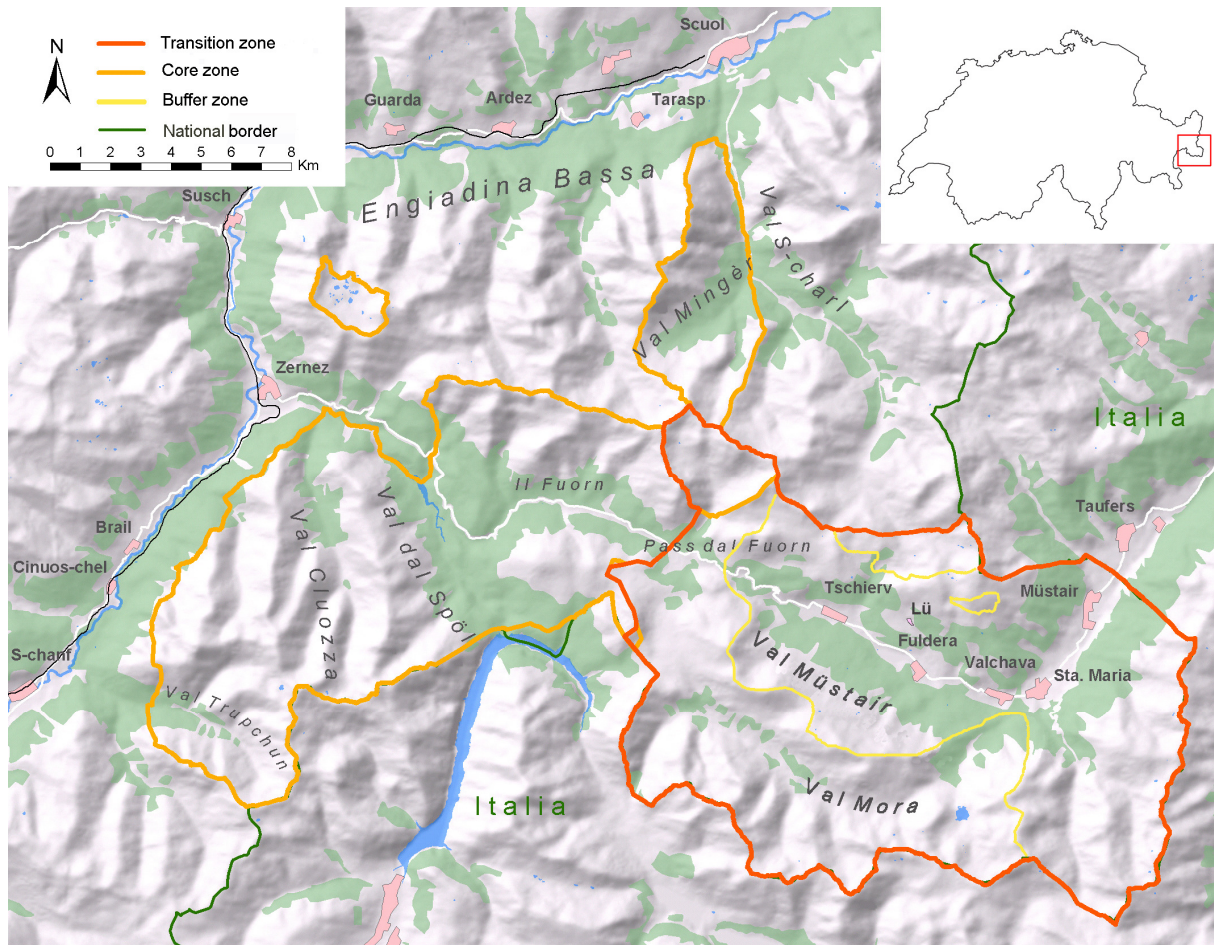
Fig. 1: The Biosphere Reserve Biosfera Val Müstair – Parc Naziunal in the Canton of Grisons, Switzerland (Map compilation: Swiss National Park-GIS 2008)
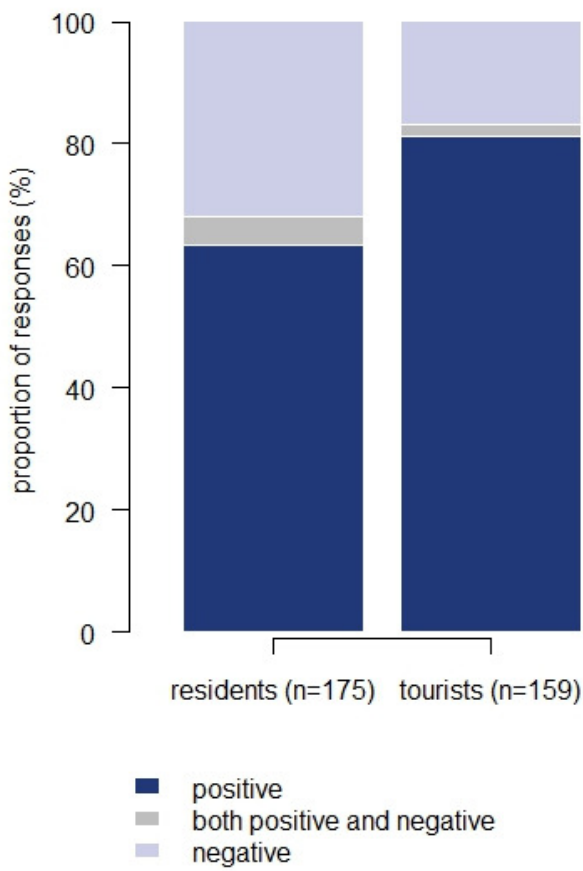
465 Fig. 2: Evaluation of potential overall changes to be induced by the planned Biosphere Reserve.

466 Question: "How do you evaluate potential changes for the region coming along with its designation as

467 UNESCO Biosphere Reserve?".

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Fig.3: Associations of residents and tourists with the term "UNESCO Biosphere Reserve". Question: "What do you associate with the term UNESCO Biosphere Reserve?". Three answers were allowed.
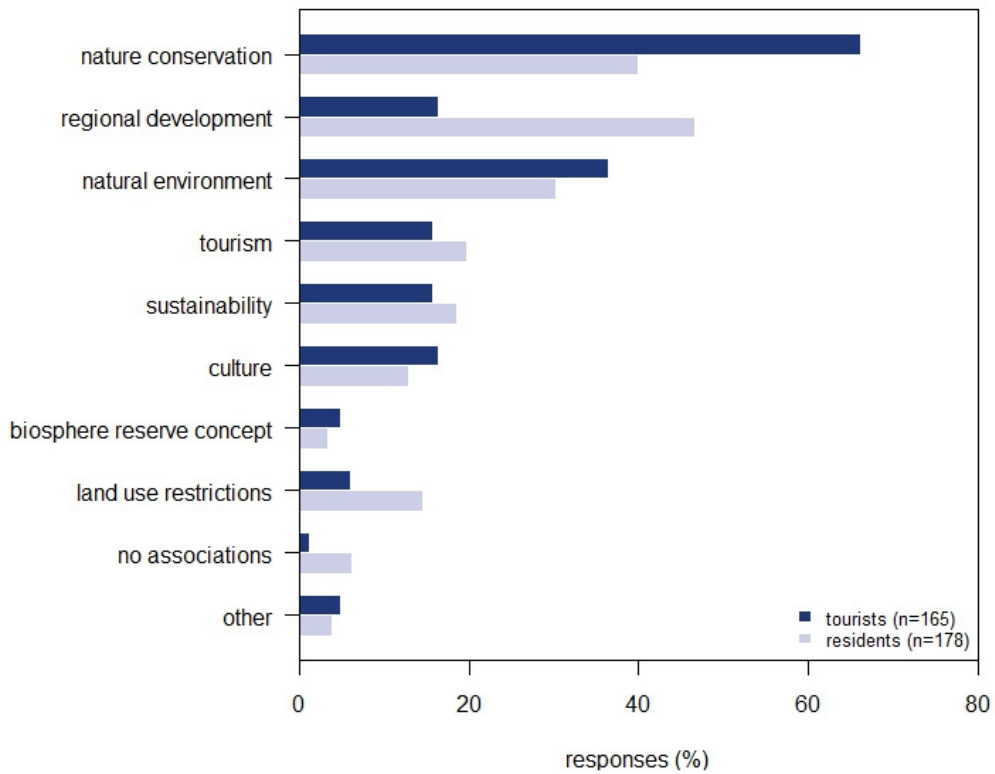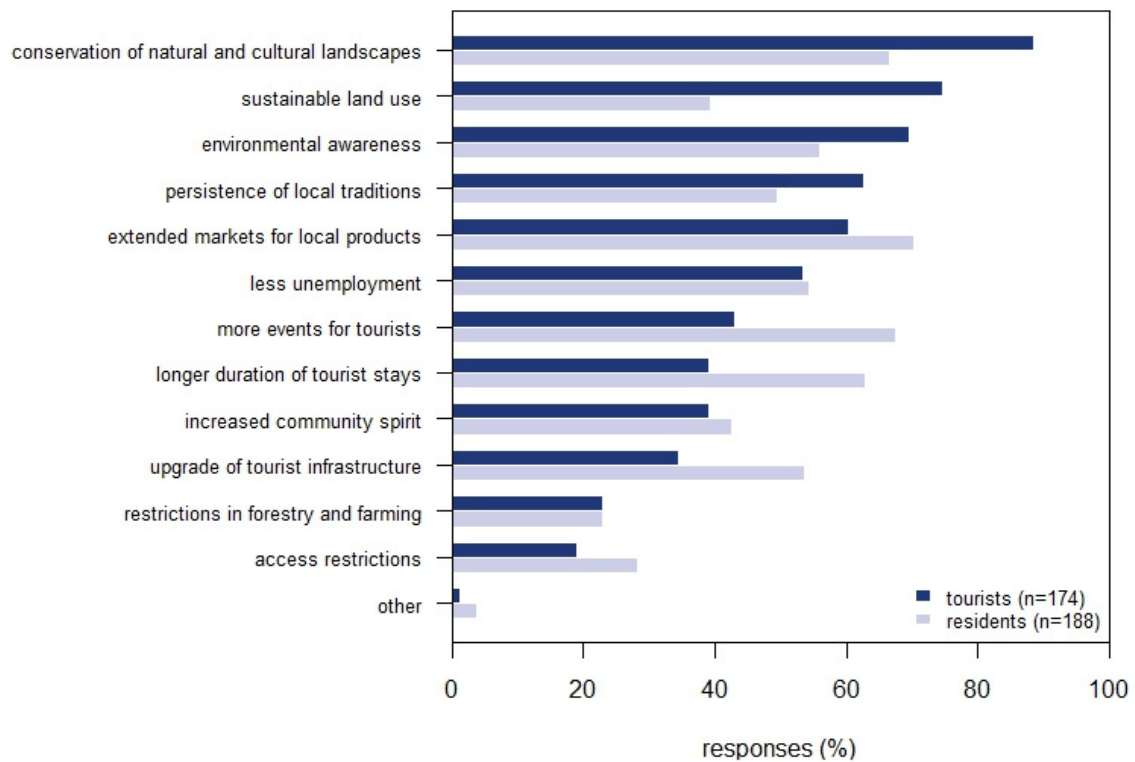
493   Fig. 4: Expectations of residents and tourists regarding the planned Biosphere Reserve. Question:
494   "Which of the given potential developments do you expect through the area's designation as
495   Biosphere Reserve?". Multiple answers were allowed.
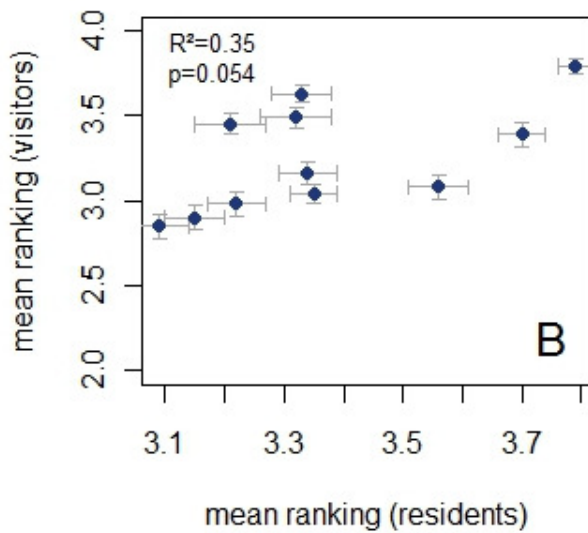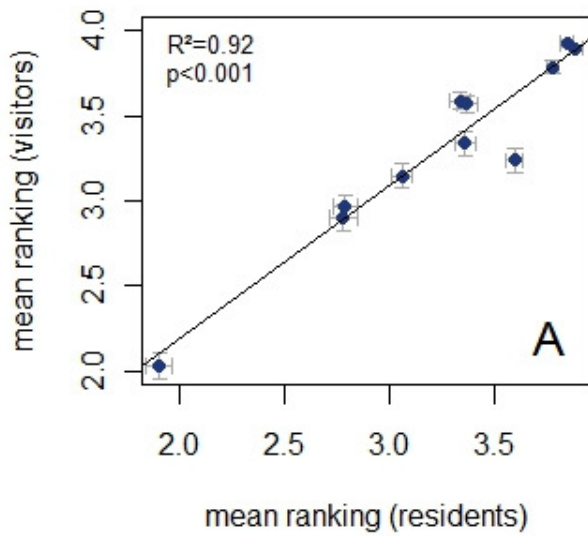
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Fig. 5: Correlation of residents' and visitors' general perception of the Val Müstair (A), and the importance assigned to key features (B) of the Val Müstair (mean ± standard error of assignments on a four item Likert scale, R^2 and p values refer to a standard linear regression). Questions asked were: "Which of the given attributes do you connect with the Val Müstair?" (A, for attributes see Tables 1 and 2), and "How important are the given attributes for you personally?" (B).