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Perception of and attitudes towards a new Swiss biosphere reserve – a comparison of residents' and visitors' views

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Keywords: acceptance, perception, attitude, protected areas, UNESCO biosphere reserve, Val Müstair, Swiss National Park, residents, tourists

Abstract

Almost all protected areas nowadays rely on the sound support of the local population. More than for every other type of nature reserve, this might be the case for UNESCO biosphere reserves. A participatory and transparent approach that takes into consideration the views of all stakeholders involved is crucial for the successful progress of the project. In 2007 we interviewed 191 residents and 178 visiting tourists in the Val Müstair (Canton of Grisons, Switzerland) with standardized questionnaires to analyse acceptance of the – at that time – proposed biosphere reserve (BR). Both groups perceived the landscape of the study region similarly but had different demands regarding the BR. While tourists had a rather emotional approach, residents clearly had more hopes for economic benefits generated through the project. However, the way the residents intend to attain these benefits fits in well with the ideas of sustainable tourism promoted by BRs. Therefore we consider this gap to be easily bridged, with both groups agreeing on a successful regional marketing for the Val Müstair BR – Swiss National Park in the future.

Profile

Protected Area

Val Müstair Biosphere Reserve – Swiss National Park

Mountain range

Alps

Country

Switzerland

Introduction

Protected area design has often focused on biodiversity only, overlooking the requirements of the local human populations (McNeely 1994). Until well into the 1970s and 1980s, most protected areas in Europe were designated to preserve or maintain natural and cultural landscapes without taking the resident population into account. This changed with the adoption of Agenda 21 at the UN summit in Rio de Janeiro in 1992. The term *sustainability* was omnipresent; involving local people in the development of protected areas became more and more important. Finally, with the adoption of the Seville Strategy in 1995 (UNESCO 1996), a new concept in protected area policy was initiated that integrated the needs of people and nature more closely than ever before. Since then, UNESCO BRs consist of three zones with decreasing levels of anthropogenic influence (transition zone, buffer zone and core zone) (UNESCO 1996). They are seen as ecological model regions, with the local people playing an integral role in the reserve concept (Hammer 2003). The support of the resident human population is indispensable for the success of protected areas (McNeely 1994; Mose & Weixelbaumer 2007), particularly BRs, which are aimed at a balanced relationship between the interests of people and wildlife.

Lucke (1995) defines acceptance as an opportunity to obtain approval for certain opinions, measures, proposals and decisions from an identifiable group of people. Designation of nature reserves always requires convergence of different parties, each of which has individual interests in the respective area. Therefore an integrated approach, taking all ideas and interests into account, is much needed (Wiersbinski et al. 1998). Backhaus et al. (2007) state that considering all existing views facilitates identification of similarities between stakeholder groups and the clarification of controversial issues in discussions. Socio-economic interviews are an important tool to adapt planning to existing perceptions and attitudes (Buchecker et al. 2003; Höchtl et al. 2005).

Hiking in the Val Mora, the buffer zone of the biosphere reserve. © Ivo I. Andri

Our study aimed at evaluating i) differences in the perception of the Val Müstair region between local residents and visitors and ii) attitudes towards the – at that time – proposed BR. Was there broad consensus between both groups and if so, on what did they agree? Knowing if a BR is viewed differently by residents and

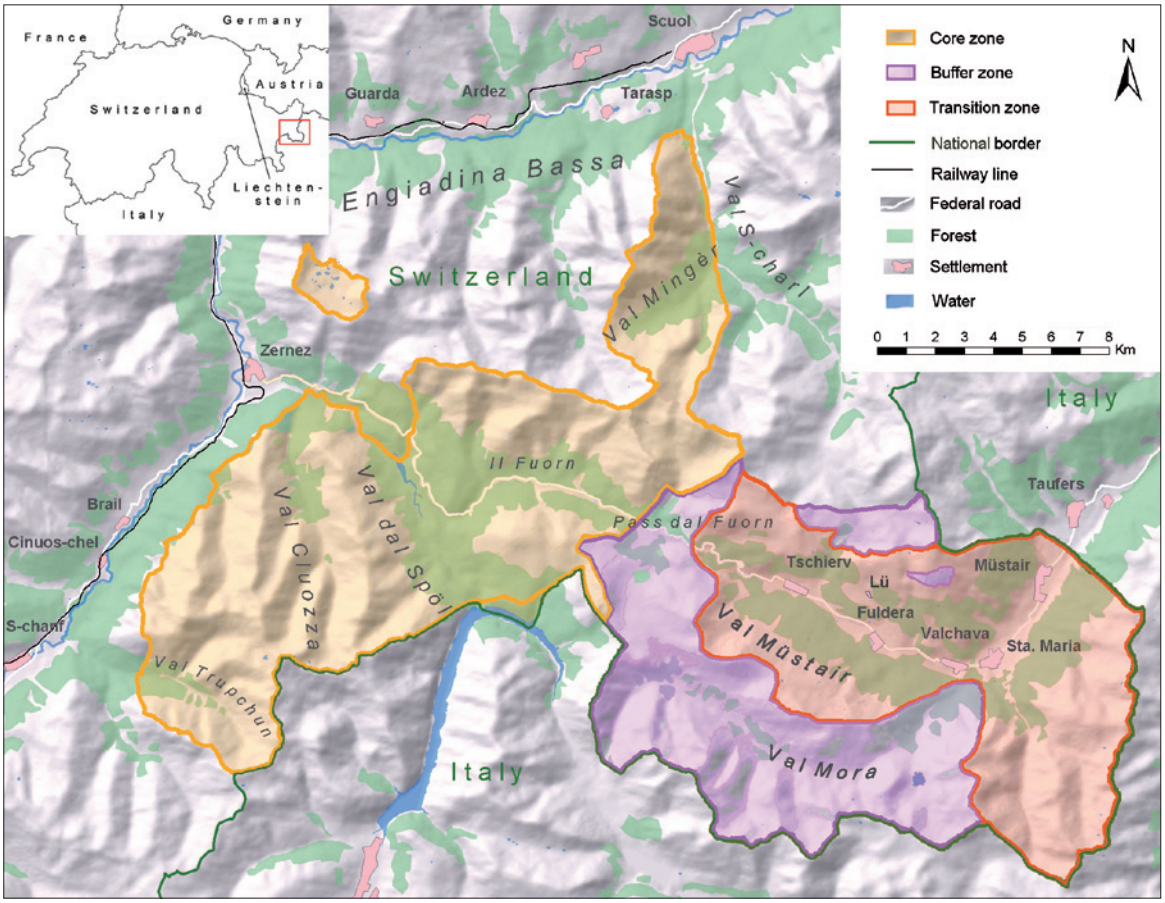

Figure 1 – Val Müstair BR – Swiss National Park, Canton of Grisons, Switzerland. The core zone is designated as Swiss National Park (orange), Val Müstair functions as transition zone (red), and Val Mora as buffer zone (purple).
Map source: Geographical Information System of the Swiss National Park – GISSNP 2008, map produced 30/08/2011.

people from regions further afield is important for the project initiators, especially during the planning stage. If there is a good fit in the expectations of the two groups, a similar image is transported to either group. Regional marketing strategies can then be easily adapted to that image (Mose 2007). Local people produce and deliver what visiting tourists and other external stakeholders demand and require. If expectations do not match between the groups, the resulting gap has to be overcome; otherwise regional marketing will not succeed in strengthening the local economy.

Study area

The UNESCO BR Biosfera Val Müstair – Parc Naziunal (centre at 46° 38' N, 10° 18' E, Figure 1) covers 361 km² at altitudes ranging from 1 250 m to 3 180 m above sea level. It is situated in the Canton of Grisons, in the Rhaeto-Romanic speaking part of Switzerland. The uninhabited core zone constitutes the Swiss National Park (Figure 1). The neighbouring valley Val Müstair with its six settlements (Tschierv, Fuldera, Lü, Valchava, Santa Maria, and Müstair, ca. 1 600 inhabitants in total) functions as transition zone and the small, secluded, uninhabited valley Val Mora as buffer zone.

The Swiss National Park (SNP) is dominated by pristine forest and high-mountain ecosystems (30% spruce, larch and Swiss pine forest, 20% alpine meadows, 50% vegetation-free rock and rock debris and open water, see Robin 2004). Land use on the territory of the SNP ceased with its designation in 1914, except for low-level tourism. The Val Müstair is a remote high-altitude valley situated at the southern main slope of the Alps. Land use is rather extensive and restricted to forestry, dairy and arable farming.

The idea of a joint BR was first proposed to the residents of Val Müstair by the administration of the SNP in the year 2000. At that time, the people of Val Müstair had already started to think of new ways for the future of their valley. Modernizations in agriculture and forestry, emigration of young people, job cuts in the public sector and economic stagnation caused difficulties for the peripheral region (Corporaziun regiunala Val Müstair & Swiss National Park 2005). A clearly defined, unified position had to be found to be able to keep up with competing tourist destinations. The hitherto extensive land-use practices should be retained while strengthening the local economic situation at the same time. Thus committed residents welcomed the vision of a joint BR with the neighbouring SNP.

In 2005, 89% of Val Müstair residents voted for pursuing the plans to establish a BR (Corporaziun regiunala Val Müstair & Swiss National Park 2005). In

November 2007, 79% agreed to adopt the charter for a Regional Nature Park Val Müstair (Corporaziun regiunala Val Müstair 2007). In Switzerland a Regional Nature Park marks the first step in the process of designating an area as BR (see Swiss Federal Department of Environment, Transport, Energy and Communications (UVEK) 2007). In 2009, the six independent settlements in the valley were merged into one municipality, simplifying organizational structures and strengthening the valley's regional identity. Finally, in summer 2010, UNESCO accepted the application for a UNESCO BR and the Swiss Federal Office for the Environment (BAFU) approved the Regional Nature Park status (Swiss Federal Office for the Environment 2010a, 2010b). Thus the BR has now successfully passed its development phase and entered the operational phase.

Material and methods

Study design

A survey using quantitative interview methods was carried out in summer 2007. 191 residents and 178 tourists were interviewed face-to-face using standardized questionnaires containing a set of open and closed questions. Open questions were used to identify knowledge gaps, misunderstandings and unexpected associations regarding the BR. In two questions (i.e. personal importance of different characteristics of the region), residents and tourists were asked to assign predefined attributes to Likert scales (Likert 1932). In composing the questionnaires, relevant questions for answering the research questions were collated and assembled in five thematic blocks: current state of knowledge of the interviewees about the BR, evaluation of the Val Müstair region, evaluation of the BR, expectations of the BR, and demographic information on the interviewees. All interviews were carried out in German. Although Rhaeto-Romanic is the official language of the study region, the lingua franca is German. Questions were kept short and non-suggestive, avoiding foreign words wherever possible. If several answers were possible, they always included negative and positive options as well as the option *other*. Two pre-tests were conducted and the questionnaires adapted in their wake.

With 1 605 residents (Maissen & Chiotopulus 2006) the population of Val Müstair provided a promising environment for gaining a sufficiently large sample size. We aimed at interviewing 163 residents (10% of the population) using quota sampling (Atteslander 2006). We stratified the population by gender, age (up to and incl. 19 years old, 20–39, 40–64 and 65+ years old) and place of residence (six villages). The interviews were conducted on the doorsteps from 9:30–11:30 a.m. and 2:00–6:00 p.m. over a period of 30 days between 4 May and 14 July 2007.

Although we did not use a randomized sampling strategy, the rather large sample size of 10% of all residents and the strict stratification suggest representative results. However, potential bias could have been introduced by interviewing people at their doorsteps because people living in remoter areas were less likely to be approached than people living in the village centres. Nevertheless, this interview method was the only one that allowed face-to-face contact with the Val Müstair residents, thus providing immediate insights into the perception of the BR project. Also, minor bias resulting from pseudo-replication might have influenced result quality, as sometimes more than one member per household was interviewed. However, gathering only independent observations was not feasible as this would have led to a very small sample size for the smaller villages. As a matter of courtesy it was not possible to terminate interviews with residents who were no longer needed for reaching the quotas of the sampling design. Therefore all residents willing to complete the questionnaire were included in the survey, increasing the sample size from the calculated 163 (10%) to 191 or 12% of the total population.

Tourists were interviewed using accidental (haphazard) sampling (Bortz & Döring 2002) at eleven selected sites across the valley that were considered attractive for visitors. We chose various areas to reach different interest and age groups, i.e. visitors interested in culture, sports (hiking / mountain biking), nature and wildlife. The interviewees were approached as they passed by and the questionnaire filled in together with the surveyor. We aimed at gaining a sample size comparable to the one of the resident survey and not at a representative sample of all tourists visiting the region. The interviews with tourists were conducted on 13 days. On average, 14 tourists were interviewed per day between 29 June and 14 July 2007.

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

Data analysis

To facilitate quantitative analysis, every possible answer was allocated a numerical value. Where multiple answers were possible, every answer was treated as a separate question, which could either be ticked (= 1) or not ticked (= 0). To analyse open questions, a system of categories was created out of the answers given, allocating each answer a certain numerical value.

We calculated the number of valid answers for each question. Illegible or ambiguous answers were discarded, therefore sample size differs between questions.

Where Likert scales were used, mean and standard errors were calculated on the assumption that the scales were roughly interval-scaled, i.e. distances between scale items were equal (Clason & Dormody 1993). We tested for differences in means using non-parametric Mann-Whitney-U tests. In addition, we used correlation analysis to test how well perception and attitudes coincided between residents and visitors. All statistical analyses were conducted in R 2.12.2 (R Development Core Team 2011).

Results

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

While the majority of the residents associated the term *UNESCO Biosphere Reserve* with sustainable regional development, the interviewed tourists mostly linked it to nature and biodiversity conservation (Figure 2). Other associations were spread similarly across both groups, and possible restrictions arising from the designation were linked to a lesser extent to the term *biosphere reserve*, although by twice as many residents as visitors (Figure 2).

Residents and visitors had similar expectations regarding potential developments in the Val Müstair generated by its designation as UNESCO BR (Figure 3), again indicating high overall acceptance. Only few interviewees expected negative developments to occur. Differences between both interviewed groups were obvious regarding tourism and sustainable land use. Expectations concerning improvements in the local labour market and an increased community spirit across the villages in the valley were very similar in both groups (Figure 3).

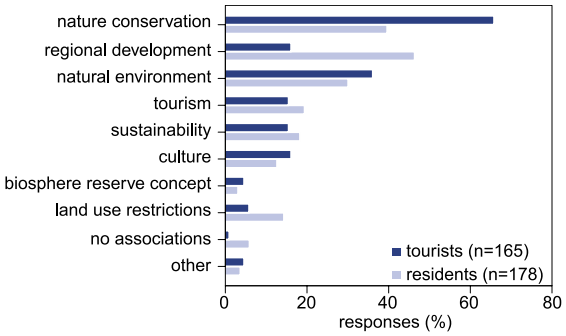

Figure 2 – Associations of residents and tourists with the term UNESCO Biosphere Reserve. *Question:* "What do you associate with the term UNESCO Biosphere Reserve?". *Up to three possible answers.*

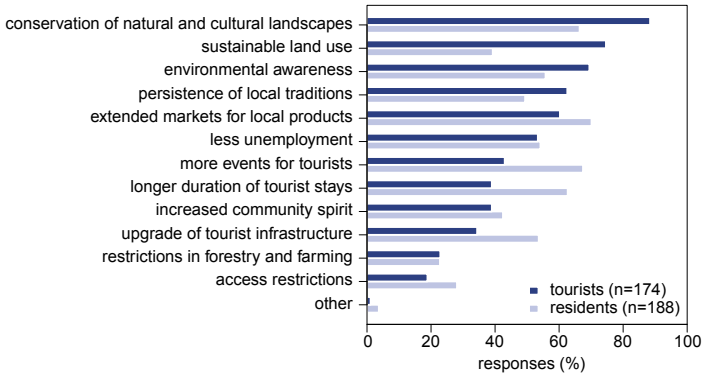

Figure 3 – Expectations of residents and tourists regarding the planned BR. Question: "Which of the given potential developments do you expect through the area's designation as BR?". *Multiple answers possible.*

Asked for their favourite aspect of the Val Müstair, the majority of residents (67%, n = 180) and tourists (53%, n = 173) suggested the characteristic Alpine landscape. The personal feeling of well-being was rated high by both groups: 82% (n = 187) of the residents and 97% (n = 155) of the visitors declared they felt *very well* and *well* in the Val Müstair. The tourists' sense of well-being was reflected by the fact that 99% (n = 173) stated they wished to visit the area again.

There was a strong and highly significant correlation (Spearman's r = 0.90, p < 0.001) in residents' and tourists' perception of the regional identity of the Val Müstair (Figure 4A). Only a high quality of life was, on average, ranked higher by residents than by tourists (Table 1). Tourists ranked rural character, nature conservation, and attractiveness for tourism significantly higher than residents (Table 1). In terms of personal significance, there was a weak and nonsignificant correlation (Spearman's r = 0.54, p = 0.09) between the

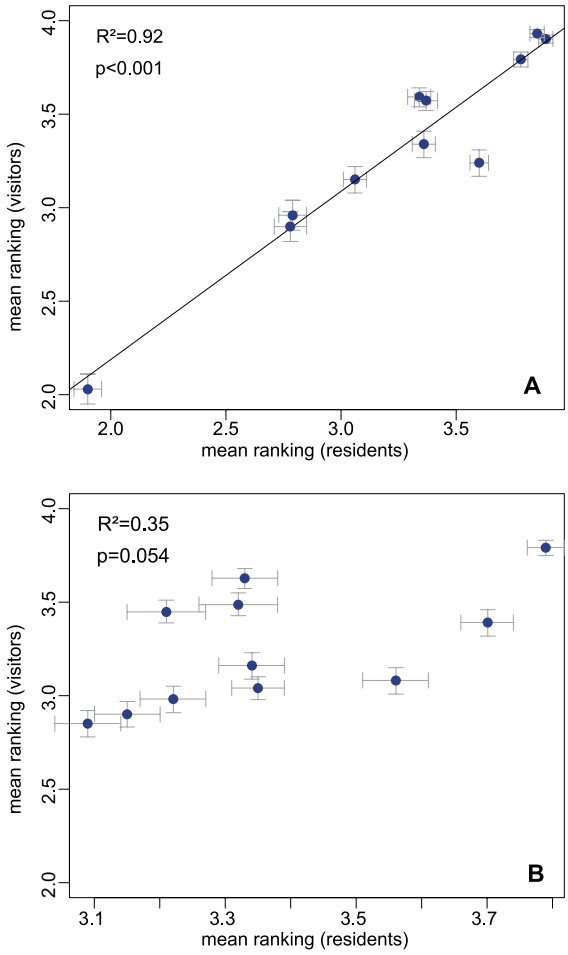

Figure 4 – Correlation of residents' and visitors' general perception of the Val Müstair (A), and the importance assigned to key features (B) of the Val Müstair (mean ± standard error of assignments on a four item Likert scale, R² and p values refer to a standard linear regression). Questions asked: "Which of the given attributes do you relate to the Val Müstair?" *(A, for attributes see Tables 1 and 2), and* "How important are the given attributes for you personally?" *(B).*

Table 1 – Ranking of various attributes assigned to the Val Müstair by residents and visitors. Question: "Which of the given attributes do you relate to the Val Müstair?". *Interviewees were asked to rank the predefined attributes on a four item Likert scale, ranging from 1 = not at all, to 4 = entirely.*
p-values refer to the results of Mann-Whitney-U-tests, comparing Likert scale item means for residents and visitors for every attribute separately.

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

ratings of residents and tourists (Figure 4B). Most attributes were ranked as more important by residents, except rural character, peacefulness and remoteness, and importance of nature conservation, which were ranked as significantly more important by tourists (Table 2).

Discussion

Results of this study show that, with 63% of the residents and 81% of the tourists, a broad majority of both interviewed groups favoured the implementation of a BR in the Val Müstair in summer 2007. However, compared with results of a referendum carried out in the year 2005, acceptance had decreased: in 2005, 89% of the Val Müstair residents voted for pursuing the plans to designate the region as BR (Corporaziun regiunala Val Müstair & Swiss National Park 2005). The lengthy designation procedure for the BR is thought to have weakened initial enthusiasm in parts of the resident population. Nonetheless, acceptance of the BR in Val Müstair rose again until November 2007 when 79% of the resident population agreed to adopt the charter for the Regional Nature Park (Corporaziun regiunala Val Müstair 2007). Increasing awareness of the BR plans in the course of our study in summer 2007 could have been one factor that increased acceptance among the Val Müstair residents again.

Overall acceptance of the BR was higher among tourists than among residents. This is thought to be due to the fact that people visiting the region are not immediately affected by the BR in their everyday life and therefore might have fewer concerns about potential negative impacts. This confirms the results of earlier studies, e.g. Schenk et al. (2007).

Both interviewed groups had great expectations for the development of the region once the BR was established (Figure 3). Overall, tourists and residents perceived the Val Müstair and the BR similarly. On closer inspection, important differences became evident. Residents had more hopes for opportunities connected with economic improvements such as upgrad-

Table 2 – Ranking of the personal importance assigned to various predefined categories describing the Val Müstair by residents and visitors. Question: "How important are the given attributes for you personally?". *Interviewees were asked to rank the personal significance of the attributes on a four item Likert scale, ranging from 1 = not important, to 4 = very important.*
p-values refer to the results of Mann-Whitney-U-tests, comparing Likert scale item means for residents and visitors separately for each attribute.

	N (residents)	N (visitors)	mean ± standard deviation		p	level
			residents	visitors		
High quality of life	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	*

ing existing tourist infrastructure, more events offered for tourists, a bigger market for local products and an increase in overnight stays. Tourists favoured development opportunities with a focus on sustainable land use, nature conservation, conservation of traditionally managed landscapes and local traditions. When it comes to regional development, tourists tended to see more the emotional values while residents rather hoped for economic growth. The residents' functional approach was obvious again when we analysed the interviewees' associations with the term *UNESCO BR* (Figure 2). Residents primarily thought of regional development, tourists focused on nature conservation. This is quite typical, as results of a socio-economic study in Großes Walsertal BR show (Rumpolt 2009). There the majority of residents associated the term BR also with development and cooperation.

While different given attributes were related similarly to the region Val Müstair by both tourists and residents (Figure 4A), answers of both groups differed significantly when it came to stating the personal significance of each of these attributes (Figure 4B). These results indicate a very similar perception of the facilities and the landscape of the study area among residents and visitors but differing needs for the facilities and ecosystem services provided by the Val Müstair. Residents had rather rational, economic demands compared to the more emotion-driven demands of the tourists.

These findings resemble results of Gehring et al. (2004) who studied residents' and tourists' perception of landscape and land use in two other regions in the canton of Grisons. They concluded that residents had a rather functional approach to *their* landscape, which they mainly perceived as space for living and for cultural identity. In contrast, tourists spending their holidays in the same area wished for it to be as idyllic and different from their (mostly) urban home region as possible (Leitungsgruppe des NFP 48 2007).

Satisfaction with being in the Val Müstair (living and visiting) was high among residents and tourists. Both groups attributed a key role for the individual well-being to the landscape of the Val Müstair region was. Mai (1989) states that people who are happy with their living conditions and who are committed to contributing to the development of their home region are most likely to develop a strong local identity to their home region. This indicates a profound acceptance of the BR in the Val Müstair.

Conclusions

Since the introduction of the Seville Strategy, BRs are seen as promising instruments for regional development while contributing to nature and biodiversity conservation at the same time. Meeting these requirements is a complex task and utterly dependent on the long-term participation of the residents. Val Müstair BR – Swiss National Park was supported by sound proportions of residents and visitors. Differences between both groups became obvious when comparing personal approaches to the landscape and assessments of potential economic benefits generated through the BR. However, the differences between residents' and visitors' attitudes are understandable, as the residents have to make their living in the Val Müstair region whereas the visiting tourists earn their money elsewhere. Clearly the unspoiled character was seen as the unique selling point of the Val Müstair region by both residents and tourists. Thus, the residents know and understand what visiting tourists demand. Regional marketing strategies can therefore be implemented by pursuing the same ideas in both directions. New offers introduced for tourists (i.e. *Heublumen-Grüsse* – hay flower greetings) fit in well with the ideas of promoting sustainable tourism through BRs. We therefore consider the outlook for regional marketing in the Val Müstair BR – Parc Naziunal as very promising.

Outlook

With the positive decisions of UNESCO and BAFU in 2010, the BR in Val Müstair has passed its development phase and entered the operational phase. The new local authority comprising all six settlements in the valley is not only municipal administration but also in charge of the accounts for the BR. Since 2007, good networking links with important partners such as tourism, ecology, economy, sponsors and neighbouring authorities have been established. A BR office was opened, and 24 BR projects initiated (Regionaler Naturpark Biosfera Val Müstair 2009). Regular monitoring of residents' and visitors' acceptance and perception of the BR has been started and will continue (FOK-SNP 2007, cf. overview of current research projects: http://www.nationalpark.ch/tasks/sites/de/assets/File/FOK_2011_web.pdf). However, UNESCO's final decision is subject to two important adjustments that have to be made to fulfil recently modified criteria for BRs. Since 2008, core zones have to be surrounded by a buffer zone (Madrid Action Plan, UNESCO 2008). The UNESCO approved the BR upon the condition that all municipalities in the Lower Engadine bordering the national park (core zone of the BR) will contribute land to create a surrounding buffer zone. This and a common management plan for all three zones have to be realized by 2013 to guarantee a definite designation of Val Müstair BR – Parc Naziunal (ENPK & FOK-SNP 2010).

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