

## The attraction of rivers in protected areas for people in search of recreation

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### Summary

The objective of this paper is to describe in which way recreational use patterns along three alpine rivers (River Enns, River Lech, River Drau) are influenced by the biophysical setting of the rivers and their floodplains. The results show that highest use frequencies were found at close-to-nature stretches being part of a National Park or Nature Park, followed by restored river stretches. Obviously these river stretches provide better opportunities for recreational activities, whereas a lack of similar opportunities was diagnosed on regulated river stretches. From an ecological point of view, use concentration at ecologically valuable stretches is likely to cause adverse effects for endangered species like gravel-breeding birds. One approach to enhance both ecological and social functions of rivers is to counteract the spatial limitation rivers are currently confronted with, e.g. through further restoration efforts on degraded stretches. This could contribute to relieve the strain on close-to-nature stretches in protected areas in the long term.

### Keywords

river management, river recreation, use patterns, use conflicts

In Austria only about 20% of the larger rivers are left having a high or good habitat quality (MUHAR, 2000). These stretches are not only a valuable refuge for threatened species but are also very attractive for recreational use (INGOLD & BLANKENHORN, 2005). This poses the managerial challenge of combining both ecological and social functions under limited spatial conditions as they are given in a densely populated country such as Austria.

From an ecological perspective, evaluating possible adverse effects that might be caused by river recreation is rather difficult, as there is hardly any data available on use frequencies and distribution (REICHHOLF, 1999; STETTNER & HINTERSTOISSER, 2001). To start filling this gap is one of the objectives of the project "Future options for the development of riverine landscapes – space requirements for multifunctionality" conducted in the framework of the Doctoral School Sustainable Development at BOKU University Vienna.

On-site data collection was carried out along three alpine gravel-bed rivers - River Enns, River Lech and River Drau – which are characterised by a wide range of protection statuses and river based recreation opportunities (Fig. 1).

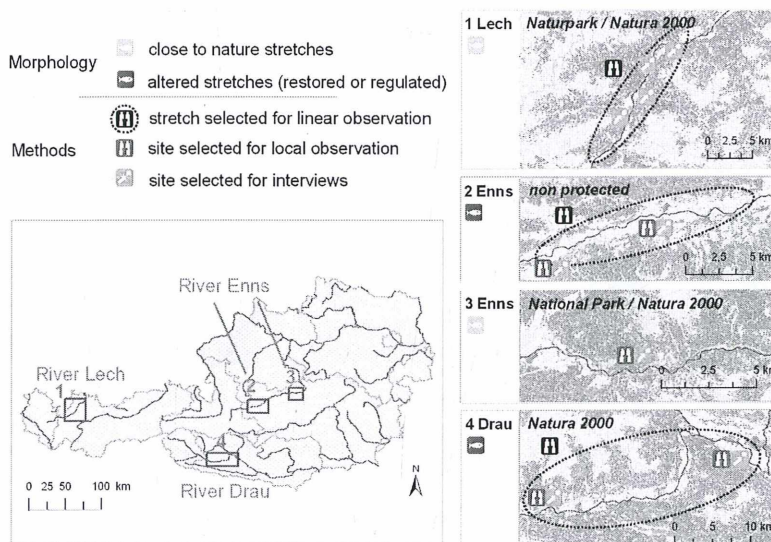


Figure 1: Location and protection status of study sites

To assess interactions between ecological and social functions a multi-method approach was applied. The territories of gravel breeding birds (*Acitits hypoleucos*, *Charadrius dubius*) were mapped, since they were chosen as indicators to evaluate use consequences from an ecological perspective (FRÜHAUF & DVORAK, 1996). To gain insights into social issues such as recreation use motives, behaviour and distribution, quantitative and qualitative methods were combined, including observations and interviews (CESSFORD & MUHAR, 2003). Concerning data on users' behaviour, observations were carried out at two different scales. At the local scale data was generated by observing recreational usage from fixed points e.g. at gravel banks. In addition to that, data generated by linear observation should help to identify use patterns. This was done by canoeing down selected river stretches (length ranging from 16km to 45km) and documenting spatially explicit the usage observed within these stretches. This method cannot be applied under difficult white water conditions and was therefore not used in the National Park Gesäuse. To learn more about users' motives and preferences a survey using semi-standardised questionnaires was carried out. The sites selected for local observations also served as interview locations.

In order to analyse in which way the biophysical settings influences the attitude and behaviour of river-based recreationists, data were allocated to two groups depending on whether the site's morphology was close-to-nature or altered (Fig. 1). All sites that were found to be close-to-nature were situated in protected areas such as National Park or Nature Park.

A range of differences concerning the motives for river recreation was found between users at close-to-nature sites and those at altered sites (Fig. 1-Fig. 5). The awareness for biophysical issues seems to be higher at close-to-nature sites, where more than 50% of the interviewees stated that nature observation was a very important motive for their stay at the river. Another finding was that three correlating issues – adventure, sports and exploring new areas – had a significantly higher meaning for users interviewed at close-to-nature sites (level of significance 0,01).

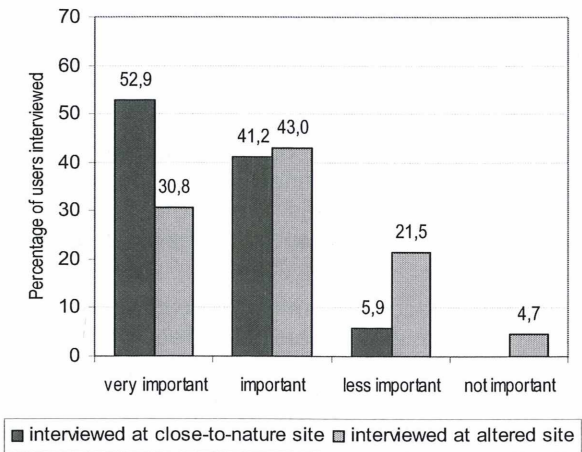


Figure 2: „Observing Nature“ as motive for river recreation (n=247)

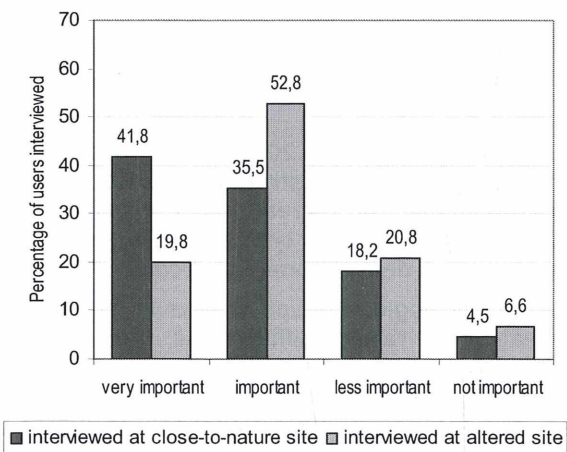


Figure 3: „Sport“ as motive for river recreation (n=247)

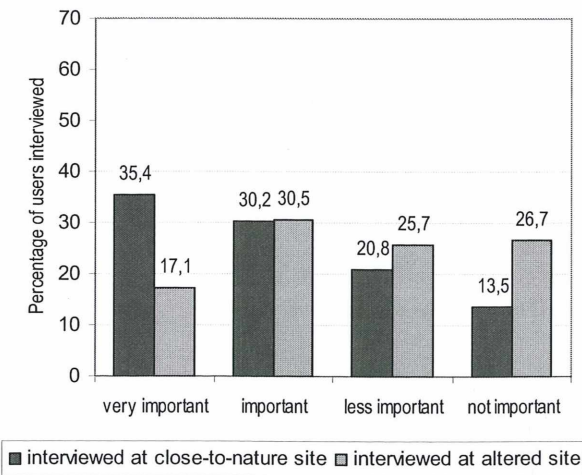


Figure 4: „Exploring a new area“ as motive for river recreation (n=247)

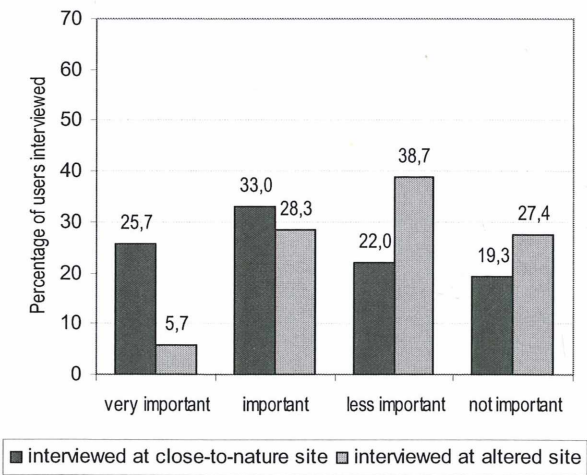


Figure 5: „Adventure“ as motive for river recreation (n=247)



Regarding the results of local observation, use frequency at close-to-nature sites was in average three times higher than at altered sites (Fig. 6). This concentration of use at local sites in protected areas can also be seen as an intended effect achieved through guiding measures by the area's management. Results from linear observation substantiate close-to nature-stretches and restored sites to be most attractive for recreational use.

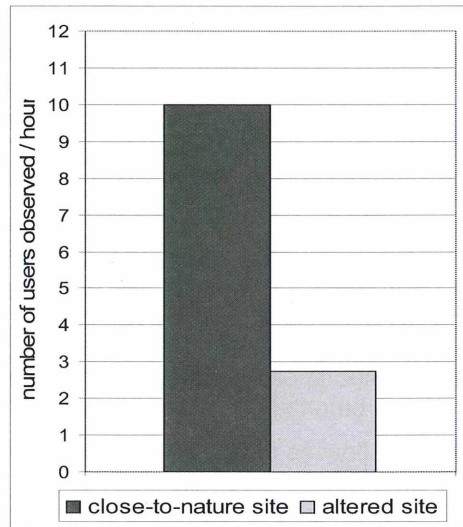


Figure 6: Local observation: use frequency

As long as close-to-nature and restored stretches are spatially in a rather limited condition, use concentration on these stretches is likely to cause adverse ecological effects, as these stretches represent the only habitat available for endangered species like gravel-breeding birds.

This overlap between the ecological value and the recreational appeal could be affirmed by the results of this study showing the need for accurate proactive management strategies.

One approach to improve both the recreational usability and the ecological functionality would be to foster further restoration efforts on degraded river stretches, counteracting the spatially limited situation and helping that way to relieve the strain on protected areas and other valuable sites in the long term.

## Acknowledgments

This project is conducted within the Doctoral School Sustainable Development at BOKU University of Natural Resources and Applied Life Sciences, Vienna, funded by: Research programme *proVISION* of the Federal Ministry of Science and Research (bmwf); Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW); Federal State Lower Austria; Federal State Styria; City of Vienna.

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Autor(en)/Author(s): Chiari Sybille, Muhar Susanne, Muhar Andreas

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