Integrative Geography at the University of Bern: Sustainability Research in Mountain Regions

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DEPARTMENT OF
INTEGRATIVE GEOGRAPHY

The Department of Integrative Geography at the University of Bern is dedicated to sustainability research and teaching. Within its sustainable regional development and sustainable land management foci, it is firmly committed to mountain research and development. One of the study regions is the Swiss Alps, where issues such as common property resource use and protected area monitoring link to global debates.

Integrative geography in Bern

The Department of Integrative Geography (DIG, 2014) is one of three departments at the Institute of Geography, University of Bern, Switzerland. It focuses on sustainable development research, in both northern and southern contexts, and on university teaching. Although it formally separated from the Centre for Development and Environment in 2009 (Centre for Development and Environment, 2014), it shares its thematic fields, approaches, and study regions. The department includes two research groups:

- The Sustainable Regional Development group focuses on the relationships between global change and concrete, contextualized development. It particularly focuses on human–environment interactions, negotiation processes, decision making, and their sustainability outcomes.
- The Sustainable Land Management group focuses on integrative aspects of sustainable management of renewable natural resources in rural areas. Research topics include the improvement of resource use through soil and water conservation measures, and integration of nature conservation in rural development, at both the technological and institutional levels.

DIG's mountain focus and its commitments in the Swiss Alps

Mountain regions have been crucial to DIG's research and teaching activities for many years. This research focus is based on outstanding initiatives such as the Man and Biosphere Programme (1970s–1980s) in the Swiss Alps, which was one of the first to make a substantial connection between the natural and social sciences and focused on the balance between the ecosystem and human activities. This integrated view of a region inspired efforts to create a World Heritage Site in the Alps (Wiesmann et al 2005; Liechti et al 2010)—a site where the DIG is still active (see below). Other DIG mountain research is related to projects in the South and East, such as in Kenya since 1976 (highland–lowland interactions and water governance), Ethiopia since 1973 (protected area management, research for a World Heritage Site, rural development, and soil and water conservation), Nepal since 1978 (mountain hazards), Laos since 1997 (geographic information systems [GIS] and landscape change), Bolivia since 2002 (hazards and land reforms), and Central Asia since 1999 (mountain pasture management, mountain access, energy, and soil conservation).

As examples, two thematic core areas of DIG research in the Swiss Alps are presented here: governance of common property resources and World Heritage Site monitoring.

Governance of common property resources

Common property resources such as pastures and irrigation water are prevalent in mountain areas (Figure 1). Their use is commonly regulated by complex and diverse governance systems. In the 8 Bernese communes of the Swiss Alps Jungfrau-Aletsch World Heritage Site alone, 5 different systems of mountain pasture use are operational: cooperatives under private or public law, simple partnerships, public bodies, incorporated companies, and natural persons (private property), and this is only the external administrative notation. Internal regulations, their strong and weak points regarding sustainable use, and—most importantly—their dynamics under changing economic, political, and sociocultural conditions are a vast field for research. A cooperative project of DIG and the University of Munich that analyzed and modeled changes of common property pasture use in the Swiss Alps (see Baur and Binder 2013) showed that with increasing farm size in the lowlands, which is a current trend in Swiss farming, farmers have reduced the use and maintenance of common property alpine pastures. Furthermore, the use of less mobile breeds has led to a grazing focus on easily accessible alpine pastures. Gradual land abandonment and forest encroachment in marginal pasture areas are results of this process (publications in process). Research on the impact of different governance systems on land-use change is continuing.

World Heritage Site monitoring

The Swiss Alps Jungfrau-Aletsch region was declared a World Heritage Site in 2001. In order to preserve the outstanding values of this area for future generations, ecological, economic, and sociocultural changes have to be

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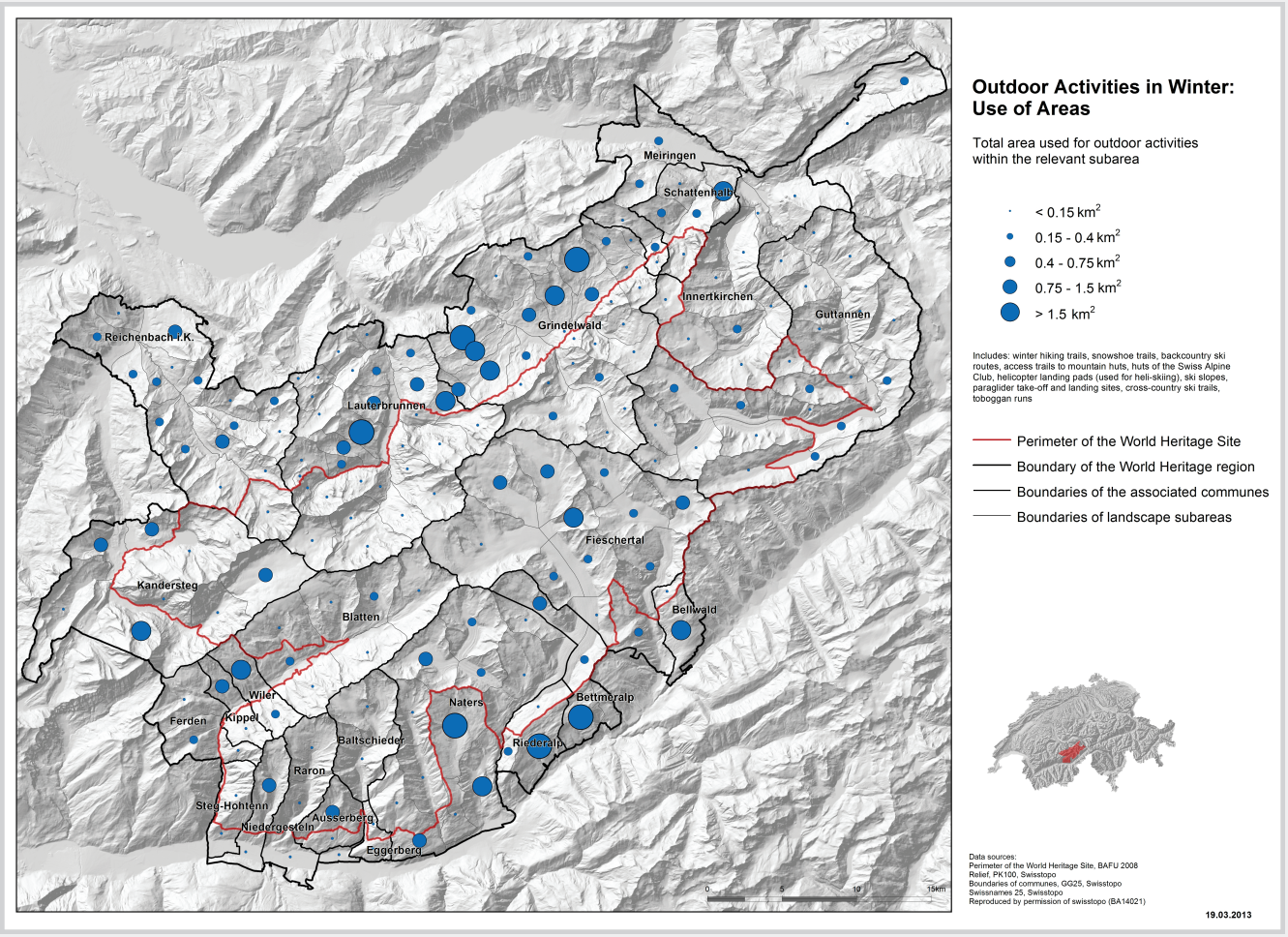
FIGURE 1 Common property pasture area in the Bernese Oberland, Switzerland. (Photo by Karina Liechti, 2010)

observed and made explicit in order to be able to communicate them to the society. The DIG is involved in the operation of a monitoring system for the World Heritage Site and has elaborated indicators that describe ongoing processes and potential threats to the values of the site (Gasser and Wiesmann 2011). Among other issues, it was possible to show that, by making the high mountains increasingly accessible to people, an intensification of tourist use has taken place in the World Heritage region, and this may be a threat to sensitive natural environments. After establishing a general overview of the areas used for outdoor activities (Figure 2) and an analysis of local conditions (such as protected areas, sensitive environments, and endangered species), concrete visitor guidance measures, where necessary, will have to be developed in cooperation with local partners. Interesting results of the monitoring activities are presented to the public by means of short "monitoring letters" (SAJA, 2014). Up to now, the following themes have been addressed: glaciers, outdoor activities, agriculture (all in 2012), biodiversity, water, and cultural landscapes (in 2013).

Networks and cooperative efforts

The DIG maintains a large national and international network, with an emphasis on research partnerships between North and South, by means of transdisciplinary research (Hirsch Hadorn et al 2008) and education. Two institutions and networks are particularly important: the Centre for Development and Environment of the University of Bern, which was established as an interdisciplinary university center in 2009, after having developed within the Institute of Geography, and the International Graduate School North–South (2014), a network of the Swiss universities of Bern, Basel, and Zurich, which have worked together since 2011 in support of research partnerships at the PhD and postdoctoral levels. It is likely that the DIG will maintain its overall direction in the coming years by working toward a geography of sustainable development and continuing its strong focus on research for sustainable mountain development.

FIGURE 2 Total area used for different outdoor activities in the different regions of the Swiss Alps World Heritage Site. (Map by Maria Paulsson and Matthias Engesser)



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