



Contents lists available at ScienceDirect

Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha

How natural disturbance triggers political conflict: Bark beetles and the meaning of landscape in the Bavarian Forest

Martin Müller*

Universität St. Gallen, Varnbühlstr. 19, 9000 St. Gallen, Switzerland

ARTICLE INFO

Article history:

Received 26 June 2010

Received in revised form 12 May 2011

Accepted 20 May 2011

Available online 17 June 2011

Keywords:

Natural disturbance

Conflict

Identity

Forest

Landscape

Protected area

ABSTRACT

The incidence of natural disturbance in forests is increasing globally as a consequence of global warming. The concomitant large-scale transformation of landscapes can have profound social impacts and trigger political conflict that hampers resource management. This paper explores the link between landscape transformations and political conflict using the example of the bark beetle epidemic in Bavarian Forest National Park, Germany. For a significant part of the local population, the bark beetle represented a threat to their homeland and the post-disturbance landscape of dead wood reflected the dominance of outside interests in land management. This resentment sparked the formation of a local political movement, which was successful in pressing for changes in the current land management policy that were based on the ideal of a green forest landscape that needed to be protected by human intervention. An alternative interpretation of the post-disturbance landscape, however, welcomed it as a step towards authentic wilderness and opposed interventions to control the bark beetle. These contrasting understandings of the post-disturbance landscape underpin the protracted political conflict over the appropriate management of natural disturbance that has been smouldering for more than 20 years. The article concludes that it is vital to understand the cultural meaning of landscapes before adopting a disturbance management policy in order to avoid paralysing political conflict and social unrest.

© 2011 Elsevier Ltd. All rights reserved.

1. Introduction

The gloomy view came as a shock for me on the approach.... Above the familiar thick green of the forest on the lower slopes, an eerie tooth-pick scenery opened up. Just as if a forest fire had raged here – only that the dead trees were not charred but miserably jutting into the sky as pale, barkless skeletons (National Geographic Germany, 2006, p. 158).¹

The scenery evoked in this article is becoming an increasingly common sight in many countries, as the incidence of natural disturbance in forests is undergoing a sharp increase due to global warming. Above-average seasonal temperatures, drought and extreme weather events have amplified the intensity, frequency and extent of wildfire, insect epidemics and windthrow in forests (Dale et al., 2001; Running, 2006). Bark beetles (Scolytinae), the agent behind the forest landscape described above, have expanded considerably in temperate and boreal coniferous forests in North

America and Central Europe (Berg et al., 2006; Flint et al., 2009). In British Columbia, Canada, the epidemic of mountain pine beetle (*Dendroctonus ponderosae*) reached a cumulative outbreak area of more than 175,000 km² in 2011 (BC Ministry of Forests, 2011).

In line with the growing incidence and scale of natural disturbance, in particular wildfire and insect epidemics, there appear an increasing number of studies concerned with its social dimension (see Table 1 for an overview). Research has examined aspects such as the perception and social construction of natural disturbance (Champ et al., 2009; Flint, 2006, 2007; McFarlane and Watson, 2008; Whittaker and Mercer, 2004), people's attitudes and support for management strategies (Absher et al., 2006; Bright et al., 2007; Burns and Cheng, 2007; Flint et al., 2009; Kneeshaw et al., 2004; McFarlane et al., 2006), community vulnerability (Collins and Bolin, 2009; Parkins and MacKendrick, 2007) and cohesion and conflict (Carroll et al., 2005; Carroll et al., 2006; Flint and Luloff, 2007). The perception and management preferences of visitors in protected areas affected by natural disturbance have also been the subject of some studies (McFarlane and Watson, 2008; Müller and Job, 2009).

What has so far received little attention, however, is the symbolic dimension of natural disturbance and how it impacts communities (Champ and Brooks, 2010). As one op-ed put it: 'the bark beetle does not only devour trees, it devours souls' (Kollböck, 1997, p. 1). This is because the environment is a 'symbolic

* Tel.: +41 (0)71 224 3115; fax: +41 (0)71 224 26 69.

E-mail address: martin@martin-muller.net.

URL: <http://www.martin-muller.net>

¹ This and all following quotes from the primary material have been translated from German by the author.

Table 1
Overview of research on the social impacts of natural disturbance.

Authors	Agent	Region	Empirical material	Key findings
Burns and Cheng (2007)	Wildfire	Northern Colorado, US	Q-sorts in semi-structured interviews	Stakeholders frame the need for active fire management around three distinct themes: (1) forests are unhealthy and need active management; (2) active management should comply with existing laws requiring environmental impact analysis and public involvement and (3) meeting long-term forest goals
Carroll et al. (2005)	Wildfire	White Mountains, Arizona, US	Semi-structured interviews with community members	Wild fires lead to both community cohesion and conflict, depending on the geographic location and social and economic histories of communities
Carroll et al. (2006)	Wildfire	Six sites in the Western US	Semi-structured interviews with community members	Conflict over the management of fire arises in particular from a clash of local agency and disembedded, bureaucratic rationality that is perceived as far removed from local realities
Champ et al. (2009)	Wildfire	Colorado, US	Semi-structured interviews with homeowners and recreationists	People negotiate identity and leisure practices under the threat of wildfire drawing on humanist, protectionist and organic discourses of nature
Collins and Bolin (2009)	Wildfire	White Mountains, Arizona, US	Household survey, participant observation, semi-structured interviews with residents	The distribution of hazard vulnerability is uneven between social groups: working class locals are more vulnerable than amenity migrants and also invest more in hazard mitigation
Kneeshaw et al. (2004)	Wildfire	Three sites in the western US	Resident household survey	Situational factors such as fire origin, impact on air quality, risk of private property damage, forest recovery and impact on outdoor recreation affect forest users' attitude towards wildfire management actions
Whittaker and Mercer (2004)	Wildfire	Victoria, Australia	Newspaper articles and public submissions	Discourse analysis reveals three competing discourses on wildfire (conservationist, ruralist and wise use) that underpin positions in a political conflict over management options of fuel wood and national parks
Flint (2006)	Insect	Kenai Peninsula, Alaska, US	Resident household survey, semi-structured interviews with residents	Collective experience and perception of social, economic and biophysical risk vary over time and in space. Fire, falling trees, declining quality of watersheds and wildlife habitat, economic fluctuations, landscape change and emotional loss were the most salient impacts
Flint (2007)	Insect	Kenai Peninsula, Alaska	Resident household survey, semi-structured interviews with residents	The salience of the bark beetle as a community issue decreases and risk perceptions of fire coalesce over time. The relationship with land managers, perceived proximity to hazard and community emergency experience are hypothesized as the main drivers of risk perception
McFarlane et al. (2006)	Insect	Rocky Mountains NPs, Canada	Resident household survey	Residents have a negative evaluation of mountain pine beetles in national parks and demand control measures. Education, knowledge and ecological worldview are significant antecedents of positive attitude; perceived issue salience is a significant antecedent of negative attitude
McFarlane and Watson (2008)	Insect	Rocky Mountains NPs, Canada	Mail survey and onsite survey of visitors	Visitors rated mountain pine beetle activity as posing a risk to national park ecosystems and having a negative impact on visitor experience, eliciting negative emotions and being unacceptable. Lack of knowledge and proximity to the outbreak areas are the strongest predictors of high risk perception
Müller and Job (2009)	Insect	Bavarian Forest NP, Germany	Onsite tourist survey	National park visitors have a neutral attitude towards bark beetle outbreaks and are against control measures in the park. High national park affinity, knowledge, education and the expectation of a recovery of the affected areas are the strongest predictors of positive attitude
Parkins and MacKendrick (2007)	Insect	British Columbia, Canada	Resident household survey and secondary data	An assessment framework incorporating physical, social, political and economic dimensions can represent community vulnerability to mountain pine beetle as a complex construct
Qin and Flint (2010)	Insect	Colorado, US	Resident household survey	In a multi-level model, community biophysical and socioeconomic characteristics affect participation in beetle-related actions and individual-level predictors of participation
This study	Insect	Bavarian Forest NP, Germany	Newspaper articles and letters to the editor	Discourse analysis shows how different meaning ascription to post-disturbance landscapes by local residents results in protracted local political conflict over management options

reflection of how people define themselves and ... changes in the environment can challenge these cultural expressions and require a renegotiation of meaning' (Greider and Garkovich, 1994, p. 14). This article explores the renegotiation of the meaning of landscape after natural disturbance and how it connects to conflict over appropriate disturbance management. It extends existing work on conflict after natural disturbance (e.g. Carroll et al., 2006; Whittaker and Mercer, 2004) and the symbolism of landscape in the management of natural resources (e.g. Davenport and Anderson, 2005; Yung et al., 2003) by showing how changing landscapes are tied to the politics of land management.

As a case study the article draws on the bark beetle (*Ips typographus*) epidemic which has affected Bavarian Forest National Park, Germany, and the adjacent communities since the early 1990s. The example of Bavarian Forest National Park is instructive, because the impact of bark beetle activity on the forest landscape has captured public debate and engendered deep chasms between those who contend that the bark beetle produces a barren, deserted wasteland of dead wood and destructs their homeland and those who see it as a natural process of forest rejuvenation in a newly emerging wilderness.

In examining the renegotiation of meaning and its implications for political conflict in the Bavarian Forest, this contribution expands the geographical range of research on the social dimensions of natural disturbance beyond the hitherto almost exclusive focus on North America and Australia (see Table 1). It thus attempts to answer the call for research across different cultural, socio-economic as well as ecological local contexts (Huntington et al., 2006; Qin and Flint, 2010). More than looking at the same phenomenon in a different location, the case of the Bavarian Forest shows that the local cultural meaning of the forest landscape makes for a specific trajectory of conflict about the management of natural disturbance.

2. The meaning of landscape

This paper situates itself within a research tradition that thinks of landscape as a cultural image (Cosgrove and Daniels, 1988; Greider and Garkovich, 1994). Understanding landscape as a cultural *image* highlights the importance of the visual dimension of landscapes. Different from the concept of place, landscape is a visual composition of space through the arrangement of different elements. Understanding landscape as a *cultural image* implies that this kind of research is not interested in the somehow objective physical or aesthetic qualities of landscape, but rather in the meaning that people ascribe to it. These meanings are symbolic expressions of people's understandings of who they are and where they belong – of identities (e.g. Matless, 1998; Sörlin, 1999). In this sense, landscape reflects a set of ideas and values about how society is or should be organised (Duncan and Duncan, 1988). Landscapes

are the symbolic environments created by human acts of conferring meaning to nature and the environment, of giving the environment definition and form from a particular angle of vision and through a special filter of values and beliefs (Greider and Garkovich, 1994, p. 1).

Forests play a central part in shaping a landscape – either through their presence or through their disappearance. 'Other than the creation of cities, possibly the greatest single factor in the evolution of the American landscape,' Williams (1989, p. xvii) claims, 'has been the clearing of the forests'. Over centuries, aesthetic conventions on what forests should look like have emerged and shaped landscapes. The importance of forest land-

scapes for the public consciousness manifests itself in the discipline of forest aesthetics and the large number of studies on the visual quality of forests that examine how to reconcile the ecological and economic requirements of forest management with public aesthetic perception (for forest aesthetics and the bark beetle see, for example, Meitner et al., 2005; Sheppard and Picard, 2006). Attempts at forest landscape restoration and afforestation reflect the concern with not only planting trees but the composition of a visual image (Carroll et al., 2010; Rietbergen-McCracken et al., 2007). The landscape of a pine forest is not equal to that of a spruce forest that of Scots pine is not equal to that of jack pine, and that of an old-growth forest is not equal to that of a second-growth forest.

Rich in cultural significance, forest landscapes are woven into the fabric of communities and key elements in creating identities (see Gunderson and Watson, 2007; O'Brien, 2006). People identify with the visual image of a landscape that creates a shared sense of place and belonging. It is not surprising then that when natural disturbance turns thick, green forests into dead wood landscapes, this must have profound social repercussions. Yet, the outcome of this landscape transformation is hardly predictable. For when we understand landscape as a cultural image, we have to acknowledge that there is not one given or natural meaning attached to it. Rather, the meaning of the same landscape varies depending on who looks at it and it can become the subject of considerable contestation (Rossiter, 2004; Trudeau, 2006; Yung et al., 2003).

3. Methodology: critical discourse analysis

In order to understand the meaning that different social groups attribute to landscape and its role in political conflict, discourse analysis is a suitable methodological approach. Discourse is a multi-faceted term and used in different research traditions (see Whittaker and Mercer, 2004). The approach here follows a version of critical discourse analysis (CDA) in seeing discourse as the social practice of meaning construction about the world with political effects (Fairclough, 1995; Weiss and Wodak, 2003). For CDA, discourse is in a dialectical relationship with other social elements such as institutions, culture and political structures. As a consequence, CDA is 'about making connections between social and cultural structures and processes on the one hand, and properties of text on the other' (Fairclough and Wodak, 1997, p. 277). This requires the researcher to be familiar with the context in which meaning construction occurs and to render it transparent in order to fashion a substantive interpretation. CDA is critical in the sense that it demonstrates how particular discursive constructions are linked to politics and help uphold a status quo or justify a certain policy. Through uncovering the differential meaning constructions, CDA can contribute to exposing the contingency of taken-for-granted realities and truths about 'how nature is' and open up a space for political deliberation (Fairclough, 1995; Jørgensen and Phillips, 2002, pp. 60–95).

The controversy over the bark beetle infestations in Bavarian Forest National Park produced a wealth of texts that are used as the basis for CDA in this paper. Two local newspapers, *Grafenauer Anzeiger* for County Freyung-Grafenau and *Bayerwaldbote Zwiesel* for County Regen (see Fig. 1), were the main forums for the exchange of opinion and views on the landscape changes and the appropriate management of the bark beetle. Both were monitored in the period from 2004 to 2007 for coverage and letters to the editor relating to the bark beetle. The total sample contained 149 articles and 480 letters to the editor (2004: 16 articles + 101 letters; 2005: 32 + 120; 2006: 25 + 147; 2007: 76 + 112). Nine months of ethnographic research in the region from January to September 2007 provided the necessary contextual knowledge for the interpretation of the texts and is used to situate the textual

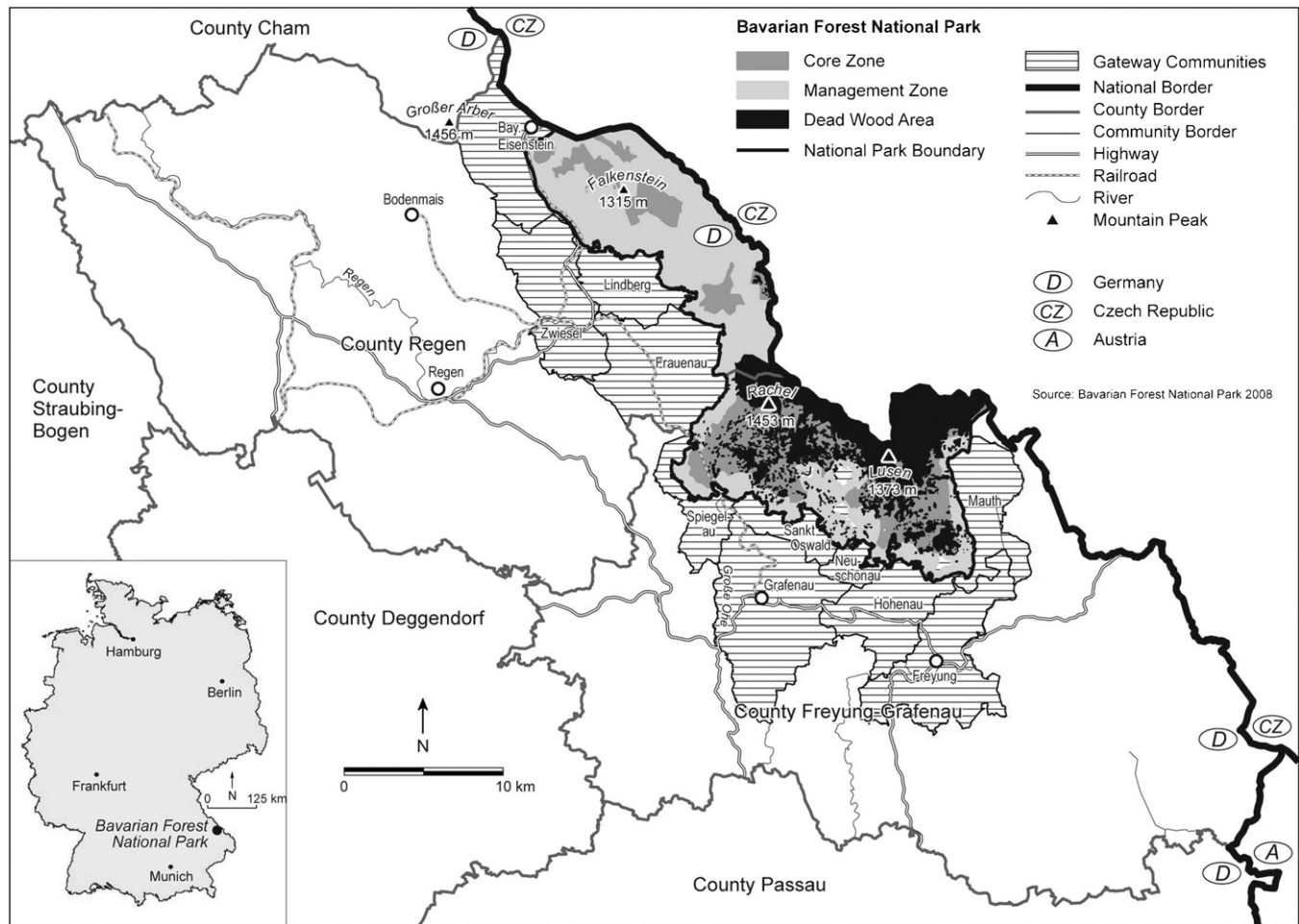


Fig. 1. Location, zonation and dead wood areas in Bavarian Forest National Park.

material in the cultural context and explicate its meaning. During this period the researcher worked as an academic secondee to the national park administration to coordinate a major research project, which included the present research. As part of his duties, the researcher participated as an observer in a number of public events that brought together regional stakeholders to facilitate the exchange of opinion and acted as a tour guide to dead wood areas for both local residents and visitors to the national park. Both functions provided opportunities to survey different reactions and interpretations of the dead wood landscapes. The ethnographic work also allowed researching background information and documents on local culture, ties to the forest and the history of the national park, obtaining pamphlets as well as documenting the visual transformation of the landscape with pictures.

Following the general thrust of CDA, the analysis first sought to generate an understanding of the cultural, political and ecological context of the bark beetle outbreak in Bavarian Forest National Park. This context conditions and limits the discourse on the dead wood landscape and at the same time represents what the discourse, in a dialectical fashion, acts upon. The newspaper material was then coded to distinguish between meaning ascriptions to landscape. Four principal codes emerged, which represent different understandings of landscape that appeared repeatedly in the material and correspond to the four results sections: 'distant management', 'threat to *Heimat*', 'ideal forest landscape' and 'authentic wilderness'. In a final step that is crucial to CDA, the discourses on landscape were linked to political action

in order to explore how particular discursive constructions of landscape are bound up with particular management policies.

4. Context

4.1. Forest and local identity in the Bavarian Forest

The Bavarian Forest is the name of a region in southeast Germany, which has at its heart the counties Freyung-Grafenau and Regen and borders on the Czech Republic (Fig. 1). Centuries of dependence on the forest and forest ownership have established intimate ties between people and the woodlands in the Bavarian Forest and the forest has become one of the central markers of people's identity (Stallhofer, 2000). Local residents call themselves *Waldler* (a dialect expression for 'forest people') and are proud of being descendants of a lineage of lumberjacks, an ancestry they can often trace back to the 19th century. In the administrative division for regional planning the region is simply called *Donau-Wald*, referring to what are perhaps the two most characteristic elements of the landscape: the Danube and the forest. The Bavarian Forest does not need the qualifier 'Bavarian' – when people speak of 'the Forest', it is almost always the Bavarian Forest.

Since the late 19th century, the state has nurtured local patriotism in the Bavarian Forest, strengthening the bonds between people and the forest. It created the image of the modest *Waldler* who cherishes the forest and is true to his land (Berlinger, 1994). The forest, in other words, is *Heimat* (see Fig. 2). *Heimat* is a term that does not have an English equivalent and there is a



Fig. 2. Mural of a Heimat club in the Bavarian Forest: 'The forest is our homeland'.



Fig. 3. Private shrine in the Bavarian Forest made from a slice of a tree trunk: 'Oh Lord, protect our forest'.

considerable literature of studies in English on the cultural meaning of this term alone (see Blickle, 2002). Perhaps the closest approximation would be 'home', a deep-seated emotional attachment to the area of descent which caters for the psychological need for security, identity and belonging through territorial bonding (see Fig. 3). The local folk tune *Mia san vom Woid dahoam* (Our home is the forest) links the emotional notion of *Heimat* to the beauty of the forest:

And no wind can blow down our little house/
For we have stones on our shingles/
And our little house is in the forest, you have to follow a path uphill/
Our home is the forest, the forest is beautiful.

The forest landscape, with the little house and the path that leads to it, is a symbol of *Heimat* identity. The soul of *Heimat* is the forest – the forest turns into a *Waldheimat* (forest home) (Weinzierl, 1985). Without an awareness of this significance of the forest for the local population, the political conflict arising from landscape changes following bark beetle infestations is almost impossible to understand.

4.2. Changing policies of managing the bark beetle in Bavarian Forest National Park

The bark beetle epidemic in the Bavarian Forest has transformed the landscape of the *Waldheimat* since the early 1990s and is closely linked to the creation of Bavarian Forest National Park. When founded in 1970, human intervention was regarded as indispensable to safeguard the transition from a commercially managed towards a near-natural forest. This also included aesthetic management so as to create a forest which would be in harmony with the local climate and landscape. One of the declared aims was the preservation of the extensive canopy cover of the mountainous spruce forests for future generations (Haug, 1993). In the aftermath of major windthrow events in 1983 and 1984, however, park management adopted a new conservation policy which demanded to completely abstain from intervention in the core zone of the park. The director of Bavarian Forest National Park at that time justified this resolution as an essential step towards fulfilling the aims of ecological integrity:

[Windthrow trees] are a component of natural forest development, an indispensable part of which is dead wood, standing and fallen dead trees. Without them the natural life cycle of forests would be impossible. Left to their own devices, forests undergo a permanent dynamic development.... Protecting these dynamic ecological processes is the mandate of national parks (Bibelriether, 1989, pp. 24–25).

This marked the change from a preservationist conservation policy in the 1970s to an approach of *laissez faire*. While the bark beetle is still controlled through regular screening of stands and immediate salvage logging of infested trees in the management zone, 'leaving nature to its own devices' became the clarion call for the core zone (see Fig. 1 for zonation). As a consequence of the new policy, the windthrow timber was not removed from the forest and the coarse woody debris provided favourable breeding habitat for the spruce bark beetle (*I. typographus*). Above-average seasonal temperatures and a series of severe windthrow events facilitated the spread of the bark beetle during the 1990 and 2000, leading to a massive reproduction during which more than 6000 ha of forest were killed – more than a quarter of the park's total area of 24,250 ha (see Fig. 1).



Fig. 4. The area between the Lusen (foreground, right) and the Rachel (background, left) in Bavarian Forest National Park is most severely affected by the bark beetle. Photograph: Katarzyna Zielewska, 2007

The outbreak in Bavarian Forest National Park marks the first large-scale infestation in a protected forest in Central Europe (Müller et al., 2010). The social impact of the disturbance is particularly profound, given that more than 150,000 people live within 30 km of the park, almost 50,000 of which are residents of the gateway communities adjacent to the park (see Fig. 1). It is considered a natural disturbance in so far as it restores a disturbance regime that is thought to be typical for spruce forests in Central Europe on the basis of historical records, but in the past has been kept in check due to intensive management, which allowed the building up of large quantities of mature spruce trees (Müller et al., 2008). Similar to forest disturbance in other countries (Dale et al., 2001), however, the outbreak has clearly been accelerated by anthropogenic factors (Müller et al., 2008), in particular human-induced climate change, which increases the incidence of hot and dry summers that sap tree vitality and milder winters that reduce beetle mortality. While the disturbance itself thus is considered natural by ecologists, its scale and velocity are at least partly human-made.



Fig. 5. Falkenstein in the management zone of Bavarian Forest National Park, covered in thick green forest. Photograph: Rainer Pöhlmann, ca. 2006

5. Results: the politics of landscape

5.1. Dead forests and distant forces

The incisive change of the visual image of the landscape resulting from the bark beetle epidemic emerged as the focal point around which the political conflict over appropriate land management evolved. The unusual visual appearance of the post-disturbance landscape stirred widespread public resentment among residents in the Bavarian Forest. The new landscape was described as a 'forest desert' or a 'forest cemetery' – highly evocative images that contrasted with the thick green of the spruce forests. Even national newspapers and agencies picked up the story, writing of a landscape that resembled a 'forest of ruins' (Deggendorfer Zeitung, 18/19 October 1997) where 'kilometres on end the skeletons of dead mountain spruce trees jut into the sky' (Associated Press, 20 October 1997). The post-disturbance landscape is characterised as a barren, lifeless scrubland that bears no resemblance to the majestic forests of the past. It is reminiscent of images of massive forest dieback due to acid rain that were prominent in the German media in the early 1980s and heralded the impending death of the forest. This memory of forest dieback is still ingrained in many people's minds as an image of barren landscapes that should be avoided at all cost (Suda and Feicht, 2002).

It is the three peaks of the national park – Lusen, Rachel and Falkenstein – which have become landmark symbols of competing landscape visions: while the Lusen and the Rachel are situated in the core zone and thus in the area affected by the bark beetle, the Falkenstein is still in the buffer zone where the bark beetle is controlled (Figs. 4 and 5). The core zone was initially scheduled to be extended to the Falkenstein by 2017, but this proposal met with fierce local resistance. A civic movement formed to rally against what it called 'forest destruction zones'. The term 'forest destruction' implies an intentionality that is often attributed to outside interests that take precedence over the concerns of the local population.

Alien (*landfremd*) interests have taken possession of these forests and are destroying them beyond recognition. When the whole forests looks like the fur of a mangy dog, they will bugger off (Bayerwaldbote Zwiesel, 29 October 2005).

The divergent perception of the landscape by authorities from afar as compared to the local population constitutes a recurrent *leitmotif* in framing the transformation of the landscape. The following letter to the editor combines this distinction with a powerful appeal to the visibility of landscape:

People attached to their *Heimat*, who live near the core zone of the national park and see mainly dead trees when looking out of their window, have a different understanding of nature protection than those living further away (Grafenauer Anzeiger, 03 October 2006).

This dichotomy of nearness and distance is paralleled by a number of other constructed oppositions: the divide between urban and rural areas, which makes rural people feel like 'second-class citizens' (Bayerwaldbote Zwiesel, 26 February 2007) who are being governed from the urban centres without having a say; the divide between supposedly simple, honest people, such as lumberjacks, and the bureaucrats and scientists in the national park and the ministry, who are seen as too far removed from the local situation to make the right decisions:

Every lumberjack knew that the bark beetle could fly for several kilometres, [but science told us otherwise] (Bayerwaldbote Zwiesel, 14 June 2006).

The post-disturbance landscape thus becomes a symbol of political processes. The tree skeletons reflect the unilateral action of national park management in the early 1980s to abstain from salvage logging in the core zone after severe windthrow events and the perceived neglect and abuse of people 'in the province'. For much of the local population, the post-disturbance landscape is a symbol of exclusion from the management of the forest: it stands in for forest (mis-)management from afar that ruined the scenic beauty of the landscape. It is a dispossession, a 'desecration of our landscape' (Bayerwaldbote Zwiesel, 12 June 2006, emphasis added) which alienates the local population from the landscape. The national park did not live up to its mission of protecting the landscape and the forest; instead, it 'protected it to death' (Weiß, 1998). The wide swathes of dead wood no longer present a landscape that people can identify with. It is a landscape of distant forces.

5.2. The bark beetle threat and the destruction of Heimat

The opposition of distance and nearness, of scientists, bureaucrats and local residents, also manifests itself in the statement that people from far away do not realise how 'the forest is not only economy but soul' (Bayerwaldbote Zwiesel, 06 August 2005). More than compromising the aesthetic value of the landscape, the bark beetle epidemic presents an assault on the innermost foundation of people's self-conception. This is lucidly captured in an op-ed:

The bark beetle does not only devour trees, it devours soul. ... Ecologists, scientists and experts of all types may define what a national park is – with or without bark beetles. But only the people living there can define what *Heimat* is and nobody else. ... If in doubt, *Heimat* overrides every national park (Deggen-dorfer Zeitung, 18/19 October 1997, p. 1).

The dead wood desert is not the *Waldheimat* of the people. The Bavarian Forest is now seen as a defaced, desecrated landscape that bears no resemblance to what once used to be home and does not instil a feeling of belonging. The chaotic, unkempt forest mocks people's efforts over centuries to domesticate the woodlands and make a livelihood. Seeing the forest die causes intense pain and suffering. It is

a crime against *Heimat*, when you see four square kilometres of dead wood. ... Rage, anger and at the same time fear overwhelm you (Bayerwaldbote Zwiesel, 9 July 2004).

This emotionality has occasionally escalated into physical and verbal abuse of land managers (Held, 1998), but has also translated into literary and musical production that engaged with the destruction of *Heimat*. People have written poems, songs and books (Handlos, 2007) about the bark beetle that tell about their rage against the insect and the inappropriate management policy of the national park (Fig. 6).

With the transformation of the landscape the bark beetle becomes a threat to *Heimat* and the people. In its campaign for controlling the bark beetle, the civic movement draws on this emotional dimension of the dead forests. In a pamphlet, it equates the current management of forests with the destruction of *Heimat* and calls on people to join the protest in protection of it. One page of the pamphlet (Fig. 7) shows the chapel near the peak of Rachel before and after the bark beetle epidemic. The symbolism of the chapel as part of the forest landscape cannot fail to suggest: this is not what God wanted, or as a member of the Bavarian Parliament said when visiting the Bavarian Forest: 'It is a sin to treat God's creation like this'.

's Kefa - Liad

Das Borkenkäfer - Lied
The Bark Beetle Song

Melodie: Andreas Geiss, 1997
Text: Andreas Geiss, 1997

Ja, so a Borkenkäfer hoat a Löss. Man muß dann nua unsan Woid zum Frössn
göom. Ja, ja da - fua san unsre Beamtn da. Ja, ja dafür sans
da. Ja, ja dafür sans da.

Ja, so a Borkenkäfer hoat a Löss.
Man muß eam nua unsan Woid zum Frössn göom.
Ja, drum is a Nationalpark da.
I: Ja, ja drum is a da: I

Ja, dem Borkenkäfer geht's ganz guat,
weil eam iatzat a da Staat noo schütz'n tuat.
Ja, drum is a Nationalpark da.
I: Ja, ja drum is a da: I

Ja, ja unsa Woid is iatzat hie
dank dem staatlich geschützten Kefa-Vieh.
Ja, drum is a Nationalpark da.
I: Ja, ja drum is a da: I

Ja, Borkenkäferln tuats iatzat überoid
bei uns im ganzen scheena Bayerwoid.
Ja, drum is a Nationalpark da.
I: Ja, ja drum is a da: I

Ja, unsa Woid is nua fua oans guat:
zum Zuch'n vo a recht großen Kefa-Bruat.
Ja, drum is a Nationalpark da.
I: Ja, ja drum is a da: I

Ja, da Stoiber is a Kasperl-Mann,
dem drahsn gar an toat'n Baam ois löbad an.
Ja, ja dafür sans unsre Beamtn da.
I: Ja, ja dafür sans da: I

Ja, da Bayerwoid hoat ausgedient,
weil bei uns vo oomowa oissi spinnt.
Ja, ja dafür sans unsre Beamtn da.
I: Ja, ja dafür sans da: I

Ja, mia san die Deppn vom hintern Woid,
die sie boid da liebe Borkenkäfer hoit.
Ja, ja dafür sans koane Beamtn da.
I: Ja, ja dafür sans nööd da: I

Ja, da Nationalpark is a Scheiß,
Dös woß sogar a jeda gscheide Preiß.
Ja, ja dafür sans unsre Preißn da.
I: Ja, ja dafür sans da: I

Ja, da oialetzte Preißn-Depp
Nennt uns iatzat grod noo an Kefa-Sepp.
Ja, ja dafür sans mia iatzat da.
I: Ja, ja dafür sans da: I

Copyright (©) 1998 by Andreas Geiss, Kirchberger Str. 2, 94261 Kirchdorf im Wald, Tel. 09928/210

Nationalpark Bayerischer Wald
von Andreas Geiss

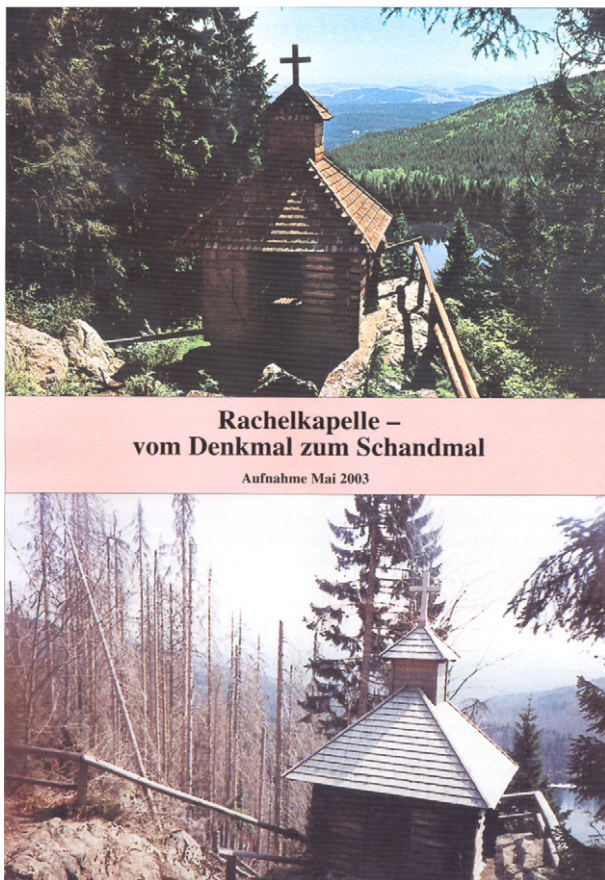
Vom Walde kleidet sind Berge und Höhn.
Des blauen Himmels tief Gezeit
wölbt sich über eine tote Welt.
Vernichtet, vom Winde geworfenes Schö'n.

Vom Falkenstein über den Rachel zum Lus'n,
so schießig wie ein Bettelmans Kleid
unser Wald ein Bild des Jammers und Leid,
der Käfer genährt da an unserm Bus'n.

Oh, riefest du Protest, du feig' Walderherzt!
Die Nationalpark-Ideologie ist verwirrt.
Man sieht ja, welche Früchte sie gebiert.
Vernichtet der Wald, und die Seele im Schmerz.

Fig. 6. Bark beetle song and poem.

So vernichtet die Nationalparkverwaltung unsere Heimat



**Rachelkapelle –
vom Denkmal zum Schandmal**

Aufnahme Mai 2003

Fig. 7. “This is how national park management is destroying our *Heimat*. From monument to stigma”: part of the campaign in favour of controlling the bark beetle. (source: Handlos, 2007, p. 47)

In this vein, a natural process, *qua* landscape, becomes so intimately intertwined with deep-seated emotional anchors of local identity that the adoption of certain management policies of spruce bark beetles triggers a larger political dispute over an assault on *Heimat*. By making bark beetle management a matter of the survival of *Heimat*, the civic movement has been successful in creating local support for its cause. In 2008, more than half of the population in the area was opposed to the principle of letting



Fig. 8. The orthodoxy of the Bavarian Forest landscape: ‘Forest wave stands behind forest wave, until one is the last and crosses the sky’ (Adalbert Stifter) (photograph: Bavarian Forest National Park).

nature follow its course as a management strategy and would have preferred to keep the landscape in its original state. More than 60% of the local population favoured controlling the bark beetle with all necessary means and a majority advocated salvage logging and the planting of new seedlings for afforestation (Liebecke et al., 2008). This broad support has helped the civic movement secure political influence on major decisions regarding the national park, eventually resulting in a veto right for local mayors in decisions to expand the core zone in which no beetle management takes place. This gives the local communities significant leverage on land management and has allowed them to force the national park to control beetles on most of its northern territory for much longer than initially envisioned.

5.3. Human nature: people and green forest landscapes

The meaning of threat and destruction of *Heimat* that is associated with the post-disturbance landscape can only be understood vis-à-vis the normalised, orthodox vision of the Bavarian Forest landscape that is frequently invoked in the conflict. It is an idealised composition of forest waves (*Waldwogen*) conjured up in the work of the famous poet Adalbert Stifter, who grew up in this area: ‘Forest wave stands behind forest wave, until one is the last and crosses the sky’² (Stifter, 1935 [1868], p. 330). Although in his work Stifter, who is revered as a *Heimat* poet, also vividly described the havoc that natural disturbance wreaks on the forest, this passage of Stifter’s ‘From the Bavarian Forest’ is often held up as depicting the ideal image of the Bavarian Forest landscape that needs to be conserved (Fig. 8). In fact, this was the founding rationale of the national park. Its declared aim was the preservation of the extensive canopy cover of the mountainous spruce forests, which are unique to Europe and have earned it the name of ‘the green roof of Europe’ (Haug, 1993). As the minister in charge put it at the opening of the national park: ‘this unique landscape is to be preserved in its natural state for the future’ (Hans Eisenmann quoted in Buff, 2006, p. 742).

The green forest landscape, in particular the image of the green roof of Europe, has become something of a visual orthodoxy for people opposed to the policy of letting nature follow its course. The civic movement phrases its political goal as a fight for keeping the Falkenstein green and making the Lusen and Rachel green again (Bayerwaldbote Zwiesel, 24 October 2006). A green forest is considered to be the natural state of affairs. ‘Fighting for a green forest corresponds to the natural feeling of most people’ (Bayerwaldbote Zwiesel, 06 February 2007). In an interview, a local resident called the image of a clean, green forest almost genetic: this is what a proper forest needs to look like and what proper forest management should aim to conserve (Hohenester et al., 1998, p. 21).

It is this green forest landscape – the visual antithesis to the post-disturbance landscape – that the civic movement wants to protect. This is why the movement named itself the *Civic Movement for the Protection of the Bavarian Forest* (Bürgerbewegung zum Schutz des Bayerischen Waldes e.V.), calling into question the legitimacy of the national park as a protection agency. The movement positions itself as a critic of the national park’s practice of land management, which it sees as being tantamount to the destruction of forests instead of their protection. The ‘proper’ protection of the forest, the movement argues, requires human intervention. Only if people help the forest, will it be able to withstand the onslaught of the bark beetle. ‘God’s creation needs our protection: if the lynx and the wolf as endangered species want to live again, a cemetery of tree corpses will not help’

² Waldwoge steht hinter Waldwoge, bis eine die letzte ist und den Himmel schneidet.

(Bayerwaldbote Zwiesel, 13 August 2005). This position echoes the dominant preservationist view at the time of the establishment of the national park.

The green forest is perceived to be part of a landscape that needs to be protected by humans because it has been shaped by them. The landscape of the Bavarian Forest is understood as a natural result of the quasi-organic ties between people and nature.

As *Waldlerin* with a long line of ancestors in this forest region I would like to point out that it was our forefathers who have formed these uniquely beautiful natural forests with untold labour, together with nature, and they have entrusted them to us as a heritage to be conserved (Bayerwaldbote Zwiesel, 29 October 2005).

Nature and culture do not figure as opposites in this quote. The green forest landscape rather becomes a co-constructed product of human and natural forces. In this view, humans are an inalienable of the green forest landscape which is just as much cultural and human-made as natural. Rich with cultural meaning, the forest landscape comes to embody cultural values of diligence and care. It represents what is seen as a 'healthy, well-kept, clean landscape' (Bayerwaldbote Zwiesel, 06 September 2005) that can only be conserved by diligent forest management. The bark beetle is a pest in this landscape that needs to be excised by the attentive forester. The activity of the bark beetle is considered as unnatural, paradoxically because it symbolises the absence of humans. The bark beetle excises people from the landscape.

5.4. Authentic nature: a new wilderness

The activity of the bark beetle challenges the visual orthodoxy of green forests and asks for a renegotiation of the cultural meaning attached to the landscape. Attempts to fashion the post-beetle landscape with a new, more positive meaning have congealed around the concept of *Waldwildnis*.³ National park management in its communication with visitors and civil society groups that support the current beetle management policy have adopted this concept as an alternative way of making sense of the post-beetle landscape. *Waldwildnis* is marketed as a tourist highlight, which touts the Bavarian Forest as the place to witness a forest dynamics that is unique between the Atlantic and the Urals. The term wilderness figures in the names of the new information centre (*Haus zur Wildnis*) and the new wilderness camp for school children (*Wildniscamp*) and promises unparalleled nature experience.

At first glance, *Waldwildnis* seems to denote a landscape where nature is separate from culture and allowed to reign without human intervention. The mutual bond between the *Waldler* and his or her forest has been severed, the organic unity between humans and the landscape disrupted. Humans are now only visitors to this landscape, not active co-creators. Yet, the landscape of *Waldwildnis* is no less rich in cultural meaning than that of *Waldheimat*:

Today, 15 years after the beginning of the transformation of the national park forests by the bark beetle, they [the forests] show ... an image of a new *Waldwildnis* with the whole abundance of forms, colours, structures, smells and creatures that belong to the forest. Wilderness – the fascinating blend of freedom, adventure, mystery and legend, of fairy tale characters, robbers and danger – is developing an unparalleled attraction for those who want to experience nature in its authentic form (*Ursprünglichkeit*) (Sinner, 2010).

Chaotic wilderness mutates here into the alternative draft of an experiential wilderness; the wilderness where natural disturbance acts as a threat to *Heimat* becomes a wilderness where natural disturbance enriches the human experience. The bark beetle is no longer a forest pest to be controlled but a creator of new forests that allows humans to glimpse something of the authenticity of nature. The new landscape becomes a screen for the projection of unfulfilled human desires and a new understanding of nature. As such, supporters of leaving the bark beetle uncontrolled often consider the post-disturbance landscape a counterpart to the modern world:

In our technology-heavy and complicated globalised world we need at least a part of nature in its original form so as not to lose the meaning of life (Grafenauer Anzeiger, 30 October 2006).

Waldwildnis embodies a supposedly authentic forest, an escape from and antipole to the fetters of civilisation that returns humans, at least temporarily, to an original state of oneness with real nature – not the one that follows aesthetic ideals. The idea of wilderness gives a different meaning to the post-disturbance landscape in the Bavarian Forest, so that it might eventually become a new landscape to identify with, even though it is so strikingly different in its visual appearance. To this end, supporters of the *Waldwildnis* argue that the aesthetic ideal of a forest needs to be revised.

So that we can accept a conglomerate of aged tree skeletons – ailing, hollow, decayed and rotten –, a chaotic jumble of fallen logs, an impassable mess of rotten wood, a forest soil of moss and mildew treacherously caving in as properties of a natural forest image and perceive them as beautiful (Scherzinger, 2000, p. 9).

The reinscription of the post-disturbance landscape as wilderness, rich in cultural meaning, does not only assign an alternative symbolic value to the new landscape, it is also a highly political project. The cultural meaning of wilderness as authentic nature is bound up with the idea of ecological integrity and the corresponding prescription for land management to leave nature to its own devices (Kangler, 2009). *Waldwildnis* as a desirable, meaning-full landscape is tied to the designation of additional core zones of ecological integrity in which the bark beetle is not controlled. Along with park management, a number of civil society organisations have sought to promote the idea of *Waldwildnis* and the Bavarian Forest as 'the wild heart of Europe' as an alternative landscape vision to the 'green roof of Europe'. As part of this idea, land management in the national park is encouraged to follow the criteria of a wilderness area according to the IUCN category Ib. This would mean a stronger commitment to ecological integrity and natural processes and a downgrade of the importance of recreation. As of 2010, only slightly more than 50% of the area of the national park is managed according to the principle of no intervention (see Fig. 1), which falls considerably short of the target of 75% stipulated by IUCN. It is the express goal of the national park to meet this target rather sooner than later, but local resistance to the destruction of *Heimat* and green forest landscapes has forced a ruling that won a delay until 2027.

But while this new landscape is successfully marketed to visitors (Müller and Job, 2009), local residents remain largely sceptic. The preservationist, steady-state understanding of the green forest landscape as *Heimat* is often seen to be incompatible with allowing the integrity of natural processes – processes that involve a wholesale remodelling of the visual appearance of landscapes.

There is no way I can see a path towards a compromise: Either you want the *Heimat* forest or you want the wilderness forest of

³ I use the German term for 'forest wilderness' in the following to refer to the specific understanding of wilderness that has emerged in the context of the Bavarian Forest.

the national park. Either you want the virgin or the pregnant woman. Just a little pregnant is impossible (Bayerwaldbote Zwiesel, 22 April 2006).

In light of this uncompromising stance, the antagonism that has formed around the 'right' visions of landscape and the appropriate beetle management policy looks likely to agonise the region for years to come.

6. Discussion

Natural disturbance can have ambiguous effects on communities: it might turn into a unifying but also into a divisive force (Carroll et al., 2005). Communities may band together in face of an external threat and join forces for a collective response to tackle it (see Flint and Luloff, 2007). But natural disturbance might also drive a wedge into communities, and indeed larger publics, and fuel political conflict about appropriate management practices (Carroll et al., 2006; Collins and Bolin, 2009; Whittaker and Mercer, 2004). The bark beetle epidemic in Bavarian Forest National Park provides a revealing case in point that illustrates the mechanisms underpinning political conflict in the wake of natural disturbance in two important respects. First, it demonstrates the extent to which changes in the *landscape* following natural disturbance can be the focal point of attention and are constructed as an attack on local identities. Second, it shows how different discourses of landscape are linked to competing proposals of how to manage natural disturbance that result in political struggle.

The same post-disturbance landscape can be the carrier of widely different meanings for different social groups, as the example of the Bavarian Forest suggests. For some, it was a result of the influence of outside forces and represented an assault on their homeland (cf. Carroll et al., 2006). Similar to residents near national parks in the Canadian Rocky Mountains (McFarlane et al., 2006), many people in the Bavarian Forest considered the bark beetle a threat to the familiar green forest landscape that should be controlled. For others, the new landscape was a symbol of wilderness, of nature freed from human fetters. The radical aesthetic transformation of the landscape is often only one of a plethora of biophysical, social and economic concerns associated with natural disturbance (Flint, 2006, 2007). But biophysical arguments such as the impact of the bark beetle outbreak on watersheds, erosion or wildlife or economic arguments such as the detrimental impact on visitor experience or the potential spread of the bark beetle to neighbouring private forests did not gain much traction in the Bavarian Forest. Although all these potential threats existed, the transformed visual image of the landscape was the linchpin of public debate, as it became a symbol for the attack on local identity for a significant part of the public. This is in stark contrast to the situation on the Kenai Peninsula in Alaska, for example, where the loss of scenic quality also was a salient concern, but the threat to community identity a rather marginal one (Flint, 2007, p. 1602). The pivotal role of the landscape as a meaningful visual symbol of identity thus presents an important extension of previous studies that have focused on the discursive construction of natural disturbance in the case of wildfire (Whittaker and Mercer, 2004) and its association with identities (Champ et al., 2009).

Fashioning the post-disturbance landscape with meaning also has a political dimension: it is a struggle over the appropriate strategy for land management. Competing conceptions of the appropriate management of natural disturbance are tied to different meaning inscriptions of landscape. Those who perceive natural disturbance as a threat to local identity advocate practices of land management with human intervention and the control of

natural disturbance. It was the opposition to the post-disturbance landscape and the adherence to a shared cultural ideal of a green forest landscape that galvanised the foundation of a civic movement to protest current management practices of refraining from intervention, which it equated with an act of wilful neglect and destruction. On the other hand, those who welcome the new landscape as a sign of the restoration of natural processes are in favour of leaving nature to its own devices.

This discursive constellation does not map easily onto the classic opposition of humanist and protectionist discourses of nature (Fine, 1998; see also Champ et al., 2009). While people opposed to letting nature follow its course consider humans as stewards of the forest and the bark beetle as a threat, they do not subscribe to the sharp distinction between culture and nature – a typical element of the humanist discourse that Fine (1998, p. 11) cites. On the contrary, they see human agency as inextricably grafted onto the forest landscape through the diligent care of generations of foresters. On the other hand, people who favour letting nature follow its course want to protect something of an authentic wilderness from human influence – the hallmark of a protectionist discourse –, but at the same time link it to landscape images in fairy tales and myths that echo a romantic vision of humans being at one with and at home in the forest. Both discourses therefore share something of an organic view of nature (Fine, 1998, pp. 9–10) that does not draw a sharp boundary between what is natural and what is human (Goldman and Schurman, 2000; Murdoch, 2001). The dispute about managing natural disturbance in the Bavarian Forest, then, is not a classical conflict of protection versus use (e.g. Rossiter, 2004; Stoll-Kleemann, 2001). Both sides agree that the forest needs to be protected and that there should not be any logging. Yet what divides them are divergent understandings of what nature protection means and how humans are positioned vis-à-vis nature.

The question of adopting one or the other policy of beetle management is thus a political decision where there is no right or wrong. As such, its resolution could proceed through a process of democratic deliberation involving all parties with a stake in the dispute. The national parks of the Canadian Rocky Mountains, for example, have taken an approach to managing mountain pine beetle infestations that integrates the interests of a range of stakeholders, including the local population (McFarlane et al., 2006; Parks Canada, 2005). In the Bavarian Forest, by contrast, the conflict has been exacerbated by a park management that, for a long time, had been turning a blind eye to the concerns of local residents in its choice of disturbance management. The lack of possibilities for local participation led to frustration and estrangement from the home landscape, bred increasing resentment vis-à-vis the park authorities and resulted in dogged political opposition, which limited the available options for land management (cf. Whittaker and Mercer, 2004).

7. Conclusion and implications

As natural disturbance in forests occurs ever more frequently in the wake of climate change, large-scale visual transformation of landscapes will become a regular sight. Since landscapes are imbued with cultural meaning, natural disturbance affects not only the forest, it often presents an attack on people's innermost feelings of belonging and self, questioning cultural images of nature and naturalness. Resource-based communities in particular may have a long history of living off the land and have grown meaningful bonds with the landscape that shape the interaction of people and natural disturbance into unique trajectories. Management decisions will therefore often generate considerable tension and might lead to political disputes over the appropriate management strategy. As the example of the Bavarian Forest

demonstrates, the effectiveness of disturbance management is highly dependent on the specific cultural meaning ascribed to landscapes in a community.

Landscape change in the wake of natural disturbance is therefore just as much a cultural and political issue as an ecological and economic one. For this reason, the implementation of a management policy that integrates ecological, economic and social concerns must also be based on an understanding of the cultural meaning of landscape. This cultural meaning varies from locality to locality, underscoring the importance of taking the local context seriously (Qin and Flint, 2010). This is especially relevant considering that allowing or emulating natural disturbance is increasingly becoming a management model for protected areas under the paradigm of protecting ecological integrity and non-equilibrium processes (Dearden and Dempsey, 2004; Zimmerer, 2000). The case of the Bavarian Forest demonstrates that bonds to a particular landscape may be so strong that significant parts of the population might press for actions to control natural disturbance. Land management authorities should therefore pay close attention to the meaning of the landscape for the local community before opting for a certain type of management policy. To be sure, finding a compromise that satisfies all demands is not always feasible, but implementing a management policy that disrupts the dominant meaning ascribed to landscapes is bound to create the potential for entrenched political conflict that might hamstringing resource management for a long time to come.

References

- Absher, J.D., Vaske, J.J., Bright, A.D., Donnelly, M.P., 2006. Ipsative crystallization effects on wildland fire attitude: policy support models. *Soc. Nat. Resour.* 19, 381–392.
- BC Ministry of Forests, Lands and Natural Resource Operations, 2011. Mountain pine beetle infestation information. http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/facts.htm (05.05.11).
- Berg, E.E., Henry, J.D., Fastie, C.L., De Volder, A.D., Matsuoka, S.M., 2006. Spruce beetle outbreaks on the Kenai Peninsula, Alaska, and Kluane National Park and Reserve, Yukon Territory: relationship to summer temperatures and regional differences in disturbance regimes. *Forest Ecol. Manage.* 227, 219–232.
- Berlinger, J., 1994. GrenzGänge: Streifzüge durch den Bayerischen Wald. Andreas Haller, Passau.
- Bibelriether, H., 1989. Windwürfe und Borkenkäfer im Nationalpark Bayerischer Wald. *Nationalpark* 322, 24–27.
- Blickle, P., 2002. Heimat: A Critical Theory of the German Idea of Homeland. Rochester, Camden House.
- Bright, A.D., Newman, P., Carroll, J., 2007. Context, beliefs, and attitudes toward wildland fire management: an examination of residents of the wildland–urban interface. *Hum. Ecol. Rev.* 14, 212–222.
- Buff, J., 2006. Folgen einer wesensfremden Gestaltungsidee. *Holz-Zentralblatt* 25, 741–742.
- Burns, M., Cheng, A.S., 2007. Framing the need for active management for wildfire mitigation and forest restoration. *Soc. Nat. Resour.* 20, 245–259.
- Carroll, M.S., Cohn, P.J., Seesholtz, D.N., Higgins, L.L., 2005. Fire as a galvanizing and fragmenting influence on communities: the case of the Rodeo-Chediski fire. *Soc. Nat. Resour.* 18, 301–320.
- Carroll, M.S., Higgins, L.L., Cohn, P.J., Burchfield, J., 2006. Community wildfire events as a source of social conflict. *Rural Sociol.* 71, 261–280.
- Carroll, M.S., Ni Dhubháin, Á., Flint, C.G., 2010. Back where they once belonged? Local response to afforestation in County Kerry, Ireland. *Soc. Ruralis* 51, 35–53.
- Champ, J., Brooks, J.J., 2010. The circuit of culture: a strategy for understanding the evolving human dimensions of wildland fire. *Soc. Nat. Resour.* 23, 573–582.
- Champ, J., Williams, D.R., Knotek, K., 2009. Wildland fire and organic discourse: negotiating place and leisure identity in a changing wildland urban interface. *Leisure Sci.* 21, 237–254.
- Collins, T.W., Bolin, B., 2009. Situating hazard vulnerability: people's negotiation with wildfire environments in the US Southwest. *Environ. Manage.* 44, 441–455.
- Cosgrove, D., Daniels, S., 1988. The Iconography of Landscape: Essays on the Symbolic Representation Design and Use of Past Environments. Cambridge University Press, Cambridge.
- Dale, V.H., Joyce, L.A., McNulty, S., Neilson, R.P., Ayres, M.P., Flannigan, M.D., Hanson, P.J., Irland, L.C., Lugo, A.E., Peterson, C.J., Simberloff, D., Swanson, F.J., Stocks, B.J., Wotton, B.M., 2001. Climate change and forest disturbances. *Bioscience* 51, 723–734.
- Davenport, M.A., Anderson, D.H., 2005. Getting from sense of place to place-based management: an interpretive investigation of place meanings and perceptions of landscape change. *Soc. Nat. Resour.* 18, 625–641.
- Dearden, P., Dempsey, J., 2004. Protected areas in Canada: decade of change. *Can. Geogr.* 48, 225–239.
- Duncan, J.S., Duncan, N.G., 1988. (Re)reading the landscape. *Environ. Plann. D: Soc. Space* 6, 117–126.
- Fairclough, N., 1995. Critical Discourse Analysis. Longman, London.
- Fairclough, N., Wodak, R., 1997. Critical discourse analysis. In: van Dijk, T.A. (Ed.), *Discourse as Social Interaction*. Sage, London, pp. 258–284.
- Fine, G.A., 1998. *Morel Tales: The Culture of Mushrooming*. Harvard University Press, Cambridge, MA.
- Flint, C.G., 2006. Community perspectives on spruce beetle impacts on the Kenai Peninsula, Alaska. *Forest Ecol. Manage.* 227, 207–218.
- Flint, C.G., 2007. Changing forest disturbance regimes and risk perceptions in Homer, Alaska. *Risk Anal.* 27, 1597–1608.
- Flint, C.G., Luloff, A.E., 2007. Community activeness in response to forest disturbance in Alaska. *Soc. Nat. Resour.* 20, 431–450.
- Flint, C.G., McFarlane, B.L., Müller, M., 2009. Human dimensions of forest disturbance by insects: an international synthesis. *Environ. Manage.* 43, 1174–1186.
- Goldman, M., Schurman, R.A., 2000. Closing the 'great divide': new social theory on society and nature. *Annu. Rev. Sociol.* 26, 563–584.
- Greider, T., Garkovich, L., 1994. Landscapes: the social construction of nature and the environment. *Rural Sociol.* 59, 1–24.
- Gunderson, K., Watson, A., 2007. Understanding place meanings on the Bitterroot National Forest, Montana. *Soc. Nat. Resour.* 20, 705–721.
- Handlos, F., 2007. *Unsere Bäume unsere Freunde*. Verlag Bauernhausmuseum, Lindberg.
- Haug, M., 1993. Entstehungsgeschichte des Nationalparks Bayerischer Wald und Entwicklung seit 1969. In: Bayerisches Staatsministerium für Ernährung, Landwirtschaft und Forsten, *Eine Landschaft wird Nationalpark*, second ed., Morsak-Verlag, Grafenau, pp. 35–84.
- Held, M., 1998. Der Nationalpark Bayerischer Wald und seine Akzeptanz: Situationsbericht. In: Wiersbinski, N., Erdmann, K.-H., Lange, H. (Eds.), *Zur gesellschaftlichen Akzeptanz von Naturschutzmaßnahmen*. Bundesamt für Naturschutz, Bonn, pp. 23–27.
- Hohenester, M., Jeschor, C., Hörauf, M., Zellhuber, A., 1998. Akzeptanz von Naturschutzvorhaben untersucht am Beispiel Nationalpark Bayerischer Wald. TU München, Freising.
- Huntington, H.P., Trainor, S.F., Natcher, D.C., Huntington, O.H., DeWilde, L., Chapin III, F.S., 2006. The significance of context in community-based research: understanding discussions about wildfire in Huslia, Alaska. *Ecol. Soc.* 11.
- Jørgensen, M.W., Phillips, L., 2002. *Discourse Analysis as Theory and Method*. Sage, London.
- Kangler, G., 2009. Von der schrecklichen Waldwildnis zum bedrohten Waldökosystem: Differenzierung von Wildnisbegriffen in der Geschichte des Bayerischen Waldes. In: Kirchhoff, T., Trepl, L. (Eds.), *Vieldeutige Natur: Landschaft, Wildnis und Ökosystem als kulturgeschichtliche Phänomene*. Transcript, Bielefeld, pp. 263–278.
- Kneeshaw, K., Vaske, J.J., Bright, A.D., Absher, J.D., 2004. Situational influences of acceptable wildland fire management actions. *Soc. Nat. Resour.* 17, 477–489.
- Kollböck, R., 1997. Heimat geht vor Deggendorfer Zeitung, Deggendorf, p. 1.
- Liebecke, R., Wagner, K., Suda, M., 2008. Die Akzeptanz des Nationalparks bei der lokalen Bevölkerung. Nationalpark Bayerischer Wald, Grafenau.
- Matless, D., 1998. *Landscape and Englishness*. Reaktion Books, London.
- McFarlane, B.L., Stumpf-Allen, R.C.G., Watson, D.O., 2006. Public perceptions of natural disturbance in Canada's national parks: the case of the mountain pine beetle (*Dendroctonus ponderosae* Hopkins). *Biol. Conserv.* 130, 340–348.
- McFarlane, B.L., Watson, D.O., 2008. Perceptions of ecological risk associated with mountain pine beetle (*Dendroctonus ponderosae*) infestations in Banff and Kootenay National Parks of Canada. *Risk Anal.* 28, 203–212.
- Meitner, M., Gandy, R., D'Eon, R.G., 2005. Human perceptions of forest fragmentation: implications for natural disturbance management. *Forest Chron.* 81, 256–264.
- Müller, J., Bußler, H., Goßner, M., Rettelbach, T., Duelli, P., 2008. The European spruce bark beetle *Ips typographus* in a national park: from pest to keystone species. *Biodivers. Conserv.* 17, 2979–3001.
- Müller, J., Noss, R.F., Bussler, H., Brandl, R., 2010. Learning from a 'benign neglect strategy' in a national park: response of saproxylic beetles to dead wood accumulation. *Biol. Conserv.* 143, 2559–2569.
- Müller, M., Job, H., 2009. Managing natural disturbance in protected areas: tourists' attitude towards the bark beetle in a German national park. *Biol. Conserv.* 142, 375–383.
- Murdoch, J., 2001. Ecologising sociology: actor-network theory, co-construction and the problem of human exemptionalism. *Sociology* 35, 111–133.
- National Geographic Germany, 2006. *Das neue Grün im Bayerischen Wald*. Rüdiger Dillow, pp. 158–168.
- O'Brien, E.A., 2006. A question of value: what do trees and forests mean to people in Vermont? *Landscape Res.* 31, 257–275.
- Parkins, J.R., MacKendrick, N.A., 2007. Assessing community vulnerability: a study of the mountain pine beetle outbreak in British Columbia, Canada. *Global Environ. Change* 17, 460–471.
- Parks Canada, 2005. *Banff National Park: Mountain Pine Beetle Update 2005*.
- Qin, H., Flint, C.G., 2010. Capturing community context of human response to forest disturbance by insects: a multi-method assessment. *Hum. Ecol.* 38, 567–579.
- Rietbergen-McCracken, J., Maginnis, S., Sarre, A., 2007. *The Forest Landscape Restoration Handbook*. Earthscan, London.
- Rossiter, D., 2004. The nature of protest: constructing the spaces of British Columbia's rainforests. *Cult. Geogr.* 11, 139–164.

- Running, S.W., 2006. Is global warming causing more, larger wildfires? *Science* 313, 927–928.
- Scherzinger, W., 2000. Wilde Waldnatur: der Nationalpark Bayerischer Wald auf dem Weg zur Waldwildnis. Nationalpark Bayerischer Wald, Grafenau.
- Sheppard, S., Picard, P., 2006. Visual-quality impacts of forest pest activity at the landscape level: a synthesis of published knowledge and research needs. *Landscape Urban Plan.* 77, 321–342.
- Sinner, K.F., 2010. Grenzenlose Waldwildnis. Nationalpark Bayerischer Wald, Grafenau.
- Sörlin, S., 1999. The articulation of territory: landscape and the constitution of regional and national identity. *Nor. Geogr. Tidsskr.* 53, 103–111.
- Stallhofer, B., 2000. Grenzenloser Böhmerwald? Landschaftsnamen, Regionen und regionale Identitäten: Bayerischer Wald, Oberpfälzer Wald, Šumava, Český Les und Mühlviertel im geographisch-empirischen Vergleich, Laßleben, Kallmünz.
- Stifter, A., 1935 [1868]. Aus dem Bairischen Walde. In: Sauer, A. (Ed.), *Sämtliche Werke* in 25 Bänden, Prag.
- Stoll-Kleemann, S., 2001. Opposition to the designation of protected areas in Germany. *J. Environ. Plann. Manage.* 44, 109–128.
- Suda, M., Feicht, E., 2002. Wahrnehmung, Bewertung und Konsequenzen großflächig abgestorbener Bäume im Bereich des Nationalparks Bayerischer Wald aus der Sicht von Touristen. Lehrstuhl für Forstpolitik und Forstgeschichte, Munich.
- Trudeau, D., 2006. Politics of belonging in the construction of landscapes: place-making, boundary-drawing and exclusion. *Cult. Geogr.* 13, 421–443.
- Weinzierl, H., 1985. Waldheimat: Hüterin kultureller Werte. In: Berlinger, J. (Ed.), *GrenzGänge*. Andreas Haller, Passau, pp. 163–171.
- Weiss, G., Wodak, R., 2003. *Critical Discourse Analysis: Theory and Interdisciplinarity*. Palgrave, London.
- Weiß, M., 1998. Kaputtgeschützt? Zur Kontroverse um die Erweiterung des Nationalparks Bayerischer Wald. *Geogr. Rundsch.* 50, 522–527.
- Whittaker, J., Mercer, D., 2004. The Victorian bushfires of 2002–03 and the politics of blame: a discourse analysis. *Aust. Geogr.* 35, 259–287.
- Williams, M., 1989. *Americans and their Forests*. Cambridge University Press, Cambridge.
- Yung, L., Freimund, W.A., Belsky, J.M., 2003. The politics of place: understanding meaning, common ground, and political difference on the Rocky Mountain Front. *Forest Sci.* 49, 855–866.
- Zimmerer, K.S., 2000. The reworking of conservation geographies: nonequilibrium landscapes and nature-society hybrids. *Ann. Assoc. Am.-Geogr.* 90, 356–369.