Degradation Discourse and Green Governmentality in the Xilinguole Grasslands of Inner Mongolia

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ABSTRACT

This article examines discourses about grassland degradation in China as expressed by herders, government officials and researchers, presenting findings from fieldwork in Xilinguole League, Inner Mongolia. Recognizing degradation discourse and grassland restoration policies as key sites of political contestation, this study does not try to arrive at the scientific facts about degradation, but rather seeks to illuminate the mechanisms by which grasslands are identified as degraded, and the implementation of policies to restore and protect the grasslands. A key finding is that policy outcomes are widely divergent and difficult to predict. This is not merely due to differences among actors in terms of their interests, access to resources, power, values or knowledge, but as much a result of contradictions and tensions inherent in key policy goals, opening up spaces for local resistance as well as selective policy implementation. This highlights the open-ended and contested nature of China’s environmental state project.

INTRODUCTION

The availability and quality of grazing land and water are crucial for the livelihood of herders everywhere, and for the viability of pastoralism as a way of life. In contemporary China, the increasing pressure on rangelands is a topic that is high on the political agenda and intensely debated. While most researchers agree that there are signs of grassland degradation in at least some parts of China, the vast geographical areas in question and their enormous ecological diversity are among the factors that make it difficult to rely on general statements about the extent of degradation, let alone its causes.

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This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.
As described in the literature, probable causes of grassland degradation in China are overgrazing and overstocking due to deficient livestock management; lack of knowledge (or even ‘backwardness’) among pastoralists who fail to adopt modern management techniques; drought and other unfavourable weather conditions (sometimes seen as a result of climate change); loss of grazing land due to large-scale agricultural projects and mining operations; and forage depletion due to large populations of burrowing mammals.¹

Research on China’s pastoral policy making has raised contentious debates, often dividing natural scientists studying rangelands as ecosystems and social scientists studying the knowledge and culture of pastoralists. There are debates about the (dis)advantages of fencing (including ‘hoof disaster’ or trampling by livestock restricted by fencing), the loss of herder mobility due to sedentarization, the quality of monitoring and extent of grassland degradation, and the linkages between degradation and stocking rates.² There are also contestations over the rationality of herd maximization (i.e. the preference of herdsmen to keep herds as large as possible) and whether this is a key cause of overgrazing, or an effective strategy to reduce risk associated with winter livestock losses.

As is often the case, research on the causes of grassland degradation gives rise to new questions rather than conclusive answers. Has the number of livestock in area X actually increased, or could the statistics be inaccurate? If the numbers have increased, is this a problem in area X today, and if so, is this the key problem? If overgrazing is identified, new questions emerge, concerning structural issues, the design and implementation of particular management policies and programmes, and the diverse practices of herdsmen as well as local authorities (Banks, 2001; Clarke, 1995; Davidson et al., 2008; Taylor, 2006; Thwaites et al., 1998; Wu and Yan, 2002; Yan et al., 2005; Zhang et al., 2007). Is overgrazing an outcome of livestock de-collectivization in the early 1980s, when pastures were still used as village-level commons (perhaps a ‘tragedy of the commons’ as described by Hardin, 1968)? Or has it been propelled by the later privatization of pasture lands and implementation of the enclosure policy prescribing fencing of household pastures? Scholarly work on the degradation of China’s grasslands is politically charged, and the academic quality of this body of research has also been questioned. According to Harris (2010: 3), studies of the causes of rangeland degradation in China are often based on ‘logical shortcuts, selective inclusion of existing data, and/or underlying prejudices’.

¹ See for instance Chen (1996); Han et al. (2008); Harris (2010); Ho (2000); Holzner and Kriechbaum (2001); Klein et al. (2004, 2007); Ling (2000); Nyima (2003); Sheehy (2001); Zhou et al. (2005).
² Banks (2001); Clarke (1987, 1995); Davidson et al. (2008); Goldstein and Beall (2002); Harris (2010); Longworth and Williamson (1993); Miller (2000); Perryman (2001); Taylor (2006); Williams (1996a, 1996b); Zhang (1988).
While the jury is still out on the causes of grassland degradation in China, the government has passed the verdict on herders as a major threat to the grassland environment. Programmes such as ‘Converting Pastures to Grasslands’ (tuimu huancao) provide monetary compensation to herders who limit grazing on terms agreed in a ‘grazing ban contract’ (jinmu hetong). The government is also targeting large numbers of herders for resettlement from the rangelands into planned settlements near towns, offering them subsidized housing and welfare benefits as ‘ecological migrants’ (shengtai yimin). To justify these interventions, authorities cite the need to protect the country’s resource base and even its ‘ecological security’, highlighting the connection between environmental degradation in western China and the security of downstream areas from environmental threats (Yeh, 2009: 888–92).

In China, there is an assumption that grassland science can provide tools for objective evaluations of grassland degradation. However, a politics of degradation is evident, not only as scientific ‘facts’ are circulated in the Chinese media, but also as science is produced, and as it is applied in policy making. As described by Williams (1997), an underlying and contentious issue in Chinese debates on grassland degradation is ‘who to blame’, in which scholars, officials and the media regularly pass on responsibility for degradation to the ‘other’. Constituted either temporally (towards the past) or spatially (from centre to periphery), the ‘other’ is either the previous government regime(s) and their policies, or the local land users (ibid.: 334–45).

Based on fieldwork carried out during June to August 2010 in Xilinguole League, Inner Mongolia, this article deals largely with the spatial side of the equation, or the politics of degradation as seen from the periphery. The focus is therefore on the perspectives of land users and managers, and the local production and application of scientific knowledge about degradation. The aim of this study is not to establish scientific facts about degradation, but rather to illuminate the methods and mechanisms through which grassland science is produced and grasslands are categorized as degraded, the contexts in which degradation is identified, the consequences for herders, and the local dynamics involved in the implementation of policies and programmes to address degradation. After a brief literature review and discussion of analytical approaches, the article outlines Chinese government policies to restore grasslands, describes how knowledge about grassland degradation is produced and applied, and how it circulates locally, analysing policy implementation with a focus on how authority is exercised, negotiated and contested. Knowledge about grassland degradation is a focal point of local contestations over natural resources, leadership and legitimacy, and an important resource for political agency. Knowledge about degradation is thus deeply implicated in the exercise as well as negotiation of authority, understood not just as state power, but as ‘the amalgamated result of the exercise of power by a variety of local institutions and the imposition of external institutions, conjugated with the idea of a state’ (Lund, 2006: 686).
Using a ‘governmentality approach’ as suggested by Yeh (2009), my aim is to capture how state interventions are ‘engaged with and compromised in practice at their points of application’ (ibid.: 888). This makes it necessary to investigate the perspectives of a variety of stakeholders, such as wealthy livestock owners, pastoralists working as ‘hired’ herders, village leaders, cadres in the grassland supervision office, and other officials in local government departments tasked with the everyday implementation of pastoral policies, as well as the dynamic interactions between these stakeholders. A key finding of this study is that policy outcomes are widely divergent and difficult to predict. This is not merely due to differences among actors in terms of interests, power, access to resources, values, or knowledge, but as much a result of contradictions and tensions inherent in key policy goals and targets, which open up spaces for local resistance as well as ‘selective policy implementation’ (O’Brien and Li, 1999). This highlights the open-ended and contested nature of China’s environmental state project (Yeh, 2009).

POLITICAL ECOLOGY, SCIENCE STUDIES AND GOVERNMENTALITY

In seeking to map and contextualize discourses and narratives about ‘grassland degradation’ (caoyuan tuihua), this study is inspired by post-structuralist strands of political ecology (see, for instance, Escobar, 1996) and literature on the politics of environmental discourse (Agrawal, 2005; Forsyth, 2003; Hajer, 1995), especially critiques of degradation discourse and environmental crisis narratives (Fairhead and Leach, 1996, 1999, 2000; Ickowitz, 2006; Roe, 1999). In the study of China’s grasslands, these approaches have been applied most comprehensively by Dee Williams (1997, 2000, 2002), writing on ‘desert discourses’ based on fieldwork in Inner Mongolia, and Emily Yeh (2005, 2009), writing on the ‘greening’ of western China based on fieldwork on the Tibetan Plateau.

Yeh draws explicitly on both political ecology and the concept of ‘governmentality’ (Foucault, 1991) in her account of ecological construction as projects that emerge out of ‘a new rationality of rule’ and simultaneously ‘help forge distinct forms of subjectivity’ (Yeh, 2009: 889). Drawing on Escobar (1995, 1999) as well as Foucault (1972, 1980, 1991) in their critiques of representational regimes, both Williams and Yeh are concerned with power and knowledge; Williams (2000: 503) with ‘power as central to an understanding of science and knowledge’ and Yeh (2009: 892) with the ‘operation of governing logics and state power’ and ‘a power/knowledge regime that authorizes interventions that help control a recalcitrant population’. However, while the earlier work of Williams (2000, 2002) offers a detailed description of the production and application of scientific knowledge about degradation and its contestation by Mongolian herders, Yeh focuses on the co-production of new forms of subjectivity along with new
rationalities of rule, although she does not assume that ‘green governmentality is a completed project of rule’ (Yeh, 2009: 893).

As noted by Yeh (ibid.: 893), ‘China’s ecological construction and restoration programs are being implemented and experienced in differentiated, place-specific ways’. Williams and Yeh also carried out fieldwork in different places (Inner Mongolia and the Tibetan Plateau) and times (the 1990s and 2000s respectively), which can partly explain why their analyses differ. More relevant to my argument, I suggest that this also reflects a shift of academic focus over the past decade, from the production and contestation of degradation discourse towards the co-production of natural environments, social orders and subjectivities. This has come with an increasing scholarly exchange at the intersection of science and technology studies (STS) and political ecology, together with a rapidly growing cross-disciplinary interest in the politics of environmental knowledge (see for instance Goldman et al., 2011).

The conversation between political ecology and STS has no doubt enriched both fields of study. STS theory has contributed much to the way we think about the production, application and circulation of knowledge claims, whether within and between ‘social worlds’, as components of ‘standardized packages’, or among actors in networks (as in ANT theory). Nevertheless, the blurring of natural and human ‘agency’ in some strands of STS, including work on cyborgs (Haraway, 1991) and nature–society hybrids (Latour, 1993), the related emphasis on the co-production of nature and social order (Jasanoff, 2004a; see also Forsyth, 2003), and the still relatively weak attention in STS to issues of power, politics and ‘material constraints’ (Jasanoff, 2004a: 2; 2004b: 28), does little to help political ecology sharpen its analysis of the politics of science and other forms of knowledge. In order to develop innovative perspectives on why and how certain knowledge claims become authoritative (beyond references to powerful narratives, alliances between networked actors, or the interests of key stakeholders), we need to focus more squarely on how scientific knowledge is produced and applied for/in the exercise of power, and how science (in both its production and application) serves as a useful tool of governance as well as a resource of political contestation. These are the questions I attempt to address here.

Whereas recent literature has offered interesting perspectives on ‘environmentality’ (Agrawal, 2005), I propose another return to the concept of ‘governmentality’. Following Fletcher (2010), I suggest that research at the intersection between STS and post-structuralist political ecology would benefit from engaging with Foucault’s analysis of neoliberal and other forms of governmentality as described in The Birth of Biopolitics (Foucault, 2008). Distinct from his earlier work focusing on disciplinary governmentality, Foucault here describes four different governmentalities that ‘overlap, lean on each other, challenge each other, and struggle with each other’ (ibid.: 313). These are the art of government ‘according to the rationality of the sovereign state’ (involving the direct exercise of sovereign power), ‘according to the
rationality of economic agents’ (neoliberal governmentality), ‘according to the rationality of the governed themselves’ (disciplinary governmentality), and finally ‘according to truth’ (as derived from religious texts, revelation, or ‘the order of the world’ and its fundamental nature, e.g. as in Marxism) (ibid.: 311–13). By clarifying the operation of different governmentalities, Foucault underscores the importance of both sovereign power and biopower (exercised through incentive structures as well as powerful narratives), providing a valuable framework for analysing the role of science in relation to different modes of governance. This opens up new avenues for investigating how science is used to produce truth by explicating the ‘natural’ order of the world; how science supports normative messages about ‘good’ values; how it is harnessed to the design of ‘rational’ incentive mechanisms; and how it is applied by lawmakers and administrators. This also invites further study of how environmental science is used to justify interventions, how state agents control the production of such science, and finally how power is exercised, negotiated and contested in the application of environmental science.

ENVIRONMENTALISM WITH CHINESE CHARACTERISTICS

Since the founding of the People’s Republic, a range of ‘scientific’ interventions have been carried out in the grasslands of China, from science education and disciplinary campaigns to spread normative, science-based messages about ‘good’ values, to neoliberal economic incentives and work targets to motivate rational, self-interested actors to make the ‘right’ choices. Following Mao Zedong’s ‘war against nature’ (Shapiro, 2001), Deng Xiaoping sought to transform the country through economic liberalization and privatization (siyouhua). In the early 1980s, when communes and production brigades were dismantled, land tenure in China’s rural areas was restructured by the Household Contract Responsibility System (Jiating Lianchan Chengbao Zerenzhi), in which use rights to farmland were allocated to individual households. In pastoral areas, herding households were first allocated livestock, while contracts later extended use rights to pastures in accordance with the Grassland Law of 1985, known as ‘double contracting’ or ‘two rights and one system’ (Banks, 2003; Bauer and Nyima, 2010; Wilkes, 2006). By the 1990s, the Thirty-Year Use Right policy was implemented, enacted by the Land Management Law of 1998.

Deng Xiaoping’s policy of ‘Opening Up and Reform’ (Gaige Kaifang) marked a major shift in China towards a neoliberal development discourse focusing on marketization and privatization, in which ‘getting rich is glorious’ and prosperity and modernization go hand in hand. In pastoral areas the key policy introduced in this brave new era was the ‘Four Allocations’ (si pei tao), prescribing the fencing of household pastures, construction of animal shelters, house building and planting of forage crops. The expressed
goal was to increase pastoral production and standards of living and eliminate poverty, to be achieved by the transformation of herders into ‘modern’ ranchers (Goldstein and Beall, 1990; Levine, 1995, 1999). The central authorities also introduced the cadre responsibility system (Mubiao Guanli Zerenzhi) to more effectively evaluate and monitor the performance of local government and party officials and guide their efforts through a combination of incentives and disciplinary measures. This meant the introduction of prioritized work targets, usually quantified and with timetables, linked to career rewards and individual or collective sanctions (see Minzner, 2009). In pastoral areas, targets were set for all four ‘allocations’, that is, the number of herders’ dwellings and animal shelters, the length of fences, and the area under forage crop cultivation. Herders were often encouraged (or pressured) by offers of subsidies in the form of money or materials (such as wire fencing). Authorities also launched campaigns to persuade herders to change their norms and values, to embrace modern market rationalities and discard ‘old’ ideas. Typical of Foucauldian disciplinary governmentality, local authorities offered prizes to herders who were ‘civilized’ (wenming) and ‘well-off’ (xiao kang).

Since the 1990s, Chinese policy making has taken another turn, this time towards the making of an environmental state (Rutherford, 2007) focusing strongly on environmental restoration and ecological protection. Along with the production of an extensive body of research on grassland degradation and desertification, large-scale programmes have thus been launched to restore rangelands, relying mainly on measures to limit stocking, ‘ban’ grazing (jinzhi fangmu) and move herders out of the grasslands (‘Enclosure and Transfer’ — weifeng zhuanyi). While some local authorities have resorted to the punishment of offenders, or the threat of punishment (i.e. the use of sovereign power), incentives have been the main means of producing compliance with the goals and objectives of these interventions.

Although the resettlement of pastoralists from ‘degraded’ environments is significant and needs further study, the focus here is on the policy measures and management strategies targeting herders still living in the grasslands, and the practices of local cadres and village leaders responsible for policy implementation. To shed light on the making and contestation of China as an environmental state, the following sections present research findings from fieldwork carried out in Dong Wuzhumuqin Banner, Inner Mongolia.³ Located in the Xilinguole grasslands, known by grassland specialists as one of China’s most productive grassland areas, Dong Wuzhumuqin may not be representative of pastoral China in terms of environmental challenges. However, this case can still serve as an example of how animal husbandry

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³ In Inner Mongolia, the terminology for administrative units differs from other parts of China. Prefectures (zhou), are known as ‘leagues’ (meng), while counties (xian) are known as ‘banners’ (qi), townships (xiang) are known as sumu and villages (cun) are known as gacha. Dong Wuzhumuqin has eight sumu and fifty-seven gacha.
is managed and policies to address grassland degradation are carried out in areas where pastoralism is the main source of livelihood.

In Dong Wuzhumuqin, as in other pastoral areas, the Bureau of Agriculture and Animal Husbandry (Nongmu Ju) plays a vital role in the local administration. The bureau’s key tasks include compiling data, keeping records and meeting targets of relevance to rangeland and livestock management — that is, producing and applying knowledge about the grasslands. According to the bureau’s own records, grasslands cover 98 per cent of the banner’s total area of 47,000 km$^2$ or 70.5 million mu.$^4$ Of the total grassland area, fields of forage crops make up an area of 7 million mu (10 per cent).$^5$ Grasslands designated by the animal husbandry bureau as under ‘restoration’ (huifu) cover 50.2 million mu (72.5 per cent of the total grassland). Of the total area under ‘restoration’, pastures fenced for seasonal grazing cover 31.5 million mu (45.5 per cent of the total grassland); pastures under ‘grazing ban’ (jinzhi fangmu) cover 9.5 million mu, and another 9.2 million mu are subject to unspecified restoration measures. Of the pastures under ‘grazing ban’, grazing is banned year-round in an area of 4.5 million mu (6.5 per cent of the total grassland), while grazing is banned only during the spring in an area of 5 million mu (7.2 per cent of the total). Contracts can be signed for three to five years and herders who sign a ‘grazing ban’ contract are given an annual monetary compensation, all according to the bureau’s officials.

The animal husbandry bureau keeps records of the banner’s population of herders as well as its grasslands. As of 2010, the total population of the banner was 71,000, while the number of registered herders was 32,000. I was further informed by the bureau staff that ‘fewer than 25,000’ of the registered herders were actually living in the grasslands at present (that is, more than 7,000 herders had moved out), and that resettlement was carried out by ‘respecting the wishes of the herders’ (zai zunzhong mumin yiyuan).

Interestingly, the bureau presented very different figures on resettlement to a visiting delegation of officials from Xilinguole League. On the one hand, they informed their guests that 6,028 herders had been resettled over the past six years, while on the other hand they claimed that only 33.4 per cent of the registered herders were actually living in the grasslands at present (that is, more than 7,000 herders had moved out), and that resettlement was carried out by ‘respecting the wishes of the herders’ (zai zunzhong mumin yiyuan).

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According to the same presentation, the annual per capita income of the banner’s herders had grown by more than 50 per cent over the last six-year period, while livestock numbers (summer counts) had been reduced

4. *Mu* is a Chinese measure commonly used for land. 1 *mu* equals 60 m$^2$, while 1 km$^2$ equals 1,500 mu.

5. All figures given are as of 2010, from the Bureau of Agriculture and Animal Husbandry.
Table 1. Background Statistics for Dong Wuzhumuqin (2010)

<table>
<thead>
<tr>
<th>Year</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<tbody>
<tr>
<td><strong>Livestock per Year, Summer and Winter Counts</strong></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td>3,620,000</td>
<td>3,220,000</td>
<td>3,250,000</td>
<td>3,140,000</td>
<td>2,900,000</td>
<td>2,800,000</td>
</tr>
<tr>
<td>Winter</td>
<td>1,770,000</td>
<td>1,670,000</td>
<td>1,600,000</td>
<td>1,410,000</td>
<td>1,520,000</td>
<td>1,480,000</td>
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<tr>
<td><strong>Annual per Capita Income of Herders in Chinese Yuan (CNY)</strong></td>
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<tr>
<td>CNY</td>
<td>6,145</td>
<td>7,110</td>
<td>7,514</td>
<td>8,575</td>
<td>9,604</td>
<td>9,997</td>
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<tr>
<td><strong>Resettlement, People per Year</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People</td>
<td>322</td>
<td>377</td>
<td>357</td>
<td>2,281</td>
<td>1,177</td>
<td>1,514</td>
</tr>
</tbody>
</table>

Source: all figures from Dong Wuzhumuqin Bureau of Agriculture and Animal Husbandry, 2010.

by about 25 per cent during the same period, and off-farm income still accounted for only 13 per cent of the herders’ income (see Table 1).

The bureau’s figures on resettlement may not have stood up to much scrutiny, but on this occasion at least, the visiting ‘higher’ officials seemed satisfied. Along with impressive posters mounted on billboards providing key ‘facts and figures’, the cadres had prepared an elaborate exhibition, set up in the spacious back yard of their office building. The yard was adorned with all the equipment with which the bureau was supposed to boost pastoral productivity, such as automatically refilling water troughs for livestock and high-tech machinery for seeding and harvesting forage crops. The exhibition seemed to suggest that a ‘mechanization miracle’ was responsible for the bureau’s amazing feat of raising the herders’ income while at the same time bringing livestock numbers down. Most importantly, the presentation of data showed that targets had been met.

Numerous interactions with officials charged with grassland management made it clear that they acted as political entrepreneurs whose management activities consisted not only of implementing policies (that is, carrying out programmes and meeting targets), but also of meeting the information needs of ‘higher’ authorities while simultaneously addressing contestation from ‘below’. Moreover, local cadres were constantly manoeuvring between different demands and goals, such as mechanization of animal husbandry, increased pastoral production, poverty alleviation among herders, introduction of improved species of forage and livestock, resettlement and grassland restoration. Among the key tools of their trade was the documentation of ‘facts’ about animal husbandry in their banner, which enabled the cadres to meet the monitoring needs of superiors as well as their own need to justify their activities to subordinates and targets of intervention. This highlights the significance of scientific knowledge production and application for the implementation of specific programmes as well as formulation of pastoral policies and targets. Before turning to the production of grassland science, the following section gives a brief outline of the institutional structures and legal frameworks in which this science is embedded.
The Ministry of Agriculture and Animal Husbandry under the State Council is in charge of grassland administration nationwide, while bureaus of animal husbandry in the local governments are in charge of grassland management within their jurisdiction, as described by the Grassland Law of 1985. All grasslands are owned by the state, except those owned by collectives (jiti), which are legally under the charge of village committees (weiyuanhui). Local governments are required to register all grasslands and issue certificates to assign grassland use rights. Local authorities are also tasked with combating grassland ‘pests’ such as locusts and plateau pika, preventing and treating endemic livestock diseases, conducting surveys of grassland resources and making plans for the development of animal husbandry ‘to improve the protection of the grasslands’ and ‘increase the capacity for raising livestock on the grasslands’ (Standing Committee of the National People’s Congress, 1985). The central government for its part is responsible for encouraging scientific research ‘in order to raise the scientific and technological level of grassland and livestock management’ (ibid.). The law further stipulates that grasslands ‘shall be used rationally and overgrazing prevented’, and where ‘aridity, degeneration or soil erosion occurs as a result of overgrazing, users of the grasslands shall be required to reduce grazing and re-sow forage grass so as to restore vegetation’ (ibid., Art. 12). Grassland users are thus ultimately liable for the results of overgrazing. However, the main responsibility for grassland and livestock management lies with local governments, while central authorities are in charge of policy making, intervention guidelines and programme funding, and national agencies provide scientific input.

The Grassland Monitoring and Supervision Centre under the Ministry of Agriculture and Animal Husbandry uses satellite remote sensing methods (Normalized Difference Vegetation Index — MODIS) combined with meteorological information from the National Climate Centre to carry out regular monitoring and assessment of China’s grassland vegetation. Monthly reports from the centre analyse weather patterns including precipitation, temperatures, soil moisture and vegetation growth, based on remote sensing images. The centre further provides reports and analyses of the condition of grasslands in specific localities, and gives recommendations to local authorities to address a variety of risks and challenges, from controlling the population of plateau pika, to making arrangements for drinking water supply during drought.

The ministry also issues national standards for grading grassland degradation, desertification and salinization. The latest version of this standard is GB19377–2003 (Su et al., 2003), drafted by the China Agricultural University in cooperation with the Chinese Academy of Sciences and several institutes in western China. As a frame of reference or baseline for

assessment, the standard suggests the use of either a Nature Reserve Grassland Demonstration Area of the same type of vegetation characteristics and surface soil conditions, similar areas classified as ‘non-degraded’ in the national survey of grassland resources (carried out in the early 1980s), or similar ‘non-degraded’ areas. Indicators of grassland degradation include plant community characteristics and composition, growth of indicator plants, measures for shoot yields and soil nutrients, surface features and soil properties. Grasslands are categorized accordingly as non-degraded, slightly degraded, moderately degraded or severely degraded.

In Dong Wuzhumuqin, key scientific input for identifying grassland degradation and establishing carrying capacity is provided by visiting researchers stationed at the China Social Science Grassland Research Institute (Zhongguo Shehui Kexueyan Caoyuan Yanjiusuo). These researchers have carried out studies to determine the degree and extent of grassland degradation in the area, of which the latest available (as of 2010) was a study conducted in 2000.\(^7\) That study showed that 30.7384 million mu or 51.42 per cent of the total grassland was degraded: 36.18 per cent was ‘mildly degraded’, 12.37 per cent was ‘moderately degraded’, and 2.87 per cent was ‘severely degraded’. According to the director of the institute, their measurements of degradation were compatible with the national grassland degradation standard (GB19377–2003). However, as these studies did not cover the relationship between grazing and degradation, livestock numbers were not taken into account.

While visiting researchers were responsible for assessing the carrying capacity (\(zai\ xu\ liang\)) of the banner’s grasslands, the institute’s own staff were charged with routine tasks such as trying out new kinds of grass seeds, monitoring the quality of fodder sold in the market and dealing with grassland conflicts. The director explained that the institute had established a number of ‘investigation points’ for the regular monitoring of plant growth all over the banner. Since 1998, they had also made use of remote sensing data from satellite images, and these were currently the key data for establishing degradation trends. Since 2001, the institute received MODIS maps of the banner’s vegetation cover.\(^8\) In addition to satellite imagery, visiting researchers at the institute would also carry out their own research on grassland vegetation, often drawing on Clementsian plant succession theory (Clements, 1916) to analyse types and processes of vegetation coverage by identifying dominant plants.

Based on carrying capacity parameters established by visiting researchers, the local government’s Grassland Supervision Office (Caoyuan Jiandu Guanli Ju) was charged with monitoring livestock and pasture conditions

\(^7\) Results from a later study carried out in 2009 were not yet analysed.

\(^8\) The colour scheme of these maps differentiates between water, clouds, and nine degrees of plant coverage, ranging from 5 kg to more than 200 kg of plant coverage per mu (the maps also depict areas with less than 5 kg of plant coverage per mu).
by counting livestock, and measuring grass height and types of grass cover. According to the officials of this office, they measured the growth of grass every month, but were not sure how much of the grassland was degraded, since they ‘didn’t have exact numbers on that’. They had seven sites for the measurement of grass production, one in each sumu under their administration. Each site had three plots of one square metre each, fenced to protect against livestock grazing, representing ‘good, medium and bad pasture’. As described by the officials, stocking limits in all the banner’s fifty-seven villages (gacha) were adjusted annually on the basis of measurements from these seven sites. Summer and winter stocking limits would differ, with summer limits set higher. Livestock counts were carried out twice annually, in June and December. After the counting and measurements were done, all the data were forwarded to the ‘higher government’.

Cadres of the Grassland Supervision Office viewed adequate rainfall as the key condition for good grass production. Nevertheless, their monitoring activities did not include measuring soil moisture or precipitation. Such measurements were the responsibility of another unit, the local Bureau of Meteorology, who had no obligation to share data with the Grassland Supervision Office. Since 2005 this bureau had carried out ‘ecological climate and environmental supervision’, which involved collecting soil samples and measuring water content twice a month. The measurements were passed on regularly to the ‘higher government’ for further analysis. Based on data from the meteorology bureau’s nine weather stations, it was clear that precipitation varied greatly from the east to the west of the banner, ranging on average from 108 to 350 mm annually. Despite the fact that rainfall had become more erratic, the bureau’s data showed that annual precipitation remained fairly constant over the last decades, whereas temperatures had risen dramatically (from an annual average of 0.67–0°C in the 1970s to 2.9°C as of 2010). Based on these data, the head of the bureau concluded that grassland degradation was related more closely to rising temperatures than to lack of rainfall.

In addition to disparate views on degradation, my fieldwork also uncovered a disconnect between the stated goal of grassland protection against overgrazing and the techniques used for assessing and monitoring grassland degradation. While remote sensing and test plot measurements were explicitly geared towards monitoring grass production, the carrying capacity of local grasslands could hardly be assessed as long as data on forage growth were not systematically coupled with data on livestock numbers. Moreover,

9. Interview with officials in the Grassland Supervision Office, Dong Wuzhumuqin Banner, July 2010.
10. The banner’s eighth sumu was reportedly administered by the Bureau of Forestry (Linye Ju).
11. The land–livestock ratio ranged from 22 to 30 mu per sheep in summer and from 30 to 40 mu per sheep in winter, according to our interviews. The average ratio was thus about 30 mu per sheep (or sheep equivalent, where one cow equals four sheep).
it appeared that information gathered locally was compiled solely for analysis ‘higher up’, especially as there was no sharing of data gathered by different units.

As grassland supervision officers admitted, they lacked detailed information on the extent of grassland degradation within the banner, which might have usefully informed their decision making. Nevertheless, the banner’s grassland managers insisted that the determination of stocking limits was based on sound scientific research and adjusted after careful monitoring. By contrast, herders very often expressed doubts about the determination of stocking limits as well as their monitoring and adjustment, describing them as too rigid and insensitive to changing conditions. As some asserted, local herders knew better than experts how to manage and protect their grasslands. They also had their own views on the causes of grassland degradation, as will be described in the following sections.

VIEWS FROM THE GRASSLANDS

The herders we interviewed for this study associated ‘grassland degradation’ (caoyuan tuihua) predominantly with drought. This was a widely held view, not only among herders but government cadres as well, including officials in the Bureau of Agriculture and Animal Husbandry who maintained that overstocking was only the second most important cause of degradation.12 While highlighting the importance of drought, herders also recognized several other causes of degradation including lack of knowledge among ‘newcomers’ (e.g. Han settlers encouraged by the offer of free pasture land, who were allegedly exploiting the grasslands for short-term economic benefit); outbreaks of locust plague; the division of pastures through inheritance; and changes in herding practices, especially due to fencing. Many herders expressed a preference for collective herding without fences because of the greater flexibility provided by a larger grazing area. In case of a natural disaster such as heavy snowfall, this made it easier to rely on mutual assistance. When individual household pastures were fenced, herd movement was limited and flexibility lost. On the other hand, herders who had fenced their land also complained that unfenced land was vulnerable to encroachment, so they had no other option than to build fences.

Not far from the county town we interviewed a family of herders who lived in a well-built brick house, and who were happy to show us their rewards for being ‘well-off’. They held large pasture lands and had hired another herder to look after their livestock for a monthly salary of 1,000 Chinese yuan (CNY). Members of this family said that degradation had become a problem during the last decade, mainly caused by drought, but also by

railway construction (for the transport of coal), to which they had recently lost some of their land. In the eastern part of the banner we interviewed a herder in very different circumstances. He had left his allotted 3,000 mu of ‘not very good’ grassland in another banner to work as a hired hand. The grasslands in his home area were degraded for three reasons, he explained: proximity to deserts, continuous drought and increasing population pressure. Living year-round in a simple yurt (Mongolian: ger), he looked after his own 380 sheep together with 1,300 of his employer’s livestock on 20,000 mu of prime grassland. For this he was paid 800 CNY a month by his employer. Having stayed in the same pastures for eight years, he was sure there were no signs of degradation, although he was keenly aware of the potential problem of overstocking. In his view the pastures in this area were large and in good shape, and the stocking limit was set too low. He also argued that the government’s stocking limits made little sense as long as they were applied only to sheep, while cattle and horses were ignored.

As we interviewed herders in several different parts of the banner, the significance of inequalities in grassland holdings became increasingly evident. As explained by the former head of the animal husbandry bureau, in the east of the banner — where the weather is colder and the population smaller — land holdings are on average 5,000 mu per person, while in the west, average holdings are 1,000 mu per person. When the communes (gongshe) were dismantled in the early 1980s, their land was transferred to the sumu (township). In 1983 the authorities contracted the ‘decollectivized’ livestock to individual households and redistributed the land to each village (gacha). In the mid-1990s the pasture land was reallocated to individual households, with the exception of collective land (jiti) set aside for the benefit of the community. Although within each gacha, efforts were made to distribute land equitably, the size of allotments was ultimately dependent on the gacha’s population at the time of distribution.

In some parts of the banner, herders viewed water scarcity as a greater challenge than scarcity of pasture land. During de-collectivization, wells that were previously collective property were allocated to individual households, along with the pasture land. By 2010, water was in the process of commodification. Some herders had to get their water supply delivered by truck, while others paid neighbours to draw water from nearby wells. The government had sponsored well construction for several years, covering 70 per cent of the cost of drilling. However, according to the water management bureau, out of 6,000 herding households in the banner, 5,000 were still using hand-dug wells and only 830 had machine-drilled wells. Since 2002, water levels in hand-dug wells (7–8 m deep) had been decreasing, and the water management bureau estimated that the ground water level had gone down by about 20 cm over the past decade. Machine-drilled wells were not affected.

13. Interview at Bureau of Forestry and Water Management, Dong Wuzhumuqin Banner, July 2010.
by the drought, but came at a high cost (up to 90,000 CNY). There was also the chance that no water was found, or that the water was not potable. We interviewed a family of resettled herders who had experienced this when drilling was done on their land. Despite drilling down to 120 m, no water was found, and they still had to pay 40,000 CNY for the work. Lack of water on their land was one of the reasons why this family had decided to settle in the ‘new town’.

Southeast of the banner capital lies a large area designated as a ‘wetland nature reserve’. At the centre of this area there was once a large lake fed by the Wulagai River, which runs through the banner from east to west. The People’s Liberation Army built a dam on this river decades ago. The reservoir was originally intended for an agricultural project that was discontinued after a few years. Later a coal company signed a contract with the government for the right to draw water for washing coal. From then on the company was also responsible for management of the reservoir. However, after the company had drilled a well near the mine, the reservoir was only used for a fishery business. When we visited the site we saw that a pumping station was under construction, while no water was being released from the reservoir. The river was no more than a trickle, the former wetlands had turned into a desert, and the lake was completely dried up. At the lake, a local herder explained that it had been dry for the last twelve years. He pointed out that adjacent pastures were also being degraded as the wind scattered salty dust from the lake onto the surrounding grassland. It was clear that the coal company had no obligation to release water from the reservoir into downstream grasslands, and would not do so as long as this went against their business interests. In the meantime, a non-governmental environmental organization based in Beijing had started to publish critical reports on the ‘death of Wulagai’, blaming the industrialists (especially the Xilin River Coal Chemical Co., Ltd) for destroying the environment and depriving the Xilinguole herders of their livelihood.

The stocking limit is the key government restriction imposed on Xilinguole herders, and also the most resisted. According to herders, the livestock count was carried out strictly in the 1970s and 1980s, when a government cadre would come to conduct the counting. At present it was more informal, and the gacha leader would usually do the job. Herders in the urban township area said that an official would count the livestock carefully and impose fines if they exceeded their limits. In other parts of the banner, herders said they would be warned if they had too many livestock in June, while in December, ‘counting’ was done over the phone. As explained by staff of the animal husbandry bureau, herders who have too many animals are first told to sell some. If the summer counts are too high, herders have six months from July to December to sell some of their livestock, or ‘come to an arrangement’ such as renting pasture from the gacha collective land, or from herders with surplus grazing land. In cases of persistent overstocking, herders might be fined for exceeding the stocking limit.
In all cases where we collected complete data from households on the area of their grassland, the number of livestock and the stocking limits set by the government, the herders had exceeded the limits. As reported to us, some herders kept as many as three times the livestock they were allowed, admitting that fines were imposed only rarely. Nevertheless, herders often complained that the stocking limits imposed on them were overly rigid and failed to reflect local conditions. They also maintained that the limits were insensitive to variations in weather patterns (especially rainfall) which they saw as critical to forage growth.

Herders in Dong Wuzhumuqin were also concerned about the building of a new railroad for coal transportation, cutting across the entire banner. Some complained that heavy trucks were trespassing on their grasslands and destroying the forage. Truck drivers were ignoring their appeals to find other routes to the construction site. A year after the fieldwork, two herders were killed while they tried to stop a truck from crossing their pasture. The tragic accident sparked social unrest, not only locally but as far away as the provincial capital of Hohhot. The authorities were charged with failing to protect the herders and the grassland environment. The façade of rational and efficient grassland management was suddenly shattered.

CONCLUSION: GREEN GOVERNMENTALITY IN THE GRASSLANDS

As Chinese authorities pursue their environmental state project, what is (co)produced is first and foremost a new rationality of rule or re-imagination of the state, in which legitimate authority is derived from the protection of the environment rather than the conquest of nature. This relies on the production, application and circulation of new scientific knowledge about threats to the environment, which serves as a foundation for policies, programmes and interventions aimed at protecting the environment against degradation. The Chinese state holds a near monopoly of science production, and scientific knowledge about the environment is also a key tool of governance, whether in the production of facts justifying new laws and policies, the identification of targets and making of incentive systems, or the propagation of normative messages about the significance of environmental threats and the role of the environmental state. The contestation of state-sponsored environmental science thus represents a challenge to state authority.

In Xilinguole, proponents of the environmental state are setting the premises of political discourse in the sense that political protest (directed largely against coal companies) is carried out in the language of environmental protection. However, this does not mean that Xilinguole herders agree with the ‘scientific’ view that grassland degradation is caused by overgrazing. On the contrary, most herders express a different view of degradation, associating it primarily with natural conditions, especially drought. This suggests a failure of environmental subject-making as a disciplinary effort, or in
other words a failure of ‘the internal subjugation of individuals’ (Foucault, 2008: 260) on behalf of the state’s environmental cause. Consequently, in their efforts to reach intervention targets local government officials must rely on the manipulation of incentives (i.e. neoliberal governmentality) if they are to avoid the use of force (or sovereign power).

The Chinese government has changed its overarching strategy from the pursuit of an economic growth-oriented mechanization of livestock production to an eco-managerial focus on the protection and restoration of grasslands, with important consequences for the governance of pastoral areas. For the ‘green’ narrative to be effective (or plausible), the new discourse of statehood must avoid disrupting earlier or parallel narratives in which the role of the state is portrayed as that of the provider of goods, modernizer or conqueror of nature. The government’s diverse goals of economic development, modernization, poverty alleviation and ecological protection may be difficult (if not impossible) to reconcile, which is precisely why narrative incongruities threaten to bring into question the rationality of the environmental state.

Grassland management is embedded in green governmentality as practice as well as discourse, in the form of administrative structures and systems of science production. A closer look at these structured practices shows up several junctures at which the environmental state project, or the co-production of nature and society, is compromised. First, although many of the targets of grassland intervention are set in relation to measures to restore the environment (such as resettlement and the signing of ‘grazing ban’ contracts), in the actual monitoring of grassland degradation, scientific production is still not geared towards the new policy goals. Methods of data compilation fail to match programming needs, and there is also a lack of knowledge sharing between local government monitoring units. Second, the government still promotes heavy machinery and mechanization as the icons of modern ranching, contradicting in very material terms the environmental sustainability discourse. Third, in the application of environmental knowledge to the construction of incentives and targets, the state has failed to convince the herders that their own knowledge and understanding of the grassland is inferior. Considering their willingness to rely on gacha leaders to actually manage stocking limits, it seems likely that many local cadres are similarly unconvinced.

The use of state subsidies to compensate herders for grassland ‘restoration’ has been understood as a form of ecosystems service compensation that has successfully realigned the interests of pastoralists with those of the state (Shen, 2004). In Xilinguole, however, government programmes are not primarily implemented through the realignment of interests, but rather through compromises and collaborations that enable agents of the state to avoid more confrontational methods of enforcement, while somehow also reaching their targets. This serves to disguise competition and overt contestation among stakeholders with different interests and agendas, even when
the grounds for conflict are obvious. A case in point is the stocking limit, which is a frequent source of tension between herders, local leaders tasked with monitoring livestock numbers, and government officials responsible for meeting stocking targets as well as potentially contradictory targets of economic development and poverty alleviation. Whereas the cadre responsibility system provides powerful incentives, it also encourages creative collusions where stakeholders’ interests converge. For instance, when gacha leaders under-report livestock numbers they simultaneously help cadres to meet their targets and herders to avoid penalties. When the resulting statistics on livestock numbers are inaccurate, the impact of livestock grazing on grassland degradation is not easily assessed, which in turn makes it difficult for scientists to determine the carrying capacity.

Programmes to restore China’s grasslands such as ‘Converting Pastures to Grasslands’ (tuimu huancao) are viewed by some scholars as a ‘deepening of state control’ (Yeh, 2005: 9). This is also the message conveyed by the government’s often highly ambitious intervention targets related to restrictions on grazing, resettlement, destocking and ‘Enclosure and Transfer’ (weifeng zhuanyi), which give the impression of a powerful environmental state. However, grassland governance involves more than programming and communication of goals and targets. It also involves ground-level acts of persuasion, compromise, competition and, at times, even forceful manipulation and violent confrontation between stakeholders with competing interests. Adding to the complexity, actors and stakeholders may change their allegiances and agendas, and engage in new discourses according to changing circumstances. The rationality of rule of the Chinese environmental state remains far from seamless. When ground realities in the grasslands are unpredictable, this is not only a result of local rivalries and irreconcilable interests in the periphery, but reflects as well the incoherence of policy making at the centre, with its competing agendas of economic growth and environmental protection. Despite heavy investment in the production of science, the co-production of nature and society is not always achievable. Green governmentality should be recognized as a highly contestable project.

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Green Governmentality in the Grasslands of Mongolia


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