Management of grazing lands through educating communities

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ABSTRACT

The Mongolian steppe is one of the world's largest grassland and it is an arid to semiarid land with a strong climate gradient. Biodiversity loss leading to desertification and land degradation is estimated to be impacting around 65% of the total area of Mongolia. The preliminary objective of this project was to trial the Positive Deviance Methodology to determine if this method assists herders to design behaviors to reverse this biodiversity loss. This project is a partnership between Mongolian Herders, Mongolian rangeland scientists and Australian based Stipa Native Grasses Association. The Positive Deviance Methodology has five basic steps based around creating the conditions that allow the local community to identify practices, develop solutions and create benchmarks and monitor progress. This project focuses on allowing herders to design regenerative practices and behaviors. Baseline monitoring, meetings and interviews were used to define the current practices for summer and winter grazing areas. Separate degradation mechanisms were identified for the different areas. Descriptions of outcomes from regenerating practices, high landscape function and perennial grass diversity, were clearly in the memories of older herders and in verbal history of younger herders and allowed the identification of temporal positive deviants. Herder meetings were then held so that the local community could start investigating the design and development of activities that would expand and amplify possible solutions. Herder initiated practice change was recorded after one herder meeting.

Key words: Piosphere, Positive deviance, Transhumance

Introduction

The economy of Mongolia was primarily based on transhumance grazing for centuries until collectivisation commenced in the 1950s when the aim was to settle the migratory rural population on collective farms (Suttie, 2005). However, this process was generally not successful and these collectives were privatized beginning in 1991. Many of the livestock enterprises then reverted to family ownership with the re-establishment of transhumance grazing management (Suttie, 2005). However, some of the traditional knowledge on which the grazing industries had successfully used the land for thousands of years may have been lost. In addition, there was a dramatic increase in the human population of the country including a nearly doubling of the rural population between 1956 and 1997 (Suttie, 2005). Modified land management skills coupled with the increased rural population has resulted in an increase in grazing land degradation throughout the country.

Biodiversity loss leading to desertification and land degradation is estimated to be impacting around 65% of the total area of Mongolia (Anonymous, 2015). The loss of biodiversity, leading to the loss of biological processes, is also contributing to climate change and increasing droughts and flooding (Cardinale *et al.*, 2012). Reversing this biodiversity loss has been described as a 'wicked problem (Conklin, 2006), and suggested solutions such as winter supplementation, hay and reserved forage plots, sowing introduced species such as alfalfa/ lucerne have failed overtime due to the unintended consequence of reducing biodiversity further while increasing risk and cost (Savory pers. commun.). The result is an

urgent need to find more reliable solutions to the seemingly intractable problems of social disruption, land degradation compounded by climate change.

Stipa Native Grasses Association

Creating behavior change is notoriously difficult and seems to be especially so in reversing biodiversity loss and the resultant desertification and degradation of grasslands. The main challenge in Mongolia has been identified as 'the lack of participation by herders in the planning process' (Anonymous, 2015). Stipa Native grasses Association (Stipa) is an Australia based, farmer led, non-profit association founded in 1997 to promote the use of perennial native grasses in agriculture. To fulfil this purpose Stipa members have developed training, extension and demonstrations of grazing and farming practices that regenerate perennial grasslands at a profit.

Behavior change has been based on:

- Diffusion of Innovations - comparative advantage and easily trialed (Rogers, 1983)
- Community Based Social Marketing – identifying key behaviors and addressing barriers and benefits to adopting these behaviors (McKenzie-Mohr, 2011)
- Managing Holistically (Savory and Butterfield, 1999)
- Positive Deviance technique– looking for uncommon successful practice and then amplifying this practice. (Pascale *et al.*, 2010)

In partnership with Mongolian rangeland scientists Stipa undertook to travel to Mongolia to determine if any of the Stipa developed educational and extension methods that had some success in Australia would be of assistance in starting to reverse biodiversity loss in Eastern Mongolia.

The Positive Deviance Approach

The Positive Deviance technique (Pascale *et al.*, 2010) was selected as a possible approach to creating behavior change in Mongolia as it fits most of the criteria below:

- The problem is not exclusively technical but social also and requires behavioural or/and social change.
- The problem is complex, seemingly intractable, and other solutions haven't worked.
- Positive deviant individuals or groups exist suggesting that solutions exist.
- There is sponsorship and local leadership commitment to address the issue.

To meet the above mentioned criteria, it is appropriate to use a technique that is based on:

- Deep respect for community, its members, and its culture, and focuses on interactive engagement with intention to let the community lead.
- Identifying solutions for sustainable behavior and social change within already existing system.

Leadership Involvement and Resource Team

The initial aim was to achieve steps 1 and 2 in the Positive Deviance methodology (Anonymous, 2010). The project commenced with two trips to Erdenetsagaan soum of Sukhbaatar aimag, Eastern Mongolia during July 2014 and September 2014. The focus of the first trip was meetings with community leaders to discuss the reasons for our visit and to gain leadership support and start to build a resource team. During this trip we emphasized that we would not be providing advice, practices or forage species from other parts of the world but would be attempting to discover which indigenous practices had maintained

Mongolian grasslands for thousands of years before collectivization began in the 1950's. This approach appeared to overcome the blockage that "problems embedded in social and behavioral patterns resist technical fixes" (Pascale *et al.*, 2010).

Defining the problem (Step 1)

Stipa experience is that where perennial grasslands are regenerating, an 'inverse' piosphere effect is produced where the landscape function and perennial grass diversity is higher closer to water points (Savory and Butterfield, 1999). During the July 2014 trip baseline data was collected from three gradients of the pasture at each of three locations near Erdenetsagaan soum (summer ground). At each site, estimated ecological site description (Herrick *et al.*, 2005), landscape function (Tongway and Hindley, 2004), vegetation and soil data were collected. These data confirmed that a strong piosphere effect was present with no evidence of perennial grassland regeneration. Small mammal burrowing, typically Brandt's vole (*Lasiopodomys brandtii*), was high near roads and water points. During the September 2014 trip the above data was collected as well as soil cores for baseline soil organic carbon from summer ground sites and winter ground sites. The winter ground sites were 50-80 km from Erdenetsagaan soum. The winter ground sites, that had not burnt, were characterised by higher landscape function, high levels of oxidising litter and low impact of small mammal burrowing. Interviews and meetings were used to determine current perceived causes, challenges and constraints, common practices and desired outcomes. Perceived causes were overstocking, overgrazing (undefined), small mammal burrowing, and climate change which all have been reported in the literature. Common practice and desired outcomes were recorded.

Determine the presence of positive deviant individuals and groups (Step 2)

Using the inverse piosphere effect as evidence of perennial grassland regeneration, no current positive deviants were found during these trips. Descriptions of outcomes from regenerating behaviors that produce inverse piosphere, high landscape function and perennial grass diversity, were clearly in the memories of older herders and in verbal history of younger herders. These memories provided evidence of previous positive deviants.

Discover uncommon but successful behaviours and strategies through inquiry and observation (Step 3)

During the search for positive deviant individual and groups older herder leaders described previous successful behaviors and strategies. These were shifting more frequently (pre small trucks) not using the same area on the summer ground. These conditions were discussed in detail as this previous management developed strong race horses whereas currently race horses need to be fed for performance. Further, winter ground management will be investigated during the next trip planned for 2016.

Design activities to allow community members to practice the discovered behaviours (Step 4)

Discussion on the impact of fires, climate change, small mammal burrowing, overstocking and overgrazing led by one herder group came to the conclusion that, with modern motor transport the same area was used each year for a summer camp. This meant that the same grazing patterns were in place for long periods each summer and were the same year after year. The group decided to trial using different areas of the summer ground each year and to attempt to ensure that grazing patterns were frequently

changed, in an attempt to mimic previous practices. Stipa practice is to trial in small enclosures but the Herders, unprompted, suggested a much larger trial.

Monitor and evaluate the resulting project and encourage further change (Step 5)

Estimated Ecological Site Description (Herrick *et al.*, 2005) was used for baseline monitoring and Landscape Function Analysis (Tongway *et al.*, 2004) was used to identify the causes of grassland degradation.

This project can be described as social research supported by rangeland science and monitoring.

After one herder meeting a group of herders changed their practice of using the same summer place. "This summer his family and some herders didn't come to close soum center. They are sitting 3 km far from last summer place" (D. Ariungerel, *pers. commun.*)

Conclusions

This study indicated that through positive deviance approach provides simple and quick measures from within current common practice for checking grassland degradation. The herders were able to identify which previous practices regenerated and maintained perennial grasslands and because these practices were identified by the herders themselves, resistance to adoption appeared to be low. Future research prospects include studying winter ground grazing practices and the transfer of this technique to other herder groups.

Acknowledgements

I express my deepest appreciation to Ariungerel Dorjgotov, Annabel Walsh and R D B (Wal) Whalley who provided valuable professional support and guidance during this study. Part of the funding for Graeme Hand's travel was provided by a travel grant from the Australian Rangeland Society.

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