The Landscape as a Unit for Rangeland Inventory in Arid and Semi-Arid Regions of Iran (Case Studies: Touran Biosphere Reserve and Behkadaye Rajinia Development Project)

Mansour Mesdaghi
Ferdowsi Mashad University, Iran

Follow this and additional works at: https://uknowledge.uky.edu/igc

Part of the Plant Sciences Commons, and the Soil Science Commons

This document is available at https://uknowledge.uky.edu/igc/23/3-6-1/10

The 23rd International Grassland Congress (Sustainable use of Grassland Resources for Forage Production, Biodiversity and Environmental Protection) took place in New Delhi, India from November 20 through November 24, 2015.


Published by Range Management Society of India

This Event is brought to you for free and open access by the Plant and Soil Sciences at UKnowledge. It has been accepted for inclusion in International Grassland Congress Proceedings by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.
The landscape as a unit for rangeland inventory in arid and semi-arid regions of Iran (Case studies: Touran Biosphere Reserve and Behkadaye Rajinia Development Project)

Mansour Mesdaghi*
Ferdowsi University of Mashhad, Mashhad, Iran
*Corresponding author e-mail: mesdagh@yahoo.com

Keywords: Cultural ecology, Dry land farming, Landscape, Land suitability, Rangeland

Introduction
Severe land fragmentation, degradation, and pollution problems will force us to think about a rural community and research group in Iran to combine our experiences and skills to deal with the challenges of improving land use sustainability (Bosch at el.1995; Mesdaghi, 1993). Planning rangeland inventory requiring recognition of the ecological processes operating at different scales and their particular characteristics (Friedel and Laycock, 1995).

In ancient countries like Persia (Iran), past land use suggests that rangelands exploitation by local herders was co-adapted with natural environments (Nyerges, 1980; Mesdaghi, 1993). Iranian rangelands, however, were nationalized through the land reforming and the modernization of rural communities, so private range properties were rejected. But, government failed to properly manage the rangelands. Local people tried to make properties inside nationalized rangelands, and the rangelands were converted to dry lands (Mesdaghi, 1993). The results of these interventions were the heterogeneity of landscape and both rangelands and dry lands were interwoven in nested complex systems. Therefore, rangeland inventory as an isolated activity is almost meaningless. Meanwhile, current landscape planning involves contributions from many different social organizations often with different interests and with different desired outcomes (Mesdaghi, 1995).

In this research two study areas of arid and semi-arid regions were selected which have been studied intensively before and after land reforming ( in 1974 under FAO Aid Development Projects) and Joint French and Iranian Project for Lepers (FAO, 1971, Spooner and Horne, 1980).

Materials and Methods
A definition of landscape based on traditional pastoral practices reveals the importance of cultural and ecological perspectives of past land use (Spooner and Horne,1980). I have proposed an integrated model includes various levels of management, the need of social organizations, potential rangeland classes, and agro-ecological-based dry land farming. Case studies were selected from two locations of arid rangelands (Touran Biosphere Reserve, in Samnan Province, 1970’s) and semi-arid rangelands (BehkadeyRaji, North Khorasan Province, 1975-1980). In each study area, the following steps of range inventories were planned: Step1. Documents of range properties were provided from Forest and Range Organization and the Bureau of Property and Documents Registrations. A map of rangelands before land reforming in 1965 was provided through old layouts and compared with new maps of recent range use. Step2. Gathering data by interviewing local people on land use in past and present. Step3. Different organization land users were considered in planning landscape as a management unit. Step4. An integrated model includes various levels of management, the needs of social organizations, potential rangeland classes, and agro-ecological-based dry lands farming was proposed with references to the case studies.

Results and Discussion
By comparing the past and present land use, integrated models were prepared based on four scales of 1:20,000, 1:25,000, 1:50,000, and 1:100,000 (Table 1). An integrated model of 1:50,000 scale will be provided which shows the features of land use in past and present (Figure 1).

The following items will be considered in new model:
1. Transferring nationalized rangelands to herder based on a logic long-term rental criteria,
2. Combining fragmented cultivated crop lands to cooperative sharing systems,
3. Developing and sharing the knowledge of different beneficial groups
4. To improve our knowledge for development a comprehensive rangeland inventory by recommendations of land use specialists of other countries. Historical aspect of range inventory and monitoring is presented in Table 2.
**Figure 1** Integrated model of land use based on ecological passed land use and modern designs of landscape as unit for planning.

Table 1. Level and scale of rangeland planning in Iran.

<table>
<thead>
<tr>
<th>Kind of plan</th>
<th>Planning Unite</th>
<th>Scale</th>
<th>Area (Ha.)</th>
<th>Vegetation level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive</td>
<td>Marteh</td>
<td>1:100,000</td>
<td>&gt;100,000</td>
<td>vegetation type</td>
</tr>
<tr>
<td>Semi-detailed</td>
<td>Charagah</td>
<td>1:50,000</td>
<td>&gt;5,000</td>
<td>community type</td>
</tr>
<tr>
<td>detailed</td>
<td>Yourt</td>
<td>1:25,000</td>
<td>&lt;5,000</td>
<td>community type</td>
</tr>
<tr>
<td>detailed</td>
<td>Deh-Dashet</td>
<td>1:20,000</td>
<td>&lt;2000</td>
<td>degraded veg.</td>
</tr>
<tr>
<td>detailed</td>
<td>National Park &amp; protected areas</td>
<td>1:20,000</td>
<td>variable</td>
<td>Climax veg.</td>
</tr>
</tbody>
</table>

Table 2. Historical aspects of rangeland inventory and monitoring in Iran.

<table>
<thead>
<tr>
<th>Method</th>
<th>Presented (person/org.)</th>
<th>Objective</th>
<th>Executive organization</th>
<th>Scope (scale)</th>
<th>Qual./Quan.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range grading</td>
<td>UNDP (1950)</td>
<td>Determination of condition and capacity</td>
<td>Range and Fodder org.</td>
<td>Private Saman (1:20,000)</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Adjusted range grading</td>
<td>Technical Range Bureau</td>
<td>condition and capacity (rainfall based)</td>
<td>Forest and range dept. (provinces)</td>
<td>Small range plans (1:25,000)</td>
<td>Qualitative</td>
</tr>
<tr>
<td>6-Factor method</td>
<td>FAO, 1971 (D.L. Goodwin)</td>
<td>Range condition classification</td>
<td>FAO</td>
<td>Small range plans 1:50,000</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Climax method</td>
<td>adapted from Dyksterhuis (1949)</td>
<td>Range condition classification</td>
<td>Technical Range Bureau</td>
<td>Small range plans 1:50,000</td>
<td>Quantitative/ qualitative</td>
</tr>
<tr>
<td>Satellite classification</td>
<td>FMC (USA)</td>
<td>Estimation range production</td>
<td>Ministry of Natural Resources</td>
<td>National level (1:1,000,000)</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Inventory planning</td>
<td>Mesdaghi (1993, 1995)</td>
<td>Range Use planning</td>
<td>?</td>
<td>National level (1:1,000,000)</td>
<td>Quantitative/ qualitative</td>
</tr>
<tr>
<td>Landscape function analysis</td>
<td>Tongway and Hindley (2005)</td>
<td>Sustainable Range use</td>
<td>CSIRO (Australia)</td>
<td>Small scale range management plans (up to 1:50,000)</td>
<td>Quantitative/ qualitative</td>
</tr>
</tbody>
</table>
Conclusion
Our monitoring the past land use suggests that the use of rangelands by local herders was co-adapted with natural environments. We have proposed an integrated model includes various levels of management, needs of social organizations, potential rangeland classes, and agro-ecological-based dry land farming. The main advantage of planning based on landscape unit is that by considering ecological aspects of past use and present features and land use, integrated models can be provided based on land suitability. Combining the benefits of different rural groups is the most important parts of decision making.

References


Mesdaghi, M. 1993 Rangeland management in Iran. Razavi Cultural Fundation, Mashhad, Iran (in Persian).


