Spatio-temporal scales of animal grazing in herding systems

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Introduction A holistic approach is needed for natural resources management and this demands understanding of the role of all the components in a system. Animal grazing is one of the most important processes in rangeland ecosystems. In rangeland utilisation in Iran, the human herder is crucial in achieving sound management. This study focused on the role of the human as a grazier (herder).

Materials and methods The study was focused on pastoralism culture in the eastern Alborz, in the north of Iran. This was considered as an anthropologically unknown region. Transhumant groups utilise the rangeland ecosystems of this region. The pastoralism culture and pastoralists' knowledge that is associated with grazing processes was investigated through participatory research during a one-year cycle. Informants were selected carefully and the data were collected through in-depth interviews with them and the researcher occasionally role playing as an amateur shepherd. The data were analysed by concept mapping (Daly, 2004). This paper is based on a part of the research findings.

Results The findings show four spatial and temporal levels: pasture, paddock, foraging site and foraging station. Human decisions affect the size and number of spatial units and grazing duration in the first, second and the third levels. The pasture (*charagah* in Persian) is an area allocated to feed a flock during a part of the year. Each stockholder owns two to four pastures in upland or lowland ranges. In some cases, pastures are held in common. Both singular and joint owners must consider governmental acts and professional limitation to end the grazing season in particular pastures. The paddock (*roogah* in Persian) can be considered as a given part of a pasture. It may be allocated to graze animals for one to several days. In summer pastures, a flock may be divided into two or three goups and a good paddock must be allocated to lambs. Herders' knowledge and experiences may lead to rotational grazing (i.e. paddock by paddock) of a pasture. Foraging site (*towgah* in Persian) is a part of the paddock (for example, a distinct slope) that is considered as an area to graze a flock for a few minutes to a few hours. The shepherds were familiar with the extent of these sites and their characteristics, according to their habits, interests and experiences. For example, some shepherds are able to monitor and mnage a large flock, so they locate a large area as a foraging site for such a flock. Foraging station (*kalafgah* in Persian) refers to a small area at which the grazing animal stops and defoliates desirable plants. The grazing time at a foraging station depends highly on non-human factors, such as plant and animal characteristics. At this level shepherds may have an indirect influence on grazing duration by increasing flock movement.

Conclusions The results highlight different spatio-temporal grazing scales in herding systems. In these systems, the role of the grazier (herder) is more important than the role of the grazing animal in determining spatial or temporal patterns and scales. The shepherd decides where to graze animals specially at the three major levels. Subsequently the models or explanations that are needed to describe spatial and temporal grazing scales in herding systems are basically different from those which are formulated for non-herding systems in developed countries (e.g., Friedel, 1994; Baily *et al.*, 1996).

Herding systems have evolved through the centuries. These systems are mainly adapted to the local environment and people's culture. Range management theories should be re-thought to consider the role of the human as a grazier and his influence on grazing management. This is particularly important for countries in which herders play an integral role in exploiting range ecosystems.

References

Baily, D.W., J.E. Gross, A. Laca, L R. Rittenhouse, M.B. Coughnour, D.M. Swift & P.H.L. Sims (1996). Mechanisms that result in large herbivore grazing distribution patterns. *Journal of Range Management,* 49, 380-400.

Dally, B. J. (2004). Using concept maps in qualitative research. In: A.J. Canas, J.D. Novak & F.M. Gonzalez (eds.). Concept Maps: Theory, Methodology and Technology. Proceedings First International Conference on Concept Mapping, Pamplona, Spain, //:httpCMC.ihmc.us/papers/cm2004-060.pdf.

Friedel, M.H. (1994). How spatial and temporal scale affect the perception of change in rangelands. *Rangeland Journal,* 16, 16-25.