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AN INVESTIGATION ON HERDER PROPERTIES IN THE MOUNTAINOUS RANGELANDS OF ABDOUL-ABAD, TORBATE JAM

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ABSTRACT

Since the unit management in mountainous grasslands are conventional areas, the existing study reviews and contrasts revision plans and natural condition rolling on conventional areas from breeding stock and vegetation perspective. Finally it introduces suitable applied procedure for planning range by using of provided information. The region which was studied includes five conventional areas that quantity of its beneficiaries is more than 109 people. For determination of boundary in conventional areas and classification of vegetation by using of GIS, the area is divided to 6 plant communities, also canopy cover, production; condition and capacity in this plant community are accounted. The Scale of congestion stock and its proportion to capacity of grassland is determined by using of data which includes the number of stock, their combination and size of herd in each area. The LSD method and analyses variance are used for the purpose of comparison of above criterion. Obtained conclusions of livestock rate and capacity of grassland show that in total areas there is an excess of stock more than its capacity and rangeland enough only for 50 % of existing stock. In general, it is concluded that vegetation condition, production, percentage of canopy cover and space of grassland are declined from high altitude to lowest land, but congestion and pressure of stock are increased so government's management should be concentrated over lowest grassland area by using experienced herder that can exploit with more efficiency from highland rang.

Keywords: *Conventional Area, Mountainous Rangelands, Range Permit, Stocking Density, Livestock Pressure*

INTRODUCTION

After to be nationalizing grassland in 40 decays, some grassland mostly with top quality, were allocated to rural inhabitant of mountainous area for the sake of pasturing livestock. This kind of rangeland due to they are located in highland and specially in condition of Iran that altitude has a big effect on dryness air, rainfall line and quality of rangeland, they are being used as summer quarter mostly for livestock (Mesdaghi, 2010). The village sanctuary grasslands or grazing bound stockers because of ancient exploitation are defined based on conventional area that have own varied legally and possession dimension therefore, the conventional areas is a bound that includes rangeland, jungle and farmland that are alone or in combination of them that conventionally are in occupation of one or a group of people from one or several villages. This bound are mostly recognized by owners of around areas (it is the reason why conventional areas are called herder properties in this article). Barani (2004) in study of revision and analysis of herder properties as management range unit declared that as the farmland is managerial unit which its bound and limit is clear and has certain physical and human source, hence herder properties can be considered as the range managerial units. Exploitation from village range and its precinct in IRAN (Mirza Alian, 2001) is in the form of corporation system, but in a country like America, it is under two kinds of management; first one is private ownership section that belongs to one herder and usually includes:

Rangeland, installations of herder and habitat of herder and the other one is public range that is based on grazing herd permit for some group of herders that they utilize commonly from range (Stoddart and

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smith, 1975). This kind of exploitation is sharply criticized by a lot of researchers like Nebel (1987). With Increase population of herders and livestock, decline level of per capital range, therefore decrease income of herders from one way and being weaker rangeland condition from another way that can lose natural balance between stock, range and beneficiaries (Mesdaghi, 2010). Shepherds in this cases do not have any motivation to retain grass for future consumption and improvement rangeland since the unused grass, may be used by another herder (Htitshmit and Stat, 2009). In mountainous rangeland, because of the lack of adequate amount of grass for grazing, most of the plane and smooth areas are being used extremely. In the rocky lands and where it is so difficult for crossing through herds, usually it is cows are collected in plane and comfort place like bottom of vallies or foothills of mountains, but sheep and goat in comparison with cow can better use slope and impossible areas (Holchek *et al.*, 2009). In general can be concluded in addition to lack of balance between capacity and amount of stock, rangelands is not exploited monotonously in way that some rangelands due to lack of water or mobility of stocks, so much grass specially in mountainous range remains unusable (Mesdaghi, 2010). Badia-Nia (2010) says that in analyzing of challenges and difficulties in management, range common being, and decline level range in related to desirable economic level and converting grassy areas (which are less slope and suitable) to agricultural land is one of the social economic problems rolling on rangelands. In present way of exploitation from range that is in the form of commonly by mentioned reasons it cannot be answered to income source and destruction of range in these areas efficiently. Since management unit in mountainous range is herder properties, present study considers to review and comparison of revision programs and natural setting rolling on graziery and vegetation, at the end introduces desirable applied instruction related to these areas by using of present information.

MATERIAL AND METHODS

General surface of areas and mountainous rangeland orderly with 4230/7 and 7712/4 hectare, in highland is between 1100 to 2600 meter of sea level and in geographical position $35^{\circ} 17' 28''$ to $35^{\circ} 23' 40''$ northern latitude and $60^{\circ} 11' 5''$ to $60^{\circ} 17' 58''$ eastern altitude that have dry and semi-dry zone that is situated in 41 kilometers distance from Torbate jam in Khorasan-Rasavi (figure1).

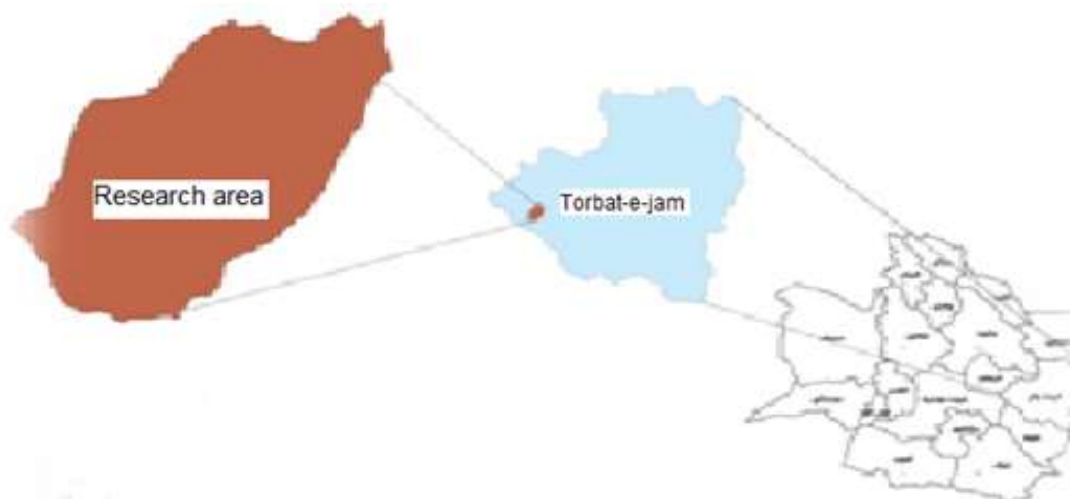


Figure 1: Situation of area which is studied in Khorasan rasave state in Iran

The chosen areas include 5 herder properties that contain some rurals like Zavador, Samsaraye Olia, Samsaraye Sofla, Bidestan and Ghazghave (figure 2). It is necessary to mention that distinguished operation of range is performed in the area on samsaraye olia, zavador, and Ghazghave, but in the Bidestan and samsaraye, olia wasnt performed any distinguished operation. Dry and semidry weather

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areas have yearly rainfall average of 262/7 millimeter, the soil of this zone have xeric moistural and mesic thermal regime that they are details of anti-soil and incepty soil with limy geology organization, moraine and sandstone classification. Sources of water in the zone studied includes seven fountains, six flumes and one well head

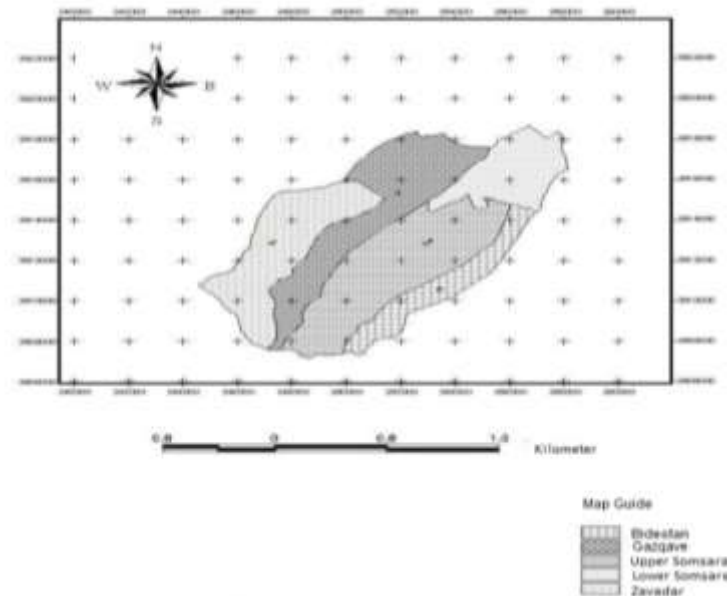


Figure 2: Boundary map of herder properties in the areas which are studied

For the purpose of preparation boundary map for herder properties (conventional areas) for ranchers by using of topography map 1:50000, we should collect local information in related to segregation of boundaries between registered records information and possession plaque boundaries are sketched on topography map in Arc view^{3, 2} Software environment, then should be set down on the some numbers in the map for completion limit areas, in the next step for determination of canopy cover percentage in each vegetation community, ten-twenty meters transects in the form of systematic and ten-one or two square meters are put at random and in the each plot at the length of the transects, herbage combination, leaf mold, stone and gravel, bare soil are picked up and grazable grass is cut and scaled after dryness in each plot, for the estimation of production grass vegetation community which exists in herder properties, duple sampling method is applied (1389, Mesdagi). Determination of condition is performed by four modified factorial method in this examination. Capacity of vegetation community in varies area estimated by calculating production in unit of hectare, grazing term and brigade space in the grazing season. After collection of information, first normal being test is Accomplished by using of anderson-Darling method then one sided variance method (one-way, Anova) is used for comparison of condition percent, canopy cover, production and size of herd in herder properties. Dropped plots were for frequency and in the form of being significance F-Test and minimum meaningful variance (LSD) was implied for comparison above factors- finally the MINITAB (v16) software was applied for the analyzing and explaining statistical data.

RESULTS AND DISCUSSION

Range in area that are under discussion have 4230/7 hectare space with 6 vegetation communities (figure3), that contained 22 families, 63 genders and 92 herbs species. The most important herbals families in these areas which can mention are, Fabaceae, Astraceae, and Poaceae

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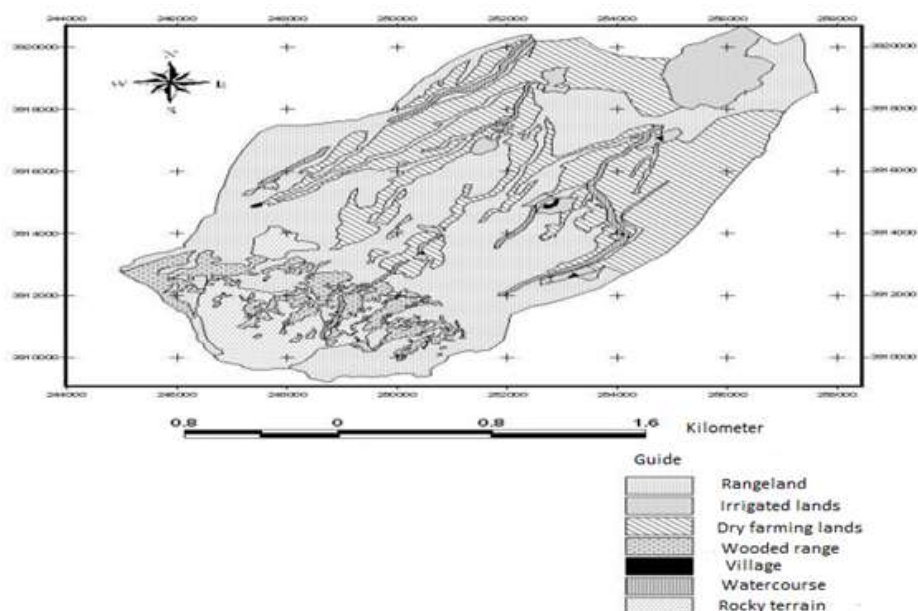


Figure 3: Category of vegetation map in studied areas

Survey of utilization technique from sanctuary range shows that utilization from range has always been in the form of common usage (collective farm) Within the analyzing which is available, herder properties have had legally and regresterial possession in the in each area they are in specified and separately plaque. In according to present information in range permit, term of grazing stock in distinguished area was 60 days that first graze on date to range was 2/15 and first date graze out from range was 4/13 and total grassland was from the kind of summer up country that this time grazing with regard to inhabitance herder is not being performed practically. In traditional grazing system, rangeland in the region at least for 7 months was exposure to direct grazing stock that this term related to number of stock and estimated range capacity is too long. Density related to separation herder properties and space of range is accordance to chart (1).

(Chart 1) Relative density of stock unit in herder properties and range in region

Relative density in range (stock unit in hectare)	Space of range (ha)	Relative density in total area (stock unit in hectare)	Space of herder properties (ha)	Stock unit number	Name of area
1/3	993	0/8	1676/3	1385	Zavadour
0/5	1398/8	0/3	2298	750	Samsaray olia
2/1	437	0/9	1024/2	945	Samsaray sofla
2/7	420	¼	807/2	1150	Bidestan
0/9	982/4	0/4	1907/8	899	Ghaghara
½	4230/7	0/7	7712/4	5128/5	Total region

With regard to chart one there is the most restriction and stock rate in Bidestan and Samsaraye Sofla that management in this area requires more biological plans and increase in output of rangeland. Computing of proportion and range capacity in each herder properties is region in the form of chart (2) Calculating of proportion stock and range capacity in the herder properties on the region.

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Chart (2) proportion stock and range capacity in the herder properties

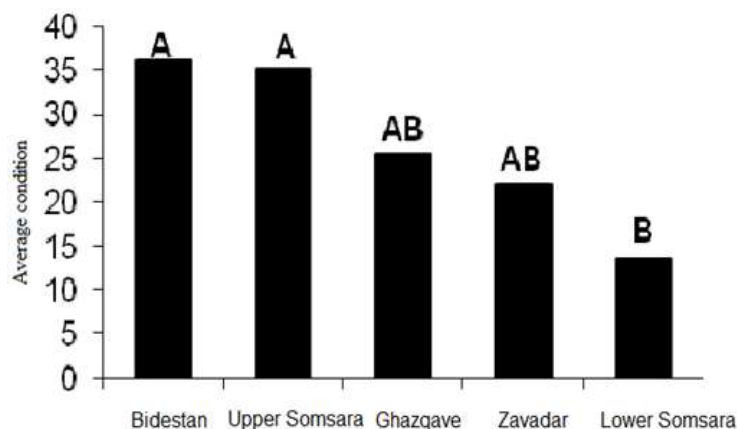
Relative number of existent stock unit to grazing capacity	Number of output stock unit	Number of existent stock unit	Capacity grazing in 100 days term	Total production herbage in range (kg)	Herder properties
5/7	950	115	200	39469	Bidestan
2	451	889	448	88778	Ghazghare
1/1	122	750	628/8	125760	Samsaray olia
4/5	739	945	206	40623	Samsaray sofla
2/8	907	1385	478	94849	Zavador
2/7	3168	5129	1961	389479	Total region

chart (2), this table shows that total areas have had excess of domestic more than range capacity and also Samsaray olia which have the minimum amount of grazing capacity in the grazing length term. In analogy percentage of canopy cover, exploitable production and size of herd in areas on region by pay attention to meaningful level of F-test in 95 percentage of confidence line there was not any significant differences between properties ($P>0/05$) (Chart 3).

(Chart 3) Amount and significancy of (F) in one-way analysis variance for amount of production, canopy cover, percentage, condition and quantity of stock in each properties ($\alpha=5\%$).

Amount of P	Samsaray sofla	Ghazghare	Bidestan	Samsaray olia	Salvador	Sources of changes
0/547	84	78	91/17	109/14	95/82	Production
0/290	20	32/5	41/6	42/8	32/7	Canopy cover percentage
0/30	13/5	25	36	35	22	Condition
0/66	475	450	560	750	600	Size of herd

The meaningful difference between properties in regard to vegetation condition is observed in against of comparison with average of vegetation condition in each herder properties with regard to level of Financial-test significance 95% ($P<0.03$), which presented in shape 4.



Average diagram of vegetation condition in herder properties.

Figure 4: Average of condition in LSD method that shown by letters.

The above diagram obviously shows that rangeland properties in the Samsaraye-sofla have the least degree of range condition although it has not meaningful differences with rangeland of Zavador and

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Ghazghave properties, and rangeland of properties in Bidestan and Samsaraye olia in comparison with other properties have the best condition degree in their range.

Conclusion

The observation shows that, there is Sagebrush (a kind of wild plant), in total species dominant vegetation. In this relation Mesdaghi (2010) has known *Artemisia Siberia* in title of one of the important and index plants in steppe region also he remarked that in northeast segment of steppe region namely Sarakhs and Torbat-Jam plain, it is Sagebrush that is dominant species that with increase altitude, gradually decrease this kind of species and accompanied by Camels-thorn (Local name= Gavan) and *Ferula* (Local name=koma). Azarnivand and *et al.*, (2005). The conclusions which are attained from accumulation stock in range of herder properties pointed that some areas that have the least surface of range territory have the most scale of accumulation stock in each hectare. Vanpolen and *et al.*, (1981) in their studies came to the conclusion that effect of density (accumulation) stock in the range of dry and semi-dry region is more important than form of grazing in that areas. Accession to intensity desirable grazing is one of the principal issues that should be contemplated in management, on the other hand, time bound, abundance and choice of herbage by stock, play important role in management of grazing. In this study about vegetation condition in properties area can find the area in which are lowland or low layer of regions was studied with very poor degree condition they have meaningful difference with the other areas that the cause of this difference can be shortage of grassy land (Converting grassy land to agriculture homebred land), gathering stock in lowland and proximity to watering place for stock. Gilen and *et al.*, (1998), Shokri and *et al.*, (2007) in their explorations have achieved to the same conclusion in this field also it was cleared that between canopy cover percentage, exploitable production and herd rate there is not any meaningful difference between properties that have been distinguished range with undistinguished range properties ($P > 0.05$) which can be referred to range capacity, smallness unit exploitation and overused grazing as the causes of this problems. Available conclusions is agree with major of studies which is performed in this relation (Azarnivand and Mosavinia (2001), Sardari (2006), Arzani and *et al.*, (2007) and Sardary (2006) declared that lack of difference in distinguished range in the both plotted and unplotted condition is due to large quantity of livestock and lack of principally and properly management also he claimed; with choice of suitable measurement methods of effective factors in the range capacity, increasing accuracy in selecting grazing systems and modification methods which are positive paces in related to modification defects that have got to be done, afterward has emphasized on supervision on performance of them correctly. Thanks to attainable information in exploitable production field, percentage of canopy cover, see stocked legs (numbers of stock), range capacity and size of grassland units in herder properties. It was clear that corporation farming cannot removes destruction problems related to country and sanctuary of villages in this region. Bajian (1995) related to this topic have reached to the same result and concentration of technical office range has been on the lack of utilize from common usage form in mountainous range and its sanctum, in addition he estimates it is false way in the management of range (Badia-Nia, 2010). Bon (2001) believes that take care of suitable size of herd and per capital portion of herder from range are the cause of stability of capacity between alignment security and conservation of resources. Exploiters utilize from range by at least 45 small stock leg (Number of stock in unit space) and exploiting average of 52/3 hectare for each person who uses from range land. this result in comparison with some studies which is on progress in this field (Arzani and *et al.*, 2007) have rather less average Arzani and *et al.*, (2007) in own studies referred to the minimum space which is required to administration of a 100-head herbs in the one-5 to 6 monthly periods is about 200 hectare that in winter quarters is estimated about 600 hectare. In this cases can find that this quantity of head herd and range space cannot be enough income for inhabitant in herder properties, on the other hand, lack of having suitable agriculture land between families in this region, may be face them more series problems, therefore whenever management of land in the form of integrity be defined based on herder properties which any kind of graziery, industry, agriculture and Activities are being managed in the form of herder properties; executive organization can have comprehensive and more principle program in relation to resolving problems in such region

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