



RECOGNIZING THE POTENTIAL OF SUSTAINABLE USE OF PASTURE RESOURCES IN SOUTH KHORASAN PROVINCE WITH APPROCH OF CARRYING CAPACITY

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ABSTRACT

South Khorasan province in connection with the carrying capacity of pastures studies as well as for the forests of the province except the ranch ability to harvest timber does not exist and according to local conditions and drought conditions should protect forests made way support work for it to be applied. Despite the limitations and problems specific to the province, the province is desert country, has a lot of potential value that is specific ecological conditions of the region. Because of this special situation and Mykrvaqlym that the general climate is desert province, valuable forest habitats of many species Iran, Turan are eligible, this change reflects the diversity of plant species and in terms of productivity and drug use, this diversity is one of the significant features of the province. So far in South Khorasan province for the 1732714 hectares of rangeland products is conducted in 27 regional habitats. The amount of usable area of 16163 hectares has been detected. As the number of products of rangeland habitats and the habitats of the 27th district of rangeland products to 1,732,714 hectares against 161,630 hectares of rangeland and usable products and the product is estimated at 262,606 kg. From the areas of natural resources such as pasture, province with an area of 7920042 hectares of a total of 652 tons of harvested forage is available.

1. INTRODUCTION

Rangelands cover an area of 54.8% of the country's total land area. These lands are subject to severe degradation for a variety of reasons, including mismatches of harvesting capacity [1]. Due to the importance of proper utilization and utilization and the capacity of the environmental resources, resource analysis in terms of environmental sustainability is essential. The breadth of capacity is an indicator that places the landlord planners at a reasonable level to accept the extra charge generated by the exploitation. Estimating the capacity of the board is basically a relative concept and approach and is a function of acceptable thresholds on the one hand and the proportionality of the land to one or a set of uses on the one hand [2].

In the process of environmental management development, the concept of the breadth of capacity was first understood by biological and bio-physical concepts, so that the discussion of the breadth of resources was mainly used in the management of pastures and pastures and in order to estimate the ecological capacity of the pastures. This concept in the forestry sector is equivalent to the acceptable level of production (wood harvesting) per cubic meter per hectare per year, and in the case of aquaculture equivalent to the acceptable level of harvesting from a catch in a predetermined volume per year in a way that allows the replacement of caught in the year. Then there is defined [3].

2. PERMITTED UTILIZATION RATE (CARRING CAPACITY) OF RANGELANDS AND FORESTS OF THE PROVINCE

Rangelands of different climate zones have a variety of plant varieties and plant species are not the same in terms of nutritional value. On the other hand, the daily needs of different species vary with respect to the difference in live weight and their energy requirements. Therefore, it is necessary to calculate the amount of forage required by herbivores based on food needs of different species and the quality of forage available to the animal [4]. Determining the daily metabolic energy of a livestock unit using pasture and estimating the average metabolic energy of one kilogram of dry forage, the amount of forage required per livestock unit can be determined and based on this, the determination of the rangelands [5].

The concept of livestock unit has been developed to express the different

types and ages of the livestock and to compare them and convert them into a single form and it is determined based on live weight of prey animals in each region [6]. Since grazing capacity of rangelands is often expressed as a livestock unit per day or livestock unit per hectare, it is therefore necessary to determine the clear size of livestock unit [7]. In our country, which is the predominant livestock trap of the sheep's pasture, the capacity of sheep is expressed on the basis of sheep's unit, which is equivalent to a non-livestock, indicating the nutritional requirement of a sheep holding 48.73 kg. The metabolic energy for keeping ruminant's changes with age, body weight or body size, food quality, access to forage, land and climate change [8]. The energy required for keeping livestock on rangelands is between 30% and 80% higher than that of livestock fed in closed environments, depending on the grazing forage, the weather conditions, and the level and height of the area [9]. According to food needs studies, livestock trapped in pastures is 60 to 70 percent more likely to be kept in closed environments [10]. This extra energy will be spent on marching forage, reaching the water, salt, shade and climbing slopes. The required metabolic energy in terms of live weight under free grazing conditions is calculated according to the Maf equation: [11]

$W = \text{Livestock weight (Kg)}$

$ME_m = 1.8 + 0.1 \times W$

ME_m (Metabolism Energy Maintenance) = Daily metabolic energy requirements of livestock in storage conditions (meg / day)

In Iran, as the dominant herd of sheep, in order to determine the size of a livestock unit, the average weight of live mice (40 kg) is considered as the unit size of livestock.

Taking into account the weight of each unit of a livestock unit of 40 kg, each head of the ram and the ewe and the whole and the goats was equal to 1.5 livestock units and each lobster was 0.75 livestock units. Daily intake of livestock in natural rangelands (in terms of dry matter per kilogram) is two percent of the body weight of the livestock. However, it should be noted that these two percent of the body weight of the livestock in the rangeland, with the quality of forage, with what heights, and ... [12]. Due to the fact that the whole and the goats and rams in the mountainous areas are interspersed and the forage quality of these areas is not comparable to wetlands rangelands, the digestibility and the amount of energy they contain are different from those with high quality wetlands. Therefore, the

application of these two percent does not seem logical in all rangelands and for all conditions. However, if this is the case for the region:

(Kilogram dry matter per day) daily requirement of livestock units= $40 \times 0.02 = 0.8$

This amount seems to be very low due to the continuous movement in mountain slopes. If the coefficient 2 is applied according to the region conditions, the amount of requirement is 1-26 kg dry matter per day, which is almost accepted [13]. It should be noted that the nutritional requirements of a livestock unit in the measurement of rangeland capacity in our country's current conditions are equivalent to 2 to 1.5 pounds of dry fodder per day. In the estimation of the capacity of the ward, two points are important. Firstly, the capacity of the rangelands, even if it is determined for a period of moderate precipitation with a minimalistic view, has been drastically reduced by the droughts in recent years. The second point, considering the forage production for wild vegetarians in the area, also stipulates that at least half of the production capacity specified for supplying wildlife to the forage in the area should be discarded as a reserve capacity [14].

The trophic carrying capacity can be calculated as follows [15]:

carrying capacity (livestock unit) = Available forage for feeding (kg) divided by (daily consumption of a livestock unit (2 kg) multiplied by 365 days)

Table1: Estimation of Forage Production in Rangeland Areas of the Province

Province			Type of habitat
Estimated forage production (thousand tons)	Total Area (Ha)	Production per hectare (Kilograms)	
1.5	6279	239	Dense pasture
91.92	642818	143	Semi Dense pasture
326.5	5727702	57	Low-density pasture
419.8	6376799	Total	

The source :Natural Resources and Forestry Organization of South Khorasan Province, 2016

Table2: Estimation of forage production in the forest and desert areas of the province

Province			Type of habitat
Estimated forage production (thousand tons)	Total Area (ha)	Production per hectare (Kilograms)	
29.2	122318	239	Forest planting hands
115.7	809294	143	Wild dense forest and shrubs
0.45	3112	143	Semi-dense forest
87	608519	143	Thin Forest
232.35	1543243	Total	

The source :Natural Resources and Forestry Organization of South Khorasan Province, 2016

As the main products of forests and rangelands are wood and forage, along with these products, a group of products includes components and parts of some forest and rangeland plants which are classified as forest and rangelands (non-food products) And those products or products other than the production of wood and forage, including: gums, mannes, galls (sub products from plants), roots, tubers, bulbs, airways, Leaves, flowers, fruits and seeds (main members of the plant) that have medicinal, oral and

industrial properties [16].

3. CAPACITY TO ESTIMATE PASTURES IN PROTECTED AREAS OF THE PROVINCE

3.1 Estimation of rangeland production in the protected area of Naibandan

In the habitats of Jebir distribution, according to annual production and taking into account the daily consumption of one livestock unit in the amount of 2 kg of dry forage per day, and every 75 kg of livestock, the Naibandan Wildlife Refuge in the present condition has a maximum gravity of 19173 Ross Jabir and this is in a situation where any domestic animal is prevented from entering. In total and goat distribution habitats, according to the annual production and taking into account the daily intake of a livestock unit of 2 kg per day, as well as each whole and goat, an average of 1.5 livestock units, a wildlife refuge under the conditions the present is responsible for up to 2,827 head and goats and this is subject to the prevention of the entry of any livestock to its habitats.

In sheep and goat breeding habitats, according to annual production and taking into account the daily consumption of one livestock unit in the amount of 2 kg of dry forage per day, as well as each ram and ewe, an average of 1.50 livestock units, a wildlife refuge under the conditions the answer is 3944 rams and ewes, and this is conditioned by preventing any livestock from entering any of its habitats.

3.2 Estimation of rangeland production in Shaskouh protected area

The area of pasture lands in the study area is 44946.87 hectares. About 4547 hectares of semi-contiguous mountain ranges and 40,400 hectares are also composed of low-density and poor pastures. In fact, a wide range of rangelands of the region produce 25 kg per hectare under the usual conditions of 1,000 tons of crop.

Traditionally, livestock training in Shaskouh area is often used in the autumn and winter. In this regard, according to the latest information obtained from the Natural Resources and Watershed Management Office of South Khorasan Province, Shaskouh protected area is within the thirteen rangeland systems. The most important of these rangeland areas are according to the classification of the sfadan ranges, Garmab and Tigab ranges, fandokht pastures, esfad and intertidal pastures, spatial and intertidal meadows, and also abiz grasslands. These rangelands and utilization of these rangeland systems in terms of overlapping with safe habitat areas and Shaskouh mountainous areas have the most negative effects and off-season grazing conflicts in the region. According to the acquired data in the study area and the neighboring areas of Shaskouh protected area, which is a total of 182 thousand hectares, now 1378 licenses have been issued. In this regard, there are 176,000 units of livestock with more than 66,000 of these surplus capacity, causing unconventional pressure on the rangelands of the region. It should be noted that the time of arrival and departure of the livestock is usually mid-November to mid-March, which is not completely observed, and the livestock breeders outside the grazing season, as well as the early grazing of the pastures of the region, are approaching the retreat. In this regard, the information of rangeland systems located in Shaskouh protected area is described in Table (3). It should be noted that due to the wide range of conventional systems, about 40% of the pastures are related to the protected area of Shaskouh.

Table3: Information about rangeland systems in Shaskouh protected area

Season of exploitation		Family License	Allowed livestock	livestock available	The family	Total pasture area (ha)	Pasture name	row
exit	int ry							
12.15	8.15	142	8900	8900	142	17981.25	Mahdiabad	1
12.15	8.15	67	12592	14305	67	20987	Farrokhi	2
5.30	3.30	307	16708	25035	307	242115	Garmab tigab	3
10.30	8.30							
12.15	8.15	33	6077	9535	33	868475	Dochahi	4
12.30	8.20	118	6062	8105	118	10275	Sinider	5
11.30	7.1	452	17872	29101	452	63112.5	Esfadan	6
12.30	8.20	80	8592	10984	112	101433	Stand	7

12.1 5	8.1 5	50	1097 0	2557 6	244	1120 4	Fandok ht	8
12.3 0	9.2 0	41	7520	9172	80	7721	Esfad	9
12.3 0	8.2 0	28	5870	9748	125	1397 6	Abiz	1 0
12.3 0	8.2 0	10	2292	3446	63	6548	Hajiaba d zirhou h	1 1
12.3 0	8.2 0	21	3533	7818	102	8215 62	Bashira n	1 2
12.3 0	8.2 0	29	3480	4721	58	6000	Kariza n	1 3
-	-	137 8	1104 68	1764 46	200 3	1820 60	Total	

The source: Natural Resources and Forestry Organization of South Khorasan Province, 2016

3.3 Estimated Mozafari rangeland production

The area of this area in the study area is 40587/01 ha and equal to 75% of the covered areas and 49% of the total area of protected area of Mozafari. The vegetation of the region in the present situation is often covered with low density and poor pasture. A wide range of rangelands of the region produce 25 kg per hectare under the usual conditions of 1,000 tons of crop. But in the present situation, despite the destruction of a large part of the region's rangelands and the persistence of droughts, the amount of pasture production is much less than these levels. Livestock training in the Mozaffari area is often used in all seasons. In this regard, based on the latest information obtained from the Natural Resources and Watershed Management Office of South Khorasan Province, the protected area of Mozafari is within the range of five rangeland systems. These pasture areas are classified according to the classification of Haji Mirak, Northern Miantang, golpakhan and Chah pakan ranges, hozpatoo and Rig Bashrooyeh ranges. In these rangeland systems, operators in the region have the most negative effects and off-season grazing conflicts in terms of overlapping with Mozafari safe areas. The acquisition of acquired data in the study area and neighboring protected area of Mozafar, a total of 277,000 hectares, currently has 532 licenses issued. In this regard, the existence of 105,000 units of livestock, of which more than 11,000 of these are surplus capacity, entail unconventional pressure on the rangelands of the region.

It should be noted that the time of arrival and departure of livestock is usually mid-November to mid-March, which is not completely observed, and the livestock breeders outside the grazing season as well as the early grazing of the pastures of the region are approaching the retreat. The rangeland harvesting time situation, even in accordance with the exploitation license, reflects the fact that, for example, in the customary Haji Mirak system, which is often plain, from 1 May to 5 December for 10 months the area affected by grazing livestock contract. It is also free throughout the year, except in March and September, in the grazing area of livestock. In this regard, the information of the customary rangeland systems in the protected area of Mozafari is described in Table (4).

Table4: Information about rangeland systems located in Protected area of Mozafari

Season of exploitation		Family License	Allowed livestock	livestock available	The family	Total pasture area (ha)	Pasture name	row
exit	Intry							
25 may	20 april	147	19534	19534	147	39683	Northern Miantang	1
22 august	20 april	126	13075	13075	126	69749	Golpakhan chahpakhan	2
19 march	20 december	0	12955	12955	77	40665	hozpatoo	3
19 march	22 september	122	24166	33328	122	81481	rigboshruoye	4
25 december	20 april	137	26810	26810	137	45926	Hajimirak	5
-	-	532	96540	105702	609	277504	Total	

The source: Natural Resources and Forestry Organization of South Khorasan Province, 2016

Finally, it is again pointed out that the plan for discussing the capability of the ward in the land preparation project is the first step towards quantitative development and exploitation of resources, which requires the necessary scientific and research support in the form of a project Related ones.

4. CONCLUSION

Due to the fact that the climate of South Khorasan is desert, desert plants have their own characteristics in terms of tolerance of these hardy conditions and have several properties which, by recognizing and using these properties, are also the most important sources of income in the natural arenas. Basically, the continuity and continuation of production requires the proper, principled and optimal utilization of renewable natural resources. In the present situation, despite the destruction of a large part of the area and the persistence of droughts, the amount of rangeland production is estimated to be less than in the past. In fact, a wide range of rangelands of the region produce 25 kg per hectare under the usual conditions of 1,000 tons of crop. Mountain ranges in the region can produce about 650 tons of forage under normal conditions with less than 150 kg production. According to the tables, the natural resource areas, including forests and deserts, which are exploited, are allowed in normal conditions with a production capacity equal to about 652 thousand tons of dry fodder that can be exploited or 362 thousand tons of TDN.

The amount of forage production will meet the nutritional needs of the livestock population of about 1.36 million livestock units for 10 months from the year, and about 1.69 million livestock units are available on the capacity of pastures in the province. Therefore, at the level of natural resources in South Khorasan province, forage production in rangeland areas with an area of 6376799 hectares is equal to 4,419 thousand tons, and in non-rangeland areas, including forest land and desert (exploited) with an area of 1543243 hectares, equal to 232.3 thousand Tons and a total of 652 thousand tons of fodder can be harvested.

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