

# Investigation of Factors Affecting the Early Spring Migration of nomads in Fars Province

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**ABSTRACT:** Iran is located in an area where geographically and topographically most of its land cannot be planted. Because of the high difference in altitude between plain lands and mountainous regions and also climate diversity, the nomads can use various areas with regular motivations according to the seasonal necessities. One of the most important reasons in attracting attention for the migration time and the livestock entering date to summer and winter pastures, is the amount of the off-season grazing effects on rangelands. One of the destructive factors of vegetation especially in the summer pastures is early grazing, which causes the carbonate hydrate reserves of rangeland plants (especially grasses and annual and perennial forbs) to be declined sharply and damaged the plants. In this research, we have tried to identify the main factors affecting on early spring migration (winter to summer pastures) and measure their relative importance (priority). In terms of importance degree (more to less), respectively the number of wanderer livestock holders, lack of forage in the winter pastures, common (cohabitating) using of summer pastures, lack of drinking water in the winter pastures, the absence of nomadic roads and spring-autumn rangelands, the lack of security of nomadic roads, the presence of *Stipa capensis* species, temperature increasing, drought, livestock carriage by car and the presence of Sisboon insect (*Oestrus ovis*) can be mentioned.

**Keywords:** Summer pastures, Winter pasture, Nomad, Rangelands vegetation degradation

## INTRODUCTION

In the Iran, many civilizations have been developed since many times ago, which livestock holding was one of their most important economic foundations. In fact, the country of Iran is located in a region where geographically and topographically most of its land cannot be planted. Because of the high altitude difference between plain lands and mountainous regions as well as climate diversity, the nomads can use different areas with regular motivations according to the seasonal necessities (Nick Kholgh, 1995). Historical evidences declare that nomadic life in Iran has an old history, as the recent archeology explorations in south west of Iran suggest that the nomadic life in this region could have been formed around 8000 years ago. The basic economic activity and livelihood of nomads are based on livestock breeding, and the sustainability of traditional livestock farming does require constant migration. In general, it can be stated that livestock, rangelands and migration provide the three main pillars in the survival of nomadic human's life (Moshiri, 1993).

Although the migration time directly is related to the weather cooling and warming, but it's not possible to take a particular day or week, because the seasonal weather changes depends on the climate. The warmth and coldness may be premature or late. It is possible to accurately calculate the time of the migration based on month, but the day and week is variable (Tayebi, 1995). One of the most important reasons in attracting attention for the migration time and the livestock entering date to summer and winter pastures, is the amount of the off-season grazing effects on rangelands. In this order, one of the destructive factors of vegetation especially in the summer pastures is early grazing, which causes the carbonate hydrate reserves of rangeland plants (especially grasses and annual and

perennial forbs) to be declined sharply and damaged the plants. Therefore, if it is let for plants to grow in the early spring, the leaves will increase and can raise the amount of produced carbon hydrate. These cases have also are in winter pastures with relative lower sensitivity (Mesdaghi, 2003).

Rangelands are one of the most important sources in traditional ranching that play an important role in the sustainability of natural resources due to their reinforcing factors. But in most developing countries, due to the population increment, the lack of awareness of villagers and exploiters from natural resources and lack of basic planning, in result the level of natural resources especially rangelands have been decreased sharply. In the Iran, the adoption of government-imposed policies and also the elimination of political and local nomadic management have resulted that the nomadic production to be heavily influenced by market conditions. This causes that they change self-livelihood system towards a new situation, which the most important characteristics is the transformation of the multi-product system into the single production system (red meat). These factors were caused that strategies for managing of grazing and nutrition, as well as the management of herds and migration and finally, range management in the nomadic livestock system to be changed entirely and enters additional pressure on rangelands (Emadi, Aghaalinejad, 1999).

One of the important issues in sustainable development is the sustainability of the agriculture and livestock husbandry sector, so that sustainable development is often intertwined with sustainable agriculture and livestock husbandry (Yunlong, Smit, 1994). The concept of sustainability has different economic, social, and environmental dimensions, so that the system is counted a sustainable in which the three dimensions are observed (Rezai-Moghadam, Karami, 2008). Therefore, in order to ensure sustainable exploitation of pasture and rancher occupation rely on rangelands, it should be noted that problems and barriers factors be identified. To provide suitable management for the conservation of rangeland, range management and livestock. That's why this research has been done.

### **Material and methods**

In line with general objectives of the research, the used research method, the study area, data collection, information gathering tools, research variables and statistical methods are described as following. In April 2002, the necessary data and information to study the problems and bottlenecks in early migration of nomads were collected during a 6-day trip with an experienced staff including two graduated person with Master of Science and two people with Bachelor of Science. In the course of which they included: Shiraz, Abadeh, Shahreza, Semirom, Eqlid, Kamfirooz, wherever we encountered with nomads so we set up a group meeting and under a joint observation exercise an interview was conducted with the head of nomadic households. During the course of the 6-day period, data collection was done by taking notes, using voice recordings, filming and, after returning, the information was analyzed and finalized. A total of 23 group meetings were held with nomads. There were 3-13 people in each meeting groups lasted from 1.5 to 3 hours for each meetings. In this research, the dependent variable is the number of days that the members of the study enter the summer pastures earlier than the recommended date. It should be noted that the recommended migration from the Migration Staff Chief of the province (located in the Fars province), the time of entry to the summer pastures is the 15th of May and the entry of livestock into the winter rangelands is the 6th November. After organizing the information collected, the available information was analyzed the standard deviation, mean, frequency and distribution were calculated.

### **Discussion**

After pluralization the information obtained from the interviews, The following Can be provided:

#### **1-Age of studied individuals:**

The results of the data analysis show that the mean age of the study people is 54.4 years old and the standard deviation is 15.1. The youngest studied one was 24 years old and the oldest was 78 years old.

#### **2-level of education**

The literacy status of the studied individuals is that 58% are illiterate, 29.6% are low educated (primary elementary), 9.9 are educated (The Junior School to high school education) and 2.5% have diploma. These results indicate that 87.6% of natural resources exploiters in nomadic society are illiterate and low literate. Therefore, the success of any action to implement livelihood improvement and growth activities is highly dependent on literacy and tribal education. Under these circumstances, it cannot be much hope for the effectiveness of development activities for them, because under these conditions they firstly will not be able to use the provided services and

secondly, they cannot be expected to participate actively in cases related to their improvement and development including the preservation, restoration, improvement and development of rangelands.

Table 1: Distribution of peoples in meeting based on literacy level

Cumulative percent	percent	frequency	Literacy level
58	58	47	Illiterate
87.6	29.6	24	Low Illiterate
97.5	9.9	8	Literate
100	2.5	2	Diploma
---	100	81	<b>Sum</b>

### 3- Household dimension

The average household size among the studied peoples is 2.6 with a standard deviation of 4.1. The minimum household size is 2 and the maximum is 12. The most frequency for household size is 6.

### 4-The number of livestock units

The results show that the number of light livestock (sheep and goat) is different in the summer and winter pastures. In winter pastures in the years when the drought is not occurred in the area, the number of sheep and goats is about 20 to 25 percent higher than the summer pastures. But in the years when there is drought in their winter pastures their animal units are almost equal at the both rangelands and there is no significant difference. The average number of surveyed sheep and lamb was 126 animal units. It was at least 40 and the maximum was 550 animal units.

Table 2: Distribution of people based on their animal unit (sheep and lamb)

percent	frequency	Animal number
42	34	0-100
22.2	18	101-150
13.6	11	151-200
14.8	12	201-300
3.7	3	301-400
3.7	13	Up to 400
100	81	<b>Sum</b>

### 5-Priorities for early spring migration

It is requested from the respondents to mention the factors affecting early spring migration, and then they were asked to comment on the priority and importance of each of the influential factors. The collection of influential factors affecting early spring migration, according to the comments of the nomads present at the meeting, include: Existence of wanderer breeders, lack of drinking water for animals, common use of rangelands, lack of forage, lack of security in nomadic roads, existence of *Stipa capnesis*, drought, increasing in the air temperature, the absence of nomadic roads and spring-autumn rangelands, carriage of livestock by machine and the presence of Sisbou insect. Following the analysis and categorization of the abovementioned items, the priority of the effective factors is shown in table 3.

Table 3. Frequency of factors affecting early spring migration regarding to the priorities given by the studied nomadic groups

The priority of factors	1	2	3	4	5	6	7	8	9	10	11	Sum
The factors affecting early spring migration												
Wanderer animal breeders	14	5	1	1			2					23
Lack of drinking water	2	1	2	7	2	1	2	2	4			23
Common use of rangeland	3	3	9	3	1	3		1				23
Lack of forage	4	13	3	2			1					23
The lack of security of nomadic roads						14	1	8				23
Existence <i>Stipa capensis</i>			7	3	2	7	4					23
Drought			1	1	2	1	3	2	12	1		23
Temperature increasing				2	1		1	11	4	3	1	23
Nonexistence of nomadic roads and spring-autumn rangelands				4	10	8	1					23
Animal Carriage by machine								2	3	14	4	23
Existence of Sisbou insect										5	17	23

**5-1- The existence of livestock breeders who do not have a grazing license:**

Livestock breeders who do not have a grazing license in both rangelands, or at least in one of the summer or winter pastures, as well as have not also traditionally certain rangelands are known as wandering livestock breeders. These livestock holders migrate about 20-30 days earlier than the rest of the nomads during the summer season and use the nomadic rangelands without any permission. The number of their livestock usually exceeds 300-500 livestock. This has caused the nomads to go to the summer winter pastures sooner. The wandering breeders are often from families of *Darrehshouri* nomads (Qashqá i Tribesman) and there are also shepherds who have been obligated by the urban people into transhumance system. This factor causes nomads to migrate 20 to 25 days earlier in spring. According to table 3, wanderer breeder factor with an abundance of 14 is the first priority and reason for the spring early nomadic movement.

**5-2- Lack of forage**

Regarding to the deterioration, poor condition and negative trend on winter pastures, the amount of rangeland production has decreased. Therefore, the lack of available forage forces livestock breeders to use hand-fed forage for their livestock for the first 1.5 to 3 months in the winter pastures. This time can be changed depending on the amount and distribution of rainfall. As the amount of rainfall in the first two months (early November -early-January) is lower, manual feed increases in the early season. Also, if rainfall and distribution is lower in April and February, then livestock holders will be forced to migrate earlier for 20 to 30 days due to drying and decreasing forage.

**5-3- Common use of rangelands**

In most summer rangelands, the type of exploitation is commonly used by breeders and they are worried that if they adhere to the migration calendar, other operators may migrate soon to the summer pastures and use existing forage. Therefore, there is a competitive relationship between nomadic rangers to reach freshly more forages. According to table 3, this factor with frequency of 9, is in the third priority of early nomadic migration reasons.

**5-4-Water Deficiency**

At the end of the winter period (from early-March to early-May), with decreasing the amount and distribution of rainfall, the forage will dried and the temperature increases as a result, the water requirement of the livestock will increase. So from the April to early-May, rainfall usually reaches to its minimum and the lack of drinking water is more likely to be felt by the animal and this can cause early spring migration.

#### **5-5-The lack of nomadic roads and the mid-altitude rangelands:**

Given the responsiveness of the interviewed nomads, the minimum length of the migratory travel from winter pastures to the summer pastures was 60 km and its maximum was 750 km. If the distance of migration be longer, the tribes will need more time to reach summer pastures, so there is a significant negative relationship between the length of the migration and the date of nomad's entry to the summer pastures. By increasing the migration length, the nomads will enter to summer pastures later. This factor can be considered as an effective factor in maintaining the sustainability of rangelands. Averagely, the nomads move between 20 and 25 days in the mid-altitude rangelands. Over the past decades, especially for the last 30 years, a large area of mid-altitude rangelands and nomadic roads has changed to agriculture and gardens. The nomads have become disturbed for their traffic and conflicted with the villagers and farmers. On the other hand, in these rangelands, livestock forage are also severely reduced, so the nomads have to rent farms and pastures and passfast from mid-altitude rangelands. This factor plays an important role in early entry of nomads to the summer pastures. According to table 3, the frequency of this factor is 10, and is placed in the fifth priority as reasons for the early spring migration.

#### **6-5-Lack of security for nomadic ways:**

In the past centuries, the dangers including natural factors (lightning, hail, flood, savage animals,...) and the human factors (thieving and plundering) have threatened the nomads during migration. For this reason, most nomads migrate all together to be more secure. But in recent years, the dangers of robbery have also increased, and people using gunfire and guns, and pick up trucks steal livestock, so that some of which have also led to murders. In this way they try to pass from the lower security roads as soon as possible so they reach sooner to the summer pastures. The lack of a well-established road has led the nomads to use urban and intercity transport roads in many parts of the migration length. This factor causes various road accidents for livestock and shepherds. According to table 3, the frequency of this factor was 14 and it is the sixth priority.

#### **5-7- Existence of *Stipa cappensis* species:**

Due to the fluctuation of the winter pastures, the invader annual *Stipa capensis* species has dominated in winter pastures vegetation cover and starts to dry on April. The seed of this plant has a bayonet appendage as well as a long awn that wound the mouth and throat of livestock. Also it penetrates into the animal skin and internal organs and causes internal bleeding and even death of the livestock. Of course, the *stipa capensis* can also cause damage to the human foot, so before drying the entire plant, the nomads leave the winter pastures to avoid livestock losses.

#### **5-8-Increasing temperature**

From early-April, the air temperature in the winter pastures is increased sharply, and this causes the drying of rangelands forage as well as increasing in the need for animal's drinking water and the problems of nomadic households. This factor also causes nomadic forced migration. According to table 3, the frequency of this factor is 11 and is placed in the eighth priority.

#### **5-9- Droughts**

In years when annual rainfall is less than the long-term annual average in the winter pastures, drought is occurred as the greater the difference, the more drought effects occurs. Drought reduces rangelands forage severely, seasonal water resources in the livestock and human sector, increasing the air temperature and increasing the use of manual feed which nomads starts the migration about 30 days earlier to escape these difficult conditions. This factor is in ninth priority with the frequency of 12.

#### **5-10-Machinery carriage**

Nomads use the car to transport from winter rangelands to the summer rangelands due to various reasons including; climatic condition (drought), difficulty in crossing the mid-altitude rangelands and nomadic roads, the low safety of migration, preventing the invasion and forage use in summer pastures by neighbors and wanderer livestock breeders and partners and getting busy by other activities except livestock breeding (such as agriculture, horticulture, labor, etc.) which in each case they enter the summer pastures earlier from 20 to 45 days.

### 5-11-The existence of the Sisboo insect(*Oestrus ovis*.)

Since early-April, when there is a dramatic increase in air temperature, an insect called Sisboo(*Oestrus ovis*. species) appears in the winter pastures, which, by stinging the eyes of livestock, or livestock holders and also their family, a long appendage exists of the eye and causes visual problems that, in some cases, these problems arise for several days.

### Conclusion

According to the discussed items, It can be said that the set of factors in the winter pastures: Lack of forage, Lack of drinking water, existence of the *Stipa capensis* and increase in air temperature Cause forcible migration. And on the other hand, The existence of wandering rancher (who do not have the right to graze), Common in rangeland exploitation, lack of necessary tribe way and lack of adequate security in the tribe ways, make the temporal distance between the winter pasture to the summer pastures reduced and Cause early spring migration. so it is recommended that the government provide support for the provision of dry forage and drinking water to ranchers at the beginning of the entry in summer pastures and their livestock would be located in closed environments in the summer pasture until the complete preparation of the rangeland. This strategy can prevent livestock from entering rangeland before their time And the destruction of vegetation and soil would be reduced on the one hand, And on the other hand, ranchers will have more secure and Livelihood Satisfaction.

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