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Planning of grazing management in goat breeding in massive forest fire areas (Case Study: Manavgat Forest Enterprise)

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Abstract

Turkey's forest area covers 29.44% of the country's surface, with approximately 23.1 million ha. Within these areas are approximately 20 thousand villages and 7 million forest villagers. The vital activities of forest villagers, whose primary source of livelihood is agriculture and animal husbandry, face severe damage due to forest fires. The "Regulation on the Procedures and Principles Regarding Animal Grazing in Forests and Grasslands, Pastures and Winter Pastures Located in Forests," published by the General Directorate of Forestry (GDoF), entered into force in 2012. According to this regulation, areas where grazing is prohibited and where grazing is allowed are specified. According to GDoF, cattle and sheep graze systematically in 53.1% of the forest areas of our country. However, it is unknown what kind of grazing system will be applied for forest villagers due to the burning of all areas around forest villages in mega forest fires. This study discusses the possibilities of creating a grazing plan and management for the forest villages of Manavgat district of Antalya province after a major forest fire. The study consists of field-specific data, fire data in the Manavgat district, forest management plan data, and forest village data damaged by fire at various levels. Forest villagers' most critical problem after major forest fires is the complete restriction of sustainable goat breeding. A new grazing plan and management approaches must be determined in such areas to maintain their living practices despite legal restrictions. In this study, a new grazing plan and management possibilities are discussed.

Keywords: Great Forest Fire, Forest Peasant Goat Breeding Enterprises, Planning Sustainable Grazing Management.

INTRODUCTION

Turkey has 23.1% (23.100.000.000 ha.) hectares of forest areas. Approximately 29.44% of the country's surface (78,456,200 ha.) is covered by forest areas (OGM, 2021). This data shows that forest and forestry activities occur in approximately 30% of the country. On the other hand, the population living in or near forest areas in the rural areas of our country is called "forest villagers." In our country, approximately 7 million forest villagers live in 20 thousand forest villages living in and near forests (OGM, 2021). This data shows that one out of every three villagers in our country, which means 1/3 of them are forest villagers (Coşgun, 2021). The high share of forest areas in the country in general and the fact that there is a significant number of forest villagers among the rural population living in these areas show that all kinds of work and transactions related to forest areas have or will have profound effects on forest villagers.

For this reason, forestry has an essential place in our country. The primary livelihood sources of the forest village population are agriculture and animal husbandry (Çağlar, 1986; Coşgun, 2005). The fact that agriculture and animal husbandry constitute the primary source of livelihood of the forest villagers, who include 1/3 of the population in rural areas, is essential data for the studies to be carried out in forest areas. Another phenomenon that causes severe damage to both segments in the interaction between forest villagers and forest areas is "forest fires."

Forest fires in our country are undoubtedly a natural disaster. The average number of forest fires in the last thirty-three years (1988-2021) is approximately 2.200, and the average size of the burned forest area is 14.700 ha (OGM, 2021). However, as it is known, in the history of our country, severe damages have occurred in 2021 in terms of the area burned and the number of fires. In 2021, forest fires broke out in July-August due to weather conditions (such as temperature, relative humidity, and wind speed); during this period, around 300 forest fires, 16 of which were large, broke out in our country. These fires, which mostly broke out on the borders of Antalya and Muğla provinces, negatively impacted settlements, that is, forest villagers living close to forests. Another negative impact of forest fires on forest villagers is the restriction of the forest villagers' ability to benefit from forest areas through grazing. On the other hand, the issue of goat grazing in forest areas has been a matter of debate for many years.

Law No. 6831 on Forestry, which entered into force in 1956 and is still valid, has shown the understanding of the adverse effects of goat breeding on forests in Article 19 of this law. The relevant article in the law reads, "All kinds of animals are prohibited in forests." However, with an empathetic approach for forest villagers living close to forest areas, Articles 20., 21., and 22. of the same law also show a tendency to realize the utilization of forests through grazing in a certain order. In various "Action Plans" prepared by the GDoF between 2004 and 2010, it is seen that there are approaches to the pressures on forest areas and the improvement of forest areas (Coşgun and Yolcu, 2008). The struggle of goat breeders in forest villages against all these approaches ended with regulating the issue in Article 182 of Law No. 6111, published on February 13, 2011, as "...However, in accordance with the requirements of public interest, animal grazing may be allowed in forest areas determined by the forest administration within the framework of the procedures and principles determined by the forest administration.... ". Based on this law, the "Regulation on the Procedures and Principles Regarding Animal Grazing in Forests and Grasslands, Plateaus and Winter Pastures Located in Forests and Forests," which entered into force after being published in the Official Gazette dated July 11, 2012, and numbered 28350, regulated grazing in forest areas through planning. According to this regulation, grazing plans were established by the DGoF at the national level shortly afterward. DGoF stated, "In 53.1% of the forest areas of our country, ovine and bovine animals are systematically grazed in forest areas. As a result of planned grazing, it fulfills the feed need for animal husbandry." (URL-1, 2022).

The importance of the study: The inability of forest villagers to graze in forest areas that have experienced significant forest fires threatens "sustainable goat breeding." Today, it is essential that goat breeding is sustainable in order to ensure food security and to be an economical substitute protein source. Almost all of the forest villages in the Mediterranean Region have goat breeding within the scope of animal husbandry. However, various socio-economic factors affect the sustainability of goat breeding. Ensuring the sustainability of goat breeding will also ensure the economic development of local forest villagers' goat breeding enterprises. For this reason, ensuring the sustainability of forest villager goat breeding enterprises has become crucial. Forest fires in large areas make it necessary to plan the grazing management in these areas to ensure sustainable goat breeding of forest villagers.

The study aims to set an example for providing grazing management that will allow forest villagers to raise small ruminants in areas burned after forest fires in the Manavgat Forest Management Directorate (MFMD) of Antalya Regional Directorate of Forestry in 2021.

MATERIAL and METHOD

The survey model was applied in this study. A survey model is a research approach that aims to describe a past or current situation as it exists. The individual or object that is the subject of the research is tried to be defined in its conditions and as it is. No effort is made to change or influence the variables (Karasar, 2020). In addition, Geographic Information Systems methods were utilized to prepare cartographic material for the study.

With the support of the Antalya Sheep and Goat Breeders' Association, goat breeding enterprises and small cattle assets were determined according to how the fire affected the villages.

The study determined the coordinates of the corrals used as winter quarters of 524 enterprises that were highly, moderately, and less affected by the forest fires. Semi-structured focus group meetings were held with some of these enterprises. During the meetings, the main outlines of the goat breeding enterprises' demands and expectations for sustainable grazing management were determined. On the other hand, during the focus group meetings, physical sketches of some of the transportation routes of the forest villagers' goat breeding enterprises to the areas they currently use as summer pastures were made. However, since the field controls of these routes could not be realized, they could not be presented as digital maps.

RESULTS

Results Regarding the Areas of Burnt Forests and Forest Villages

The study covers forest villages in MFMD areas of Antalya Regional Directorate of Forestry in 2021. In MFMD of Antalya Regional Directorate of Forestry, fires occurred in massive areas. The ratio of the amount of burned area (31.572 ha) to the total forest area (51.671 ha) of MFMD is 61%. In this sense, almost 2/3 of the area of a forest management directorate was destroyed. There are 43 villages affected by the fire within MFMD. Approximately 80% of the fire-affected villages in the region are located in the Manavgat region. The large forest fire in the Manavgat district of Antalya province in 2021 covered an area of approximately 320 thousand acres.

As stated by GDoF, animals were or are grazing in forest areas, corresponding to approximately 53% of the country's forest areas. While forest villagers in the MFMD areas were able to raise goats through grazing in these areas before the forest fires of 2021, it has become clear that they will not be able to use these areas for a long time (approximately 20 years) due to the large forest fires of 2021, which covered massive areas.

The forest fires in Antalya and Muğla provinces in the summer of 2021, effective in large areas, have seriously jeopardized the sustainable goat breeding of forest villagers who make a living from animal husbandry. There was no significant loss of small cattle in forest villages during the fire process. This is because this summer period corresponded to when forest villagers' goat breeding enterprises were in summer pasture areas. In other words, forest villagers who make a living from goat breeding did not experience a significant loss of livestock during the forest fires, as they mostly grazed in the highlands. The factor that jeopardizes the sustainable goat breeding of these villagers stems from their wintering location, which they utilize around their villages for about 4-5 months as wintering grounds, most of which are within forest areas. The goat breeder forest villagers, who survived the forest fire in the summer period with a significant amount of livestock loss, were faced with the situation of not being able to find a place to stay when they returned to their homes for wintering because the environment they used as winter quarters remained within the burned forest areas. In addition, due to the forest fire, there was a lack of grass for the animals to graze.

According to the observations made in the field, the vegetation in the burned areas after the fire has gradually started to be utilized for grazing. These areas, where forest villager goat breeders used to graze before the big

forest fire, are restricted to grazing due to the "Areas where grazing permission will not be granted" article of the Grazing Regulation.

Observations in the burned forest areas reveal that the forest fires that started in the borders of Manavgat and Gazipaşa districts of Antalya province have created the largest burned forest area in the history of the Republic (Table 1).

In 2021, the number of forest fires that occurred in Antalya Regional Directorate of Forestry, the distribution of the number of fires, and the amount of burned area according to the forest management directorates where the fire was effective are given in Table 1 and Figure 1.

Table 1: Distribution of forest areas burned in the primary forest fire in Antalya Regional Directorate of Forestry in 2021

Forest Enterprise Directorate	**Number of DistrictForest Rangers Affected by Fire**	**Area of Burnt Forest in Forest Management Directorates (Ha.)**
Manavgat	6	31.572,10
Taşağıl	5	9.247,60
Akseki	3	5.360,00
Gündoğmuş	4	8.675,00
Alanya	3	5.632,00
Gazipaşa	1	246,70
Total	**22**	**60.733,40**

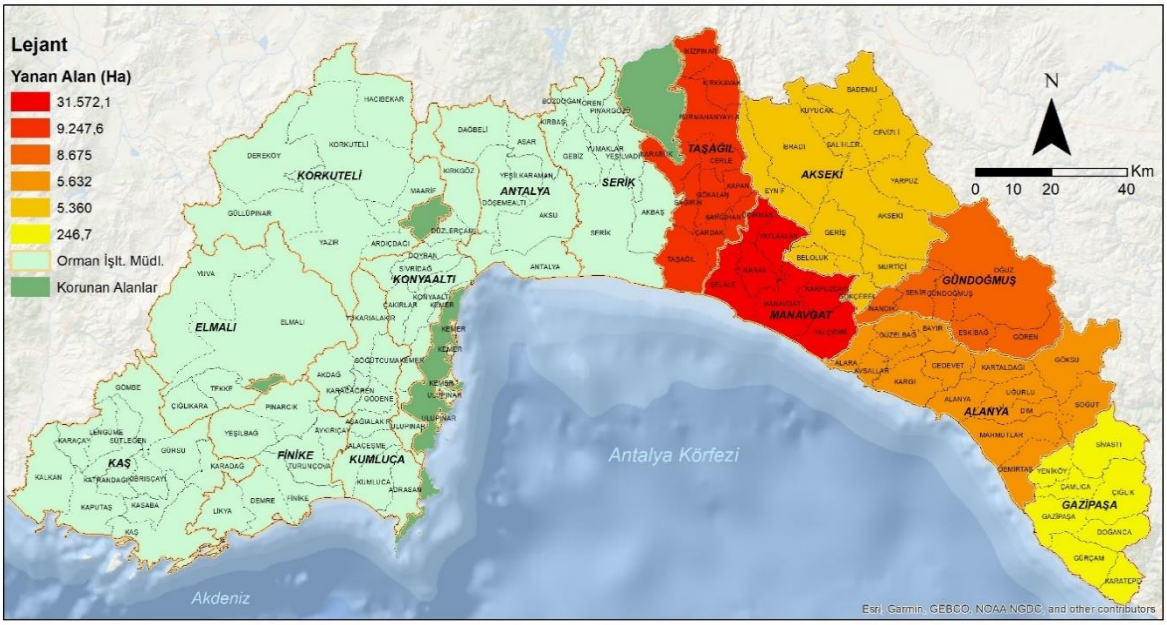

Figure 1: Distribution of forest fire areas of Antalya Regional Directorate of Forestry in 2021

Considering global climate change, there is a risk that these and similar abnormal natural events will occur more frequently in the future. For this reason, forest villagers living in close proximity to forest areas may be affected even more severely. According to the investigation in the study area, the list of villages affected by forest fires in the Manavgat district is given. The ways of being affected are categorized as *"Villages highly affected by fire," "Villages affected by the fire with moderate damage,"* and *"Villages less affected by fire"* (Table 2).

In 2021, a forest fire was effective in 41% of 106 villages in Manavgat District of Antalya province. In 2021, the total number of villages affected by the large forest fire in Antalya Forestry Regional Directorate is 54. Among these villages are 43 villages affected by the fire within MFMD. Approximately 80% of these fire-affected villages are located in the Manavgat region.

Table 2: Villages affected by forest fires in Manavgat District and how they are affected

Number	Villages Mostly Affected by Fire	Villages Affected by Fire with Moderate to Minor Damage	Villages Less Affected by the Fire
1	Ahmetler	Belenovası	Cevizler
2	Aksaz	Beydiğin	Karacalar
3	Aşağıışıklar	Çayyazı	Salur
4	Bucakşeyhler	Çeltikçi	Sevinç
5	Çardak	Çolaklı	Sırtköy
6	Dikmen	Demirciler	
7	Evrenleryahşi	Evrenseki (Evren)	
8	Gebece	Gündoğdu	
9	Hocalar	Güzelyalı	
10	Hocalı	Hacıali	
11	Kalemler	Karaöz	
12	Oymapınar	Karavca (Değirmenli)	
13	Saraçlı	Salkımevler	
14	Evrenseki (Seki)	Sarılar	
15	Tilkiler	Sülek	
16		Şişeler	
17		Taşkesiği	
18		Ulukapı	
19		Uzunkale	
20		Yavrudoğan	
21		Yaylaalan	
22		Yeniköy	
23		Yukarıışıklar	

Table 3: Distribution of goat holdings and goat assets in the villages most affected by the fire

Number	Köy Adı	Number of Goats	Number of Enterprises
1	Ahmetler	4.774	27
2	Aksaz	474	9
3	Aşağıışıklar	233	4
4	Bucakşeyhler	624	5
5	Çardakköy	4.539	29
6	Dikmen	215	2
7	Evrenleryavşi	827	4
8	Evren-Seki	0	0
9	Gebece	8.215	39
10	Hocalar	784	8
11	Hocalı	615	2
12	Kalemler	273	5
13	Oymapınar	1.565	8
14	Saraçlı	6.701	81
15	Tilkiler	971	2
Total		**30.810**	**225**

Together with the Antalya Sheep and Goat Breeders Association, examinations and evaluations were carried out in the field. In these evaluations, the number of small cattle holdings in these villages and the number of

livestock they have were determined according to the degree to which the villages were affected by the forest fire (highly affected villages, medium and less affected villages, less affected villages) (Table 3-4-5).

Table 4: Distribution of goat holdings and goat assets in villages moderately and slightly affected by the fire

Number	Villages Name	Number of Goats	Number of Enterprises
1	Belenobası	997	40
2	Beydiğin	8.563	38
3	Çayyazı	438	2
4	Çeltikçi	418	6
5	Çolaklı	258	7
6	Değirmenli	450	6
7	Demirciler	875	15
8	Evrenseki	577	6
9	Gündoğdu	561	12
10	Güzelyalı	1.393	8
11	Hacıali	318	5
12	Karaöz	938	15
13	Salkım Evler	0	0
14	Sarılar	633	15
15	Sülek	1.138	15
16	Şişeler	1.130	4
17	Taşkesiği	298	3
18	Ulukapı	2.306	44
19	Uzunkale	414	3
20	Yavrudoğan	1.238	14
21	Yaylaalan	3.073	12
22	Yeniköy	1.996	9
23	Yukarıışıklar	1.194	5
Total		**29.206**	**284**

Tablo 5: Yangından az etkilenen köylerdeki keçi işletmeleri ve keçi varlığı dağılımı

Number	Villages Name	Number of Goats	Number of Enterprises
1	Cevizler	100	1
2	Karacalar	17	3
3	Salur	1.924	5
4	Sevinçköy	1.366	5
5	Sırtköy	351	1
Total		**3.758**	**15**

In the study area, as a result of the examinations and evaluations carried out together with the Antalya Sheep and Goat Breeders' Association, the villages affected by the great forest fire in 2021 in the region and the number of goats and enterprises in these villages are presented in Figures 2 and 3 within the scope of village borders.

GDoF data shows that approximately 53% of forest areas are predominantly goat grazing. However, after the forest fires in 2021 in MFMD, a severe grazing ban was imposed on the fired areas used by forest villagers'

goat breeding enterprises for grazing. As stated by the DGoF, the management and planning of grazing are necessary for the sustainability of enterprises in goat-breeding forest villages. However, although almost 20 months have passed since the date of October 2021, which GDoF set for planning grazing in fire-damaged forest areas, it has not yet been able to enter into a study because post-fire restoration works and operations in these areas are seen as a higher priority.

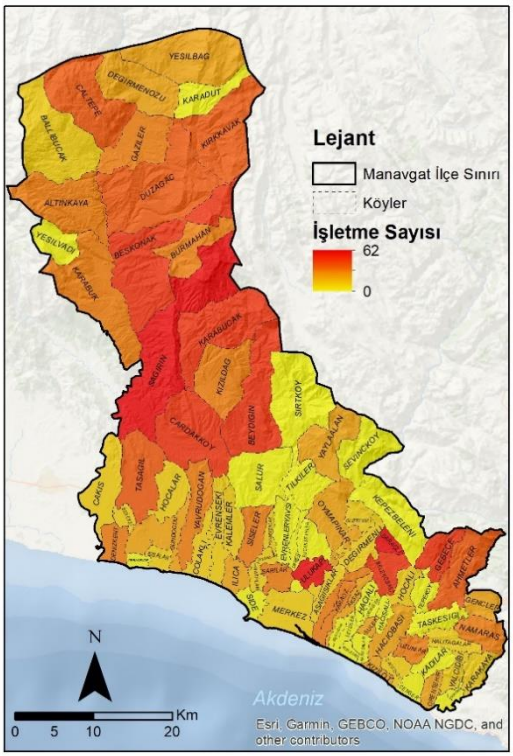

Figure 2: Number of goats affected by fire

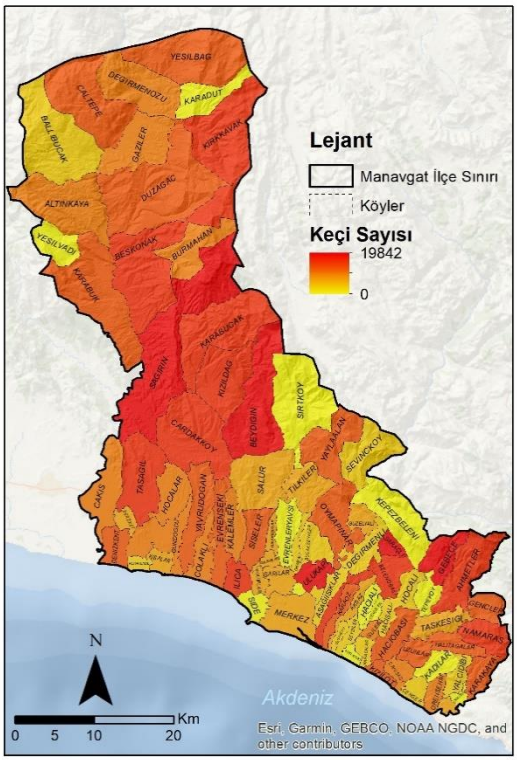

Figure 3: Number of goat farms affected by fire

3.2. Post-Fire Demands and Expectations of Forest Villagers in Burnt Areas

In the focus group meetings held in some of the villages affected by the fire, the solutions suggested by the villagers to ensure sustainable goat breeding are outlined below.

- ✓ Ensuring that some of the forest areas that were degraded (closed) before the fire can be opened to grazing,
- ✓ Since all of these areas are prohibited by the regulations after the fires, the presentation of alternative grazing areas in the nearest and suitable areas,
- ✓ Before the fire, sufficient areas around the existing corral areas (the size of which is determined depending on the presence of livestock) should be demarcated for grazing purposes, and these borders should be surrounded by barbed wire, and these areas should be allowed to be used,
- ✓ Before the fire, in the area where the existing corral areas are located, areas large enough to accommodate the animals owned in the area should be delimited and surrounded with barbed wire. Providing low-interest or grant feed loan support in order to provide feed supplementation that will ensure adequate nutrition of animals in these areas.

DISCUSSION

The fact that the forest fires that have occurred in recent years cover large areas dramatically affects the population called "forest villagers" who live intertwined with these areas. The fact that the fires also cover these villages causes the villagers to suffer loss of life and property. Restoration works to be carried out in

these areas after the fire also affect goat breeders at a much higher level, who are engaged in small cattle breeding and grazing in forest areas.
OGM states that grazing occurs in forest areas, which constitute 53% of forest areas. Despite this, the "Regulation on the Procedures and Principles Regarding Animal Grazing in Forests and Grasslands, Pastures and Winter Pastures Located in Forests and Forests," which regulates the utilization of forest areas through animal grazing, entered into force after being published in the Official Gazette dated July 11, 2012, and numbered 28350, and the "a, b, c and ç" subparagraphs of Article 4/1 paragraph of the "Basic Principles" section of the Regulation point to "areas where grazing permits will not be granted." In 2021, the forest fires experienced in massive areas in our country constituted one of the biggest obstacles to the "sustainable goat breeding" of the forest villagers who make a living with animal husbandry, especially "goat breeding."

"... Grazing directly affects the lives of forest villagers economically and socially. People engaged in animal husbandry organize their lives around the most ideal and economical way of raising their animals. Especially ovine breeding is an important activity for forest villagers in the Aegean and Mediterranean regions. It is aimed to minimize grazing damages and to ensure that forest villagers live in welfare and peace with the support of the forest organization. With the "Grazing Plans" prepared regionally in line with the regulation, grazing is carried out within a certain plan and order." The current situation of forest villagers grazing in forest areas has been determined by GDoF (URL-1, 2022). Various studies have been published to evaluate the grazing plans created following this regulation (Coşgun, 2013; Coşgun, 2014; Coşgun, 2018; Coşgun and Yılmaz, 2018). All publications show that there is planned grazing in forest areas (despite some crucial deficiencies in the plans) and that grazing practices can be carried out within the framework of regulations based on laws.

Since the settlement of man in the Mediterranean Basin, grazing has significantly impacted vegetation (Atalay, 1992). Summer drought and fires are essential to play a role in the shaping of Mediterranean vegetation (Trabaud, 1994). Grazing does not affect the spatial distribution of plants in the maquis ecosystem in the long term, but only the spatial distribution of shoots near the main plant (Papatheodorou et al., 1993). The first noticeable result of plant-animal relationships based on grazing is morphological changes in plants (Valderrábano and Torrano, 2000). According to Tavşanoğlu and Coşgun, 2009, the effect of goat grazing on the growth form of seven maquis species in pure Cupressus sempervirens forest in Köprülü Canyon National Park was investigated. Among the species analyzed, only Juniperus oxycedrus showed a significant negative relationship between the distance to the corral and grazing index values. It was suggested that this relationship was due to the fact that J. oxycedrus became more stunted as the distance to the corrals increased. This may be due to the increased preference of Juniperus individuals by goats in the vicinity of corrals where plant abundance decreased.

Several recent studies have shown that traditional goat and sheep grazing may be essential for maintaining biodiversity in Mediterranean ecosystems (Verdu et al., 2000). It has also been suggested that preventing grazing, instead of increasing plant biodiversity, may lead to the establishment of colonizing species that are not native to the area and may be considered more as noxious weeds (Lunt and Morgan, 1999). In areas with Mediterranean ecosystems, determining the animal husbandry system, i.e., the current situation, is the first step. In this context, studies such as the utilization patterns of animal breeders, plant compositions in the utilized areas, animal species and quantity, etc., have been carried out (Çelikkol and Tan, 2002; Çelikkol, 1999; Ensminger et al., 1990; Foster, 1998). On the other hand, according to Tolunay et al., 2009a and Tolunay et al., 2009b; it was determined that four goats per hectare per year could graze in the maquis of kermes oak (Qercus coccifera L.).

It is also reported that goats grazing in forest areas benefit forests, considering their grazing capacity (Xanthopoulos, 2004; Xanthopoulos et al., 2006). It has been criticized that Turkey's goat population is

decreasing without any scientific basis and ignoring the differences between regions (Gökçe, 2010). The issue of protecting and developing forests is an ecological-economic system problem on the axis of forest-peasant-business. Within this system, goats are the primary source of nutrition and livelihood of poor forest villagers and a component of ecological and economic importance (Bassullu and Tolunay, 2010; Tolunay et al., 2009c). Goat breeding is a traditional animal production branch widely practiced in underdeveloped and developing countries. This activity constitutes an important source of livelihood and food for low-income families in rural and forested areas. Another feature of this breeding branch is that marginal areas (mountainous, heathland, and stony lands) that cannot be utilized in any other way are used to obtain products such as milk and meat through goat breeding (Paksoy, 2007).

The relationship between goats and forests, damages to goats, breeding, reproduction, and inventory of goats have been included in many studies (Aldezabal and Garin, 2000; Boyazoglu and Morand-Fehr, 2001; Ainalis and Tsiouvaras, 2004; Ainalis et al., 2006; Zarovali et al., 2007). It is also seen that there are various studies such as economic analyses of goat breeding enterprises in the Antalya region, population structures, production status, labour force status, roughage source, reproduction status of goats, problems encountered in breeding, determination of a new goat breed for the region, sociodemographic lifestyles of goat breeders (Dellal, 2000; Dellal, 2000a; Dellal, 2000b; Kaymakçı et al., 2005; Kitsopanidis, 2002; Dellal and Dellal, 2005; Saatçi and Elmaz, 2017; Saatçi et al., 2016). However, studies on the demands and expectations of enterprises in ensuring the sustainability of goat breeding enterprises are limited. Ensuring the sustainability of goat breeding in forest villages in the Mediterranean Region has an important share in the development of the local people (Bekiroğlu and Tolunay, 2010a; Bekiroğlu and Tolunay, 2010b).

Goat breeding experienced a significant decline in the early 2000s. The main determining factor is the harmful effects of forestry on livestock breeding, in contrast to the high costs of feeding and other input costs and the low costs of milk and meat outputs. Restricting grazing in forests has negatively affected the high expectations of forest villagers and goat breeders from forests (Alkan and Uğur, 2015). Within the scope of goat-forest relations, it is seen that the number of goats in Turkey, which was around 19 million heads in 1980, has continuously decreased and declined to 5.1 million heads in 2009. In recent years, the number of goats has increased again with the increase in demand for goat products, especially milk, in parallel with public awareness and government incentives, and reached 10.3 million heads in 2014. The Ministry of Forestry's negative attitude towards goat grazing in and near forests has accelerated this decrease (Keskin et al., 2015).

Since grazing is done outside most of the year, goat breeding is a form of breeding with low input costs due to this structure. Forest areas constitute grazing environments for forest villagers. There are not enough studies on the effects of grazing on forest areas other than those determined by laws and regulations (Armağan, 2019). Regarding forest fires in our country, two dimensions of grazing in forests are emphasized. One is seen as a positive effect, and the other as a negative one. As a positive effect, it is emphasized that the flammable load material under the forest areas is reduced through grazing in forest areas. It is stated that with the decrease in flammable load, cover fires in forests will be less, and the severity of cover fires will be lower. As a negative effect, it is argued that fires caused by shepherds during the grazing process in forests cause fires (Göktepe and Avcı, 2015; Avcı and Korkmaz, 2021).

The burning of massive forest areas for the first time in 2021 in our country impacted the lives of forest villagers in these areas. In particular, goat breeding enterprises have become unable to benefit from the forests that they used as grazing areas before the fire after the fire. This situation has brought the local people and forestry management face to face. This situation was also experienced in the region under study, and the need for local politicians (politicians at the level of national deputies and even ministers) to intervene in the process emerged. However, no progress has been made towards solving grazing management with a new planning

approach.

Due to the effects of climate change, the frequency of forest fires, which accelerate quickly and occur in massive areas, is gradually increasing. For this reason, the sustainability of goat breeding the livelihood of the forest villagers living in these areas, has gained importance for the peace of life in the region and post-fire restoration works. This research study was designed to plan the grazing management that will ensure the sustainability of goat breeding in the forest villages of Manavgat Forest Management Directorate, where a large forest fire occurred and damaged many forest villages. However, the research, including the whole project, could not be realized due to insufficient funding. Large forest fires are continuing in our country today. Therefore, this article was prepared by taking into account the available data.

After large forest fires, economic losses should be prevented by allowing the forest villagers living in these areas to continue their grazing activities before the fire to sustain their livelihood. However, while doing this, a common interest method should be established so that the region's ecosystem is not negatively affected. For this purpose, in the first stage, it should be determined which areas can be used for grazing after the fire. Among the areas that can be utilized for grazing purposes, pre-fire degraded coppice and scrub areas of various densities should be considered first. In order to avoid various socio-political problems caused by illegal grazing in all restored areas, opening some areas for use is an agreement ground where there is a common interest for both parties (forest villagers and forestry management unit). It is important to ensure that stakeholders who can come together in common interests make joint decisions.

CONCLUSION

In Turkey, 2021 was an extremely important year in terms of forest fires. In addition to many forest fires in a short time, the largest forest ecosystems in the history of the Republic of Turkey have been burned. Therefore, in relation to post-fire rehabilitation works in large areas, it is necessary not to ignore exemplary grazing planning/management, which directly concerns the peace of life in these areas and the economic structure of the local people. There is no study to determine how the grazing management will be for the forest villager goat breeding enterprises affected by these fires after large forest fires and what to pay attention to in planning.

One of the primary sources of livelihood of forest villagers living in forest villages in the Aegean and Mediterranean regions is animal husbandry, and therefore, predominantly goat breeding. Sustainable goat breeding in forest villages requires them to utilize forest areas for wintering for 5-6 months of the year. The fact that these utilized forest areas have been subjected to fire eliminates the sustainability of goat breeding in these areas. Especially in areas where large forest fires have occurred, sustainable goat breeding for grazing purposes faces serious legal constraints. For this reason, planning grazing management in areas where large forest fires have occurred will allow forest villagers and forestry organizations to live in peace.
The "Regulation on the Procedures and Principles Regarding Animal Grazing in Forests and Grasslands, Pastures and Winter Pastures in Forests" published by OGM restricts grazing in these areas in order for the restoration works to be carried out in fire areas to be healthy. However, massive forest fires involving the general area of many villages cause severe damage to both forest ecosystems and forest villagers whose natural habitats are intertwined with forests. In this respect, they have ecological, socio-economic, and cultural impacts.

Forest fires occurring in large areas restrict the vital activities of forest villagers. Therefore, the lack of grazing areas further aggravates their living conditions. Therefore, the problem of restriction of grazing areas, which is the biggest obstacle to sustainable goat breeding of forest villagers, needs to be solved after large forest fires. However, no interest and interest group has any experience in this direction. For this reason, there is a need

for project studies to make grazing planning compatible with the rehabilitation of these areas after large forest fires.

In the study to be carried out, the coordinates of the corrals that are utilized in the current situation should be processed on the forest management plans. Thus, it will be possible to determine the level of grazing intensity within the areas to be rehabilitated after the fire. On the other hand, it will also be possible to reveal the locations of the damaged coppice areas (closed with gaps) and scrub areas in the management plans and the locations of the corral areas that can be utilized in the new situation. In light of these determinations, new corral areas must be identified by performing suitability analyses of potential corral areas for future use. The possibilities of utilizing these areas can be discussed in focus group meetings with goat breeder villagers. On the other hand, in planning rehabilitation works after large forest fires, areas of a certain size (which may vary according to the presence of livestock) around the existing corral areas can be limited and fenced with wire fences. The density of the areas that can be allowed in restoration plans and the pre-fire stand establishment structures should be considered. Low-credit or grant feed support can be provided to these enterprises according to the permitted areas' conditions and animal presence. Thus, while avoiding socio-political pressures caused by illegal grazing in all areas it will also ensure that restoration efforts' success is not hindered.

This study discusses the results of a sample project that can be achieved due to various constraints. With the rapid implementation and finalization of the projects to be developed in line with this discussion, working and living peace between forest villagers and the forestry organization can be ensured. However, unfortunately, the perception of "not being able to see the forest from seeing a single tree" continues to be a dominant behavior and perception model both in the forestry organization structure and in some scientific circles. It is a dialectical reality that restrictions enacted only by regulations will not be compatible with the practice of life.

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