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Patterns of transhumant livestock system on Mount Zireia, Peloponnese, Greece

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Abstract. The transhumant livestock system in Greece, as well as in the Mediterranean basin, is deeply rooted in time, having developed a set of cultural characteristics, the carriers of which continue to be the transhumant farmers. There are more than 3,050 transhumant flocks in Greece, whose major part belongs to Sarakatsans, an ethnic group. These flocks moved on foot in the past, but now most of these movements are carried out with trucks. This study aimed to investigate the dynamic overtime of a) transhumant animals and b) transhumant routes in Mount Zireia in Peloponnese in Southern Greece. The data were taken from personal communications, publications, and data from the Payment and Control Agency for Guidance and Guarantee Community Aid (PCAGGCA). According to the results, a substantial number of transhumant sheep and goats exist in the study area. The traditional routes on foot have stopped, and the animals are currently being moved with trucks, responding to modern socio-economic developments the shared international custom. These changes in the transhumant livestock system probably due to a general trend of transhumant farmers to adopt innovations and modern standards, restrictions in land uses, changes in their living standards.

Keywords. Transhumant routes - cultural heritage - ecosystem services – sheep.

Modèles de système d'élevage transhumant sur le mont Zireia, Péloponnèse, Grèce

Résumé. Le système d'élevage transhumant en Grèce, ainsi que dans le bassin méditerranéen, est profondément ancré dans le temps, ayant formé un ensemble de caractéristiques culturelles, dont les porteurs restent quelques petits groupes d'éleveurs mobiles. Il y a plus de 3,050 troupeaux transhumants en Grèce, dont la majeure partie appartient aux Sarakatsans, une communauté ethnique. Ces troupeaux se déplaçaient à pied dans le passé, mais maintenant la plupart de ces déplacements sont effectués avec des camions. Cette étude visait à étudier la dynamique au fil du temps des a) animaux transhumants et b) des routes transhumantes dans le mont Zireia dans le Péloponnèse dans le sud de la Grèce. Les données ont été extraites de communications personnelles, de publications et de données de l'Agence de Paiement et de Contrôle pour l'Orient et la Garantie des Aides Communautaires (PCAGGCA). Selon les résultats, un nombre important d'ovins et de caprins transhumants existe dans la zone d'étude. Les itinéraires traditionnels à pied ont cessé et les animaux sont actuellement déplacés avec des camions, répondant aux développements socio-économiques modernes et à la coutume internationale commune. Ces changements dans le système d'élevage transhumant sont probablement à cause d'une tendance générale des éleveurs transhumants à adopter des innovations et des normes modernes, des restrictions dans l'utilisation des terres et des changements dans leur niveau de vie.

Mots-clés. Routes de transhumance - patrimoine culturel – services écosystémiques - ovins.

I - Introduction

The term "transhumant livestock farming" indicates the annual movement of herds, especially sheep and goats, between summer and winter rangelands, regardless of the transportation means and distance they cover (Manzano-Baena and Casas, 2010; Bhasin 2017a). This paper focuses on transhumant sheep and goats, although in the past, movements also concerned

other animals belonging to the livestock family. Today except for small ruminants, there is a significant number of transhumance farms exclusively with cattle in Greece (PCAGGCA, 2020). Nevertheless, this kind of animal, the practice of movement is at the core of the cultural and social constitution of the mountainous livestock communities in Greece and has greatly contributed to the landscape of the regions historically developed (Sidiropoulou *et al.*, 2015; Ragkos *et al.*, 2020). The historical evolution of transhumant sheep and goats has put itself within the modern semi-intensive systems of the European Union, which are based primarily on grazing and less on feeding indoor. From this perspective, the process of the system is subject to problems that differ significantly from those faced by transhumant farmers of the past decades, but without changing the essence of their goals.

Sheep and goats transhumance can be found in many Mediterranean and Balkan regions, including Greece, as they are suitable for the particular conditions of mountainous rangelands (Ligda *et al.*, 2012; Vallerand, 2014; Nori and Farinella, 2020). Movements in Greece have the form of a social organization in which they migrated independent family groups. Several ethnic groups such as Sarakatsans, Vlachs, and Koupatsaroi are associated with this activity. According to data from the Payment and Control Agency for Guidance and Guarantee Community Aid (PCAGGCA, 2020), there are more than 3,050 transhumant flocks in Greece, and a major part of them belongs to Sarakatsans. Sarakatsans are closest to the traditional historical movement and are located spatially throughout mainland Greece, while they were organized into closed autonomous societies, called "Tseligato".

According to Nitsiakos (1997), "Tseligato" was a form of productive cooperation between a number of domestic groups, generally linked by ties of kinship or marriage, under the leadership of a strong breeder. These social structures had a distinct identity, social cohesion, and efficient use of resources while seeing the exercise of all types of professions (grocery stores, cheese, bakeries, etc.), factors that combine them secured autonomy (Ragkos *et al.*, 2016). According to Syrakis's (1925) data, 13,700 families moved along with their flocks, of which 5,956 were families of Sarakatsans. Later around 1950 -1960, Sarakatsans were mainly moved to Thessaly and Sterea Greece, Central and East Macedonia, Epirus, Peloponnese, and Thrace (Chatzimichali, 2007).

All flocks moved on foot in the past, but now most of these movements are carried out with trucks, and only local (small distance) are moved on foot. The aim of this study was to investigate the dynamic overtime of a) transhumant livestock and b) transhumant routes in Mount Zireia in Peloponnese in Southern Greece.

II - Materials and Methods

The study area was Mount (Mt) Zireia (Kyllini), located in the Peloponnese peninsula, South Greece, famous for its association with the god Hermes. Mount Zireia is located west of Korinthos city. The study area covers ca. 39761.57 ha in an altitudinal zone ranging from 310 m to 2374 m a.s.l.

The data for this investigation were collected from personal communications, and the respondents were all over 70 years old, for the past (1950-1960) and related publications (Chatzimichali, 2007), while for today (2020) from the Payment and Control Agency for Guidance and Guarantee Community Aid (PCAGGCA, 2020).

III - Results and Discussion

The patterns of transhumant sheep and goats in Mt Zireia are presented in Table 1. Although a remarkable number of transhumant sheep and goats exist in the study area for the last 60 years, their number presented a significant decrease of about 64%. In Mt Zireia around 1960, they moved 103 Tseligkata, 245 herders' families with 38,230 sheep and goats (Chatzimichali, 2007). According to the data from PCAGGCA (2020), they moved only 54 families with 13,717

animals, and the Tseligkato system has become almost extinct in the area as it happens in most areas in Greece (Kavvadias, 1991; Sidiropoulou *et al.*, 2005). The abandonment of transhumance is obvious in mountainous local communities Kastania, Kyllini, and Trikala where the higher decrease of more than 80% was presented. It is interesting that in the study area, transhumant animals presented in 4 new communities in the last years. According to personal communications with residents of these local communities, there was also transhumance in the past, but it was not known as Chatzimichali did not record them.

Table 1. Transhumant sheep and goats per local community on Mt Zireia in 1960 and 2020

Local community	Animals	
	1960	2020
Gkoura	5530	2047
Drosopigi	2670	1302
Karya	200	1545
Kastania	2500	346
Kyllini	3300	454
Manna	1700	1012
Trikala	20680	3964
Feneos	1650	709
Steno		543
Saradapyxo		464
Arxaia Feneos		275
Kato Tarso		1056

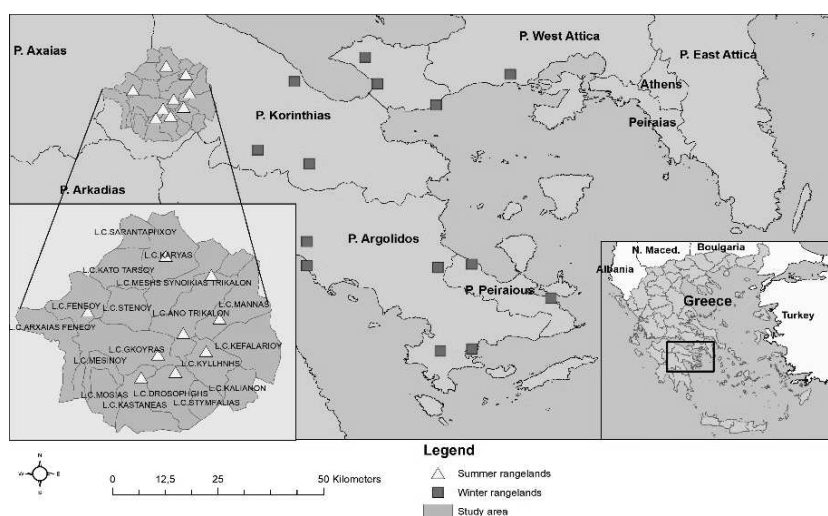


Figure 1. Grazing rangelands by transhumant sheep and goats during summer (mountainous) and winter (lowlands) in 1960

In the past, all flocks and families were moved on foot (Figure 1) from different regions from the Peloponnese peninsula or West Attica, lasted 3-7 days and nights, and followed the same route each year (Chatzimichali, 2007). These movements have stopped due to several reasons, and the main traditional transhumance routes practice that responds to modern socio-economic developments and is a common global custom. In the last decades, all these movements are

performed with trucks and have modified the time spent for the transitions of the herds (Apolloni *et al.*, 2018). The changes in the transhumant livestock system probably due to a general trend of transhumant herders to adopt innovations and modern standards, restrictions in land uses, changes in their living standards. As in other countries, there is a need to develop a monitoring system of both transhumant activity and environmental changes (Pérez León *et al.*, 2020).

IV - Conclusions

These preliminary results indicated a remarkable decrease of transhumant animals in mountainous rangeland on Mt Zireia and the abandonment of traditional foot movements. These changes probably had significantly affected the landscape and the ecosystem services provided of this mountainous area. In many cases, abandonment of the transhumant livestock system was related not only to a loss of cultural heritage but also closely linked to the significant effects on the ecosystem structure and function. It is necessary to investigate tracking migratory routes and the effect of their dynamics especially on landscape and the ecosystem services provided.

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