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Department of Agronomy Food Natural resources Animals and Environment





Università degli Studi di Padova

The value of sheep transhumance for rural landscape: the Alpagota sheep breed in the Alps

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Inscribed in 2019 on the Representative List of the Intangible Cultural Heritage of Humanity

- Transhumance: pastoralism based on the seasonal droving of livestock along migratory routes in the Mediterranean and the Alps
- Two broad types of transhumance can be distinguished:
 - ✓ horizontal transhumance, in plain or plateau regions
 - ✓ vertical transhumance, typically in mountain region

"Transhumance shapes relations among people, animals and ecosystems" (https://www.unesco.org/en)



FONDO EUROPEO AGRICOLO PER LO SVILUPPO RURALE: L'EUROPA INVESTE NELLE ZONE RURALI





Sheep up project

EIP Agri Innovation Award – most voted Operational Group <u>https://www.youtube.com/watch?v=4NuuUO</u> <u>OfG44</u>

Alpagota Sheep Breed

Breeding Males / Females (n of heads)	 1521 (3143 in 2020) M/F: 95/1426
Herds (n)	59
Risk status	Endangered
Uses	Meat

Source: EFABIS, 2023

Slow food presidium «agnello d'Alpago»





Case Study: local sheep breeds in Veneto Region

This study is part of a project (Sheep Al.L. Chain) aiming to improve the competiveness of local sheep breed farms (Lamon and Alpagota) through the valorisation of their link with mountain agroecosystems

Three specific aims:

- Sustainable use of animal genetic resources/in vivo conservation program
- Link between sheep products and landscape/agroecosystems → "territorial marketing" strategy
- Conversion to organic production: SWOT analysis

Complete results available at this link:

https://www.mdpi.com/2071-1050/14/8/4698

Teston et al., 2022

Use of genetic resources



application for mobile phone to support mating plans, with the aim to limit the risk of inbreeding.



AIMS

The grazing patterns of transhumant flocks can contribute to maintaining High Nature Value Farmland (HNVF), defined as those areas in Europe where agriculture supports, or is associated with, either a high species and habitat diversity and/or the presence of species of European conservation concern.

This research investigates the potential role of sheep transhumance in the conservation and sustainable use of marginal areas in the Eastern Alps.

Potential role of local sheep breeds?



Link between sheep farms and landscape



Patches managed by a single sheep farm

2 km

Material and Methods

4 GPS collars - VERTEX Vectronic Aerospace GmbH

- 1 position/h
- 16 months (December 2020- March 2022)



GEODATABASE (53454 positions)

postgreSQL

- Overlap between animal positions and
- - Corine Land Cover 2018 for habitat and High Nature Value Farmland-HNV
 - Natura 2000 Network sites
 - Variables and analyses
 - land use/habitat: % of locations in HNV land covers and within Natura 2000 sites
 - Movement: daily and total yearly distances (Km), altitudinal gradient (m)

Material and Methods

Two transhumant flocks monitored from December 2020 to March 2022



N. Heads: 1200 Production: Meat Location: Padova – Asiago (Eastern Alps)



N. Heads: 1500 Production: Meat Location: Feltre – Marmolada – Friuli (Eastern Alps)



Results

Posizioni GPS Spostamento Stazionamento Regioni Total Distance: 1118 km Daily distance: 2.8 ± 2.2 km Altitudinal gradient: 2285 m asl

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> Total Distance: 1587 km Daily distance: 3.2 ± 2.9 km Altitudinal gradient: 2341 m asl

20 km

10

Results – High Nature Value Farmlands



- Agriculture land with significant natural vegetation
- Natural grasslands
- Pastures
- others

Land use - Flock 1: 28% HNVF

Land use - Flock 2: 34% HNVF





Results



Results: effect of sheep grazing on vegetation



Delta NDVI -0,60 - -0,31 -0,3 - -0,11 -0,1 - 0,1 0,11 - 0,30 0,31 - 0,60

The normalized difference vegetation index (NDVI) is a widely-used metric for quantifying the health and density of vegetation using sensor data. It has a high correlation with the true state of vegetation on the ground. Neutral or positive delta-NDVI indicates vegetation growth.



The results confirmed the potential role of transhumant sheep flocks in conserving mountain landscapes and HNVF and suggest that further information should be acquired on the effects of grazing practices on these habitats.



Implications and next steps

- Policy makers: info to support territorial planning and rural policies
- Shepherds farmers: recognition of the added value of transhumance; sustainable pasture management
- Research:
 - indicators to monitor ecosystem services provided by livestock grazing
 - Specific researches on link between AnGR, farming systems and agroecosystems are needed

Next steps: integration between GPS tracking of animal movement, remote sensing and biophysical indicators of ecosystem services to identify practices able to:

- support the sustainable use of grasslands
- promote the multifunctionality of traditional practices

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Thanks for the attention!

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