Adaptation of the Life+ Mil'Ouv eco-pastoral diagnostic method to the Albanian context

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This text is available in French, Albanian and English. For printed editions, please contact the Ciheam-IamM, Mada or CEN L-R. The documents are also available in electronic format on the websites of the Ciheam-IamM (**http://www.iamm.fr/**) and the Mil'Ouv programme (**http://www.lifemilouv.org**).

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Cover photos:

- View of Mount Pashtrikut (Has, Albania). Photo: F. Lerin (2015)
- Has goat. Photo: F. Lerin (2015)
- F. Launay and B. Medolli: demarcation of management units beside a sinkhole on the karst plateau, with M. Xhibexhia, pastoral stock farmer. Photo: B. Sirot (2015)

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Abbreviations and institutions

CEN L-R: *Conservatoire d'Espaces Naturels du Languedoc Roussillon* (France). Conservatoire of Natural Spaces of Languedoc Roussillon. The CEN L-R is a member of the network of Conservatoires of Natural Spaces (*Consevatoire d'Espaces Naturels* - CEN), nature protection associations which contribute to managing and protecting biodiversity and natural spaces in France. The CEN L-R acts as the coordinator of the Life+ Mil'ouv programme. http://www.cenlr.org/

CERPAM: *Centre d'Etudes et de Réalisations Pastorales Alpes Méditerranée* (France). Mediterranean – Alps Centre for Pastoral Studies and Actions. http://www.cerpam.fr/

CIHEAM IAMM: International Centre for Advanced Mediterranean Agronomic Studies, an intergovernmental organisation composed of thirteen member states, including Albania. The Mediterranean Agronomic Institute of Montpellier is one of the four institutes comprising the Ciheam. It is the coordinator of the think tank and a co-financier of the BiodivBalkans programme. http://www.iamm.fr/

EFNCP: European Forum on Nature Conservation and Pastoralism (Europe). The EFNCP is a European network which defends the preservation of extensive stock farming while increasing awareness and understanding of agricultural systems with a high natural value. http://www.efncp.org/

FFEM: *Fond Français pour l'Environnement Mondial.* French Global Environment Facility. The FFEM is a public fund designed to encourage the protection of the global environment in developing countries. It is a co-financier of the BiodivBalkans programme. http://www.ffem.fr/

Idele: *Institut de l'élevage* (France). Institute of Stock Farming. The national technical research and development institute focusing on stock farming and agricultural value chains. Idele is a partner of the Mil'Ouv programme. http://idele.fr/

LIFE+: The LIFE+ programme is the European Union's financial instrument for the environment which co-finances projects "with European value added". It is divided into three sections: nature and biodiversity, environmental policy and governance and information and communication. The Mil'Ouv programme is co-financed by the LIFE+ programme. ec.europa.eu/environment/life/

MADA: Mountain Areas Development Agency (Albania). MADA is an Albanian agency aimed at improving the quality of life in mountain areas by encouraging the development of sustainable activities. MADA co-finances and participates in the implementation of the BiodivBalkans programme.
http://www.bujqesia.gov.al/al/ministria/institucione-ne-varesi/agjencia-e-zhvillimit-te-zonave-malore-mada

OIER Suamme: *Organisme Inter-Etablissement du Réseau des chambres d'agriculture – Service d'Utilité Agricole Montagne Méditerranée Élevage* (France). Inter-Establishment Organisation of the Network of Chambers of Agriculture – Agricultural Mountain Mediterranean Stock Farming Utility Service, henceforth the **Regional Chamber of Agriculture Languedoc Roussillon**. www.languedocroussillon.chambagri.fr/

PAZA project: Protection Against Zootechnic diseases, Albania. Financed by the European Union, the PAZA project organised a vaccination campaign against brucellosis in 2010-11 throughout Albania. http://www.paza-albania.eu/

PNC: *Parc National des Cévennes* (France). Cévennes National Park. French national parks are a combination of outstanding areas with protected biodiversity and a management style enabling their riches to be preserved. They are characterised by a strong desire to reconcile the protection of nature and the development of human activities in accordance with customs and traditions. The PNC is a partner of the Mil'Ouv programme. https://www.cevennes-parcnational.fr/

RASP: Rural Association Support Program (Albania). The objective of RASP is to encourage opportunities for improving the means of subsistence and of reducing poverty in rural areas by making better use of natural, cultural and human resources to obtain sustainable development. RASP contributes to the implementation of the BiodivBalkans programme. http://www.rasp.org.al/

SupAgro Florac: French agro-environment education institute (France). Part of the SupAgro Montpellier school, SupAgro Florac focuses on the management of natural rural areas and environmental education. http://www.supagro.fr/

UNESCO: United Nations Education, Scientific and Cultural Organisation. The UNESCO heritage committee draws up a world heritage list of cultural or natural assets exhibiting exceptional universal value. http://whc.unesco.org/fr/list/

Introduction

This document is the result of a rapprochement between two programmes:

- the Life+ Mil'Ouv programme (standing for Milieux Ouverts, or open habitats) implemented by the Conservatoire of Natural Spaces Languedoc-Roussillon (CEN L-R) under the banner "*Mediterranean pastoral open habitats have resources! Share knowledge to preserve biodiversity!"*;

- the BiodivBalkans, programme co-funded by the French Global Environment Facility (FFEM) relating to the promotion and conservation of biodiversity – sustainable development of the Balkan mountains. This programme is implemented by the Albanian MADA (Mountain Area Development Agency) and the Ciheam-IamM, in particular for the think tank ("reflexive pole").

Underlying the construction of the joint action are the research and comparative actions conducted by the Ciheam Montpellier over a number of years with regard to agro-sylvo-pastoralism in the Mediterranean Basin. This achievement has not only been incorporated into the Balkan programme mentioned above but also resulted in a partnership agreement being signed in 2015 concerning this "network function" between the inter-departmental organisation managing "The Causses and the Cévennes, Mediterranean agro-pastoral Cultural Landscape" UNESCO site and the Ciheam Montpellier. As the Mil'Ouv programme itself focuses on the pastoral landscape of the UNESCO site and has incorporated the Ciheam Montpellier into its guidance committee, the convergences were obvious… all that remained was to identify an opportunity to launch a joint action!

We felt that an action aimed at "exporting" the Mil'Ouv method was a suitable collaboration project enabling:

- the European Life+ programme to demonstrate that beyond its clear benefits for the French territories concerned by the diagnostics and the development of a renewed pastoral benchmarkingl, the programme could also be of interest at community, European and Mediterranean level;

- the BiodivBalkans programme to introduce a method consolidating the environmental aspects of the project approach and strengthening the construction of the pastoral question in Albania (and more broadly speaking in the western Balkans) by welcoming a team from the Mil'Ouv programme consisting of two naturalists (from the Cévennes national park and the CEN L-R) and one pastoral stock farming specialist (from the French stock farming institute – Idele).

In this introduction, we will emphasise the key elements of the interest of this experience for the BiodivBalkans programme in Albania. Within the scope of its activities aimed at conserving and promoting agro-biodiversity in the rural mountain areas of Albania, the BiodivBalkans project has selected a local breed of goat (Dhia e Hasit – the Has goat) proper to this region in north-eastern Albania – a region boasting prime landscape, ecological and pastoral qualities.

Since 2014, in collaboration with an Albanian rural development NGO (RASP – Rural Association Support Programme) and the local producers, the BiodivBalkans project has developed a quality and origin label for Has goat meat, the taste and culinary qualities of which are acknowledged by Albanian consumers. Through the construction of a geographical indication (GI), it is not only a question of providing consumers with a guarantee of the product's origin and quality (closely linked to the place of production and farming practices), but also of enabling producers to promote this product (through a premium on the market), highlighting both local know-how and practices a priori beneficial to the environment and the landscape ecology of the karst plateau.

The BiodivBalkans project therefore wishes to promote local production by means of a quality and origin label while incorporating this tool in a broader agro-ecological approach to conserving and using natural resources. "Ecological" and "rural development" objectives and injunctions must thus be merged in a joint approach. During the research conducted within this framework, we covered and described the land in detail, produced a typology of producers, described the stock farming practices and identified how the sector and its value chain operate. However, the environmental element remained less well documented and the positive dynamics between biodiversity and stock farming systems were not clearly explained. The "transfer" of the Mil'Ouv method for the BiodivBalkans programme exhibited a three-fold benefit.

(1) First, it provided additional environmental and economic elements emphasising the vital importance of the pastoral question in Albania. It is pastoral systems which supply the majority of Albanian meat – quality meat (even if traceability is only very partial) which ensures that the country is comfortably self-sufficient with regard to animal products. This production is appreciated by consumers who observe a certain consistency in terms of quality. It must be said that this is not the case for the most common fruit and vegetables, the quality of which deteriorated quickly over the past decade. Market dynamics caused quality farming produce to be neglected in favour of mediocre standardised products supplied by small or medium-sized specialised intensive farms. Animal produce continues to resist this trend! It is nevertheless subject to pressure from imports and the development of intensive or semi-intensive systems (based on in-stall farming with fodder based on concentrates, some of which are imported) which are becoming increasingly common on the outskirts of the large centres of consumption.

We therefore believe that defending pastoral systems is an essential and even priority task if the country does not want to see these "high natural value" systems disappear altogether, taking with them the diversity and quality of this farming and pastoral produce. The disappearance of these systems would also lead to a human exodus from mountain regions and the abandonment of almost free feed resources for animals, the closing-off of landscapes, the proliferation of brushwood and an increased risk of fires. These stock farming systems also help to manage natural environments by calling on an agro-biodiversity recognised at a European level.

Defending and illustrating these localised systems is nevertheless not a simple task as more than 75% of the country's surface area consists of mountains and uplands and, in line with the Mediterranean fragmentation, there are as many localised stock farming systems from the north to the south of the country as there are pastoral massifs and local territories. Support for pastoral stock farming therefore initially involves a process of identification and applied research; it also requires strategic diagnostic work focussing on these traditional sectors and a particular effort to improve the commercialisation and traceability aspects for consumers. The work has thus only just begun!

(2) The second benefit of the eco-pastoral diagnostic is to provide a detailed analysis of these pastoral systems by working on different scales which are increasingly precise. This is one of the originalities of this method which nevertheless need to be specified and adapted during the transfer process.

In the case of Albania, and in light of the previous observation concerning the fragmentation of areas and the weak familiarity with the systems, we adopted medium-sized landscape units: the "pastoral massifs". It was then necessary to characterise and demarcate them before dividing them into smaller units. This involved calling on a detailed understanding of the customary or lineage-based management of these pastoral and agricultural territories rather than settling for working directly at the agro-pastoral farm scale – which is the basic building block of the standard method. It was then possible to divide these spaces into (pastoral) "management units" and "topo-facies" (of environmental issues) as in the initial method. This multi-scale and multi-objective (economic, pastoral and environmental) analysis is time-consuming, but indispensable if we are to move beyond generalities and examine the details of the agro-environmental issues.

(3) The final important point is that, in the proposed method, this precise diagnostic is conducted by a "trio": a naturalist, a stock farming technician and the stock farmer himself. If the approach is original in France, it is even more so in Albania where it runs counter to the accompaniment practices adopted by the stock farming sector support services. The technocratic vision governing the behaviour of the "(engineering) specialists" under the communist regime has, to a certain extent, been followed by a vision of "expertise" and post-communist "extension services". We therefore felt it important to demonstrate, by experience, that to handle these agricultural and pastoral questions in detail, the collaboration of the stock farmers in the field is essential. Only they know in detail, and for a given territory, the situation of the resource and the problems, difficulties and constraints linked to its use. Only they are in a position to explain the rationale underpinning their behaviour, such as the feasibility of the solutions proposed, and to adopt practices ensuring a better use of resources both in environmental and pastoral terms.

Naturalists and stock farming specialists must therefore combine their skills and methods on site in order to obtain a joint definition of the challenges and risks. This dual-party exercise alters their practices and sometimes even their visions by raising new questions and introducing new approaches. However, they must also work together in handling local knowledge and the constraints and prospects facing the stock farmers.

This experience of transferring the method therefore provided us with the opportunity to take a more detailed look at, and provide a more tangible and operational content for, general questions concerning the combination of practices in the field, the structure of accompaniment actions and the definition of the strategic agro-environmental objectives of these outstanding territories and systems. They are territories with a rich potential despite difficult conditions which are nevertheless under pressure and in danger of becoming marginalised, both in agricultural policy and in the territorial strategies.

1

The Mil'Ouv eco-pastoral diagnostic method

Mil'Ouv is a European Union LIFE+ project aimed at helping improve the use of natural resources in stock farming and the conservation status of agro-pastoral habitats in Mediterranean regions.

The project operators have developed an original eco-pastoral diagnostic method which they have implemented on agro-pastoral farms in France since 2013.

This chapter was largely drafted using documents relating to the LIFE+ Mil'Ouv projects available on the website **http://www.lifemilouv.org/**.

Photo: F. Lerin.
Julien Marie, naturalist in the PNC, conducting a large-scale observation of the Cahan landscape in the Has district (Albania)

Preserving the agro-sylvo-pastoral ecosystems, a key objective in the Mediterranean

The Mediterranean basin is a beacon of biodiversity, combining great specific wealth and a high level of endemism (Sirami *et al.*, 2010). A large majority of the plant and animal species to be found there rely on the traditional agro-sylvo-pastorals landscapes maintained for centuries by human activity (Cox *et al*., 2011). Areas with a rich biodiversity are often associated with extensive agricultural systems operating by means of ecological processes similar to those of natural ecosystems (Oppermann *et al*., 2012) (Poux *et al.*, 2009).

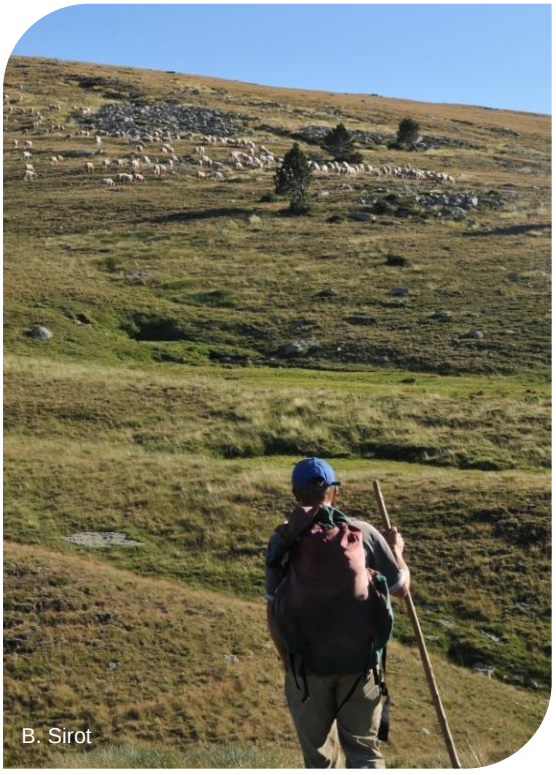
In the Mediterranean agro-sylvo-pastoral systems, grazing plays a decisive role in the dynamics of faunal and floral diversity, ensuring that biodiversity is preserved. Beyond this naturalist benefit, however, these systems also produce specific landscapes underpinned by the practices characteristic of the territory and by all the related traditions, know-how and material assets (Lerin, 2010). It is thanks to this that the agro-pastoral landscape of the Causses and the Cévennes in France was included on the list of UNESCO World Heritage sites under the heading of “continuing cultural landscapes”.

Agro-pastoral and agro-sylvo-pastoral systems
Agro-pastoral systems combine crops and free-range stock farming. These systems use several types of resource in open habitats, often managed collectively.
If these resources include forest, the system is referred to as agro-sylvo-pastoralism.

Agro-pastoral landscape in Les Bondons (Lozère, France).

Landscape in Lozère (France) at the end of winter

Mediterranean agro-sylvo-pastoral landscapes owe their long-standing configuration and resilience to the interaction between human activity and natural habitats (Blondel *et al*., 1999). In recent decades, however, the evolution and diminishing importance of pastoral practices have caused a restructuring of the landscape dynamics (Blondel, 2006). Changing habitats have resulted in a global reduction in biodiversity: today the Mediterranean basin is one of our planet's hotspots where conserving the habitats of endangered species is of the utmost importance (Myers *et al.*, 2000). As with the conservation of the symbolic and historical value of this cultural and landscape heritage, preserving natural habitats or spaces involves supporting and promoting agro-sylvo-pastoral systems.



Shepherd and sheep in the Causses (France)

On 28 June 2011, the Causses and the Cévennes were included on the list of UNESCO World Heritage sites under the heading "Mediterranean agro-pastoral cultural landscape"

Open pastoral habitats

Most rare species endemic to the Mediterranean basin are associated with open habitats. By “open habitats” (according to the definition used by the Mil’Ouv programme), we mean areas demonstrating spontaneous natural growth with little brushwood and no trees which is unsuited to the use of machines: causses, grasslands, scrubland and open heathland. These habitats were created by human activity and must be grazed and/or harvested to be maintained.

Example of an open habitat, European feather grass (Stipa pennata) ground cover. Larzac causse (France).

Open habitats: very high stakes…

Mediterranean and sub-Mediterranean open pastoral habitats are reservoirs of biodiversity home to numerous heritage species of fauna and flora. The rich diversity of the natural species observed there is strengthened by agro-pastoral activities such as grazing or cutting (Bonn *et al*., 1998, Diershke *et al*., 2002). In France, almost one natural habitat in two and more than 30% of bird species recorded as being of interest on a European scale are present in these habitats.

Open habitats also represent a significant feed resource for animal flocks. For example a flock of sheep bred for meat in the Causses in France can derive the majority of its feed from the land where it is allowed to range, including a high proportion (almost 85%) of grassland and heathland. These open habitats offer a relatively abundant and high-quality resource. Furthermore, they can be used in different seasons, even during the flock’s production (nursing, reproduction).

Sheep grazing in the Pyrenean mountains

… but now under threat

In southern Europe, neglected land tends to become overrun by brushwood and forest and certain plant and animal species usually associated with it disappear. This is particularly the case for rare species tied to these open habitats which are thus threatened by their disappearance. According to the EFNCP, habitats in semi-natural environments throughout Europe are in greater danger and less good condition than other types of habitat, such as forests for example.

Encroachment of boxwood on grassland. Larzac (France).

Today in these regions, the pressure exerted by agricultural intensification on the best land continues while land deemed to be marginal and less productive is neglected – which is the case of pastoral areas. The continued decline of agro-pastoral activities causes habitats to become closed off, resulting in a modification of the biodiversity and an increased risk of fires (Lepart *et al.*, 2007). In France, for example, grassland areas have shrunk by 3.5 million hectares since 1970 (i.e. 25% of their initial area) while areas covered in brushwood have grown by 6.5 million hectares (Chabert *et al.,* 1998).

Conserving the activity of stock farming is a fundamental objective for the future of these areas although the production context is uncertain, with changing agricultural and consumer policies, environmental expectations and climatic variations in particular weighing on the pastoral use of these habitats.

To adapt to these changes, the methods, advice and references used to date in terms of agro-pastoralism and the environment must also change. The challenge is to accompany the pastoral world with a view to encouraging stock farming practices conducive to ensuring the best possible conservation of habitats while maintaining and, if possible, consolidating the economic viability of the farms.

Mil'Ouv, a European "LIFE+" project

The Mil'Ouv project falls within the "Information and communication" section of the European Union's LIFE+ fund. This section "*co-finances projects relating to communication and awareness-raising campaigns on environmental, nature protection or biodiversity conservation issues, as well as projects related to forest fire prevention*" (http://ec.europa.eu/).

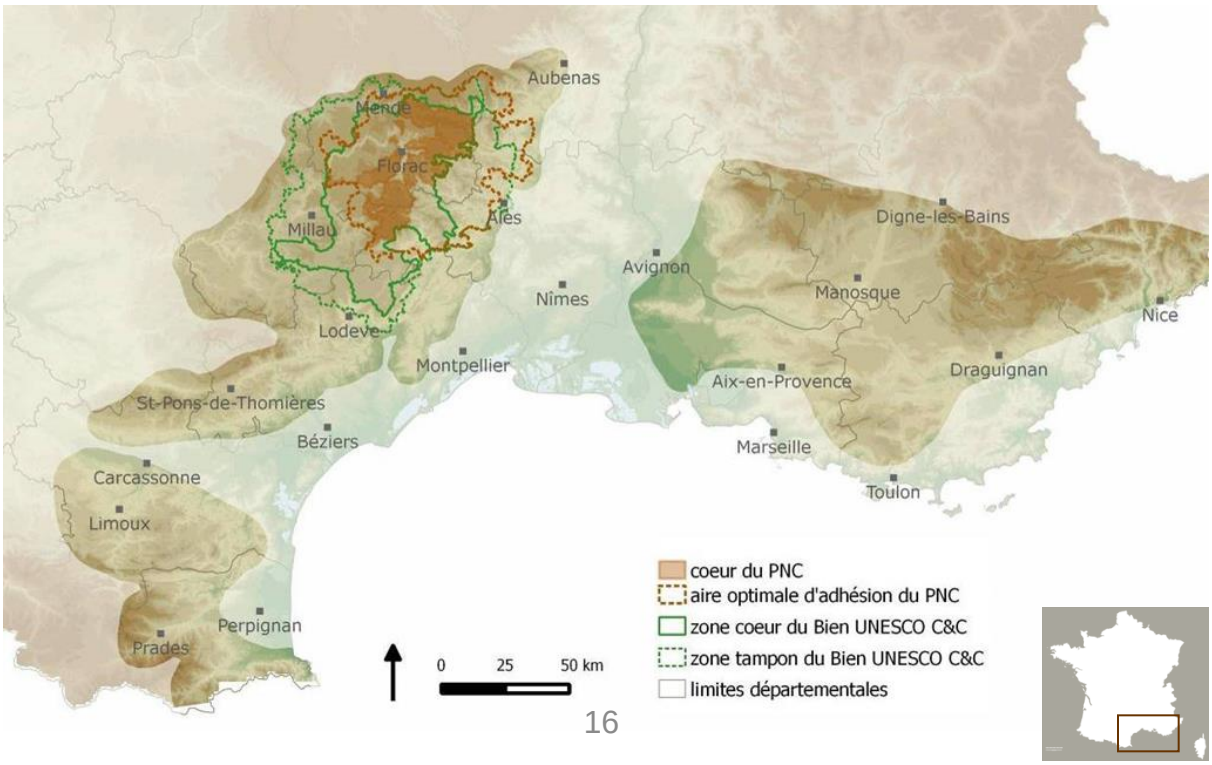
The project, coordinated by the Conservatoire of Natural Spaces Languedoc Roussillon (CEN L-R), is implemented in partnership with the Cévennes National Park (PNC), the Stock Farming Institute (Idele) and SupAgro Florac. It began in September 2013 and is scheduled to end in December 2017.

Objectives of the project

The aim of the LIFE+ Mil'Ouv project is to contribute to improving the use of natural resources in stock farming as well as the conservation status of agro-pastoral habitats in Mediterranean France by encouraging the dissemination of suitable know-how, information and advice intended for all stakeholders in the field of agro-pastoralism. It contributes to the benchmarking of the role of pastoral activities in keeping natural open habitats in a well-preserved state by providing technical arguments relating to environmental aspects. More broadly speaking, Mil'Ouv helps develop awareness of the importance of eco-pastoral management of open habitats.

Scope of action in France

This territory stretches southwards from the Massif Central, more particularly covering the UNESCO site of "the Causses and the Cévennes (C&C), Mediterranean agro-pastoral Cultural Landscape". The actions are primarily implemented in the French region of Languedoc Roussillon, as well as in other regions including Rhône-Alpes, Midi-Pyrénées and PACA (Provence-Alpes-Côte d'Azur).



Mil'Ouv actions in France

Accompanying stock farmers to optimise the use of their pastoral resources and their independence

Mil'Ouv has developed an innovative eco-pastoral diagnostic method and means of accompanying stock farmers in changing or maintaining their practices with a view to ensuring the conservation of open habitats and their biodiversity. Within the framework of this project, 130 stock famers receive 'diagnostic visits', with 60 of them having already received or scheduled to receive more in-depth visits providing personalised accompaniment concerning the pastoral and ecological management of their open habitats.

Communicating, disseminating and increasing awareness

Based on these experiences in the field, Mil'Ouv implements an information communication and dissemination approach. Meetings are organised to share and disseminate knowledge through local technical workshops, seminars, etc. Mil'Ouv produces and disseminates information using a range of media including books, technical and educational booklets, websites, videos, etc. (available in French at http://www.lifemilouv.org).

Developing and providing training courses

Training sessions are organised intended for stock farmers, agricultural and natural space technicians, students, teachers and the elected representatives of the local authorities.

Training session with students from SupAgro Florac (France).

Origin of the Mil'Ouv method: a development based on pre-existing methods

In France as in the rest of Europe, environmental questions have become increasingly important in the agricultural world since the 1970s (see appendix 1). This emergence is reflected by the gradual introduction of incentive measures in the European mechanisms of the CAP designed to limit the adverse impacts of agriculture on the environment. Since 1992 in France, for example, the AEM scheme allows farmers to be paid for environmental services. This generally involves a five-year contract between the government and the volunteer farmers requiring that they adopt a certain number of environmentally-friendly practices in exchange for payment. More recently, TAEM measures were introduced in 2007 which are more specific measures applied in high-stake areas (water quality, biodiversity, Natura 2000 zones, etc.). The 2014 CAP reform strengthened support for environmentally-friendly practices by granting 30% of aid to the adoption of practices beneficial to the environment.

CAP: Common Agricultural Policy of the European Union.

Natura 2000: In order to limit the erosion of biodiversity, the European Commission introduced a network of so-called 'Natura 2000' sites boasting a significant heritage value due to the rarity or fragility of the fauna and flora present.
(see the importance of the Natura 2000 sites in Europe at: http://natura2000.eea.europa.eu)

Within the scope of the CAP, certain objectives are shared by the countries of Europe but implemented within the framework of national mechanisms. This is the case of the following measures proper to France:

AEM: Agro-Environmental Measures.
TAEM: Territorialised Agro-Environmental Measures

The appearance of these incentive measures required agro-environmental diagnostic methods to be created allowing a link to be established between the status of biodiversity and agricultural practices (see appendix 2). These include eco-pastoral diagnostic methods created by French organisations in order to evaluate and/or guide the management of pastoral habitats, including the Evaluation of Free Range Grazing and Mountain Pastures (CERPAM), the Diagnostic of Free Range Grazing (Suamme, Idele, CERPAM), the Diagnostic of Farm Biodiversity (CEN L-R, PNC), etc. (see appendix 3).

There are numerous methods which, with the help of certain tools, enable ecological and/or pastoral diagnostics to be conducted. They can only be used, however, for very specific objectives reflecting the orientations of the entities that created them at a given moment to answer a specific question.

The Mil'Ouv project has endeavoured to decipher the rationale common to all these approaches. The Mil'Ouv diagnostic method is thus the fruit of pooling and adapting existing methods and tools which have been combined, retaining only the most relevant approaches and indicators.

It is intended to be as comprehensive as possible – both operational, insofar as it that culminates in advice and recommendations, and inclusive. Tools allow the status of the resource at different levels to be cross-referenced with the flock's feed system while taking account of the stock farmer's environmental objectives and strategies on his farm. This method also incorporates a monitoring process to accompany the stock farmer in changing practices in the wake of the recommendations.

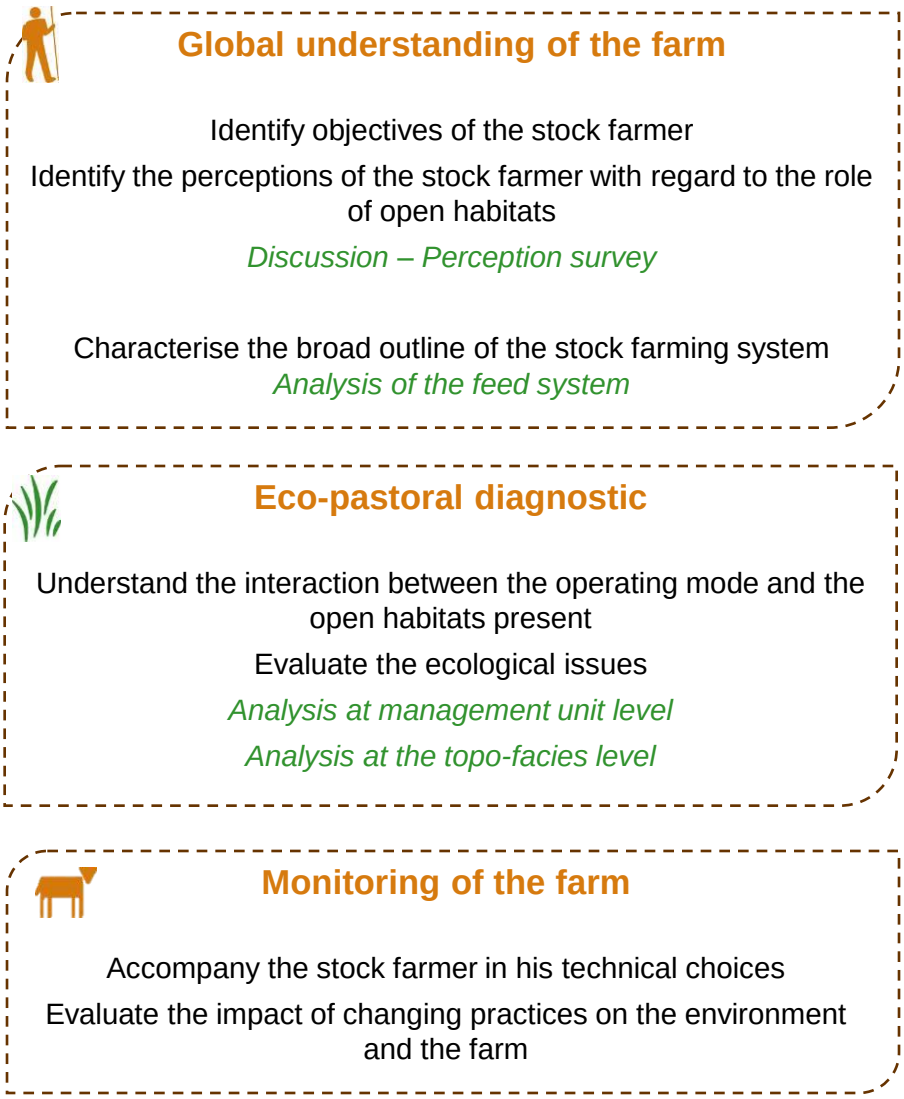
Mil'Ouv diagnostic in France

This new method is based on the observation (Buffin *et al.,* 2014) that pastoral stock farmers in southern France are generally consulted by technicians with regard to questions of production or compatibility, but more rarely with regard to environmental questions. When they are, the visits they receive generally relate to contractual arrangements concerning the CAP TAEMs whereby the stock farmers receive directions and are told what to do and how to do it without being given any real explanations.

These stock farmers are nevertheless all faced with vegetation dynamics that they attempt to optimise – in particular problems of encroaching brushwood which causes environments to become inaccessible and reduce the source of fodder. They are keen to receive advice, but more particularly they want discussions (!) in order to identify solutions. This is what the Mil'Ouv diagnostic tries to create.

The diagnostic method at a glance

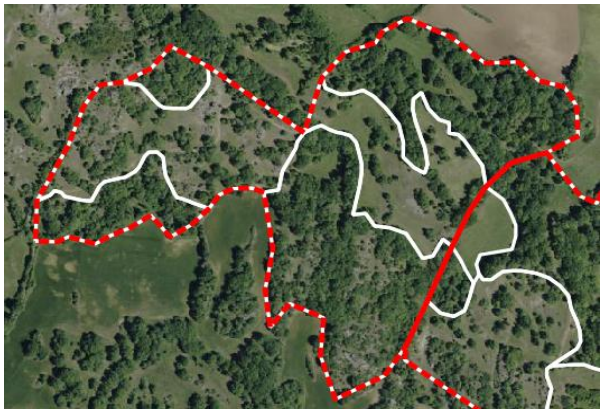
The Mil'Ouv diagnostics are conducted on site with the stock farmer. In France, a comprehensive diagnostic requires at least three days. Accompaniment is subsequently proposed on the farms of certain volunteer stock farmers, entailing additional visits.



The 3rd section of this document examines the stages of the diagnostic for application in Albania.

Management unit or MU: surface areas managed in the same way, for example a set of grazed areas per specific plot over one or more data periods.

Topo-facies: a homogenous unit with regard to vegetation and topography, demarcated by a fence, a barrier consisting of plants, a change of vegetation structure or relief (exposure, soil, etc.). It can be a homogenous habitat or a patchwork of different interwoven habitats.



Management unit divided into 6 topo-facies

The originality of the method

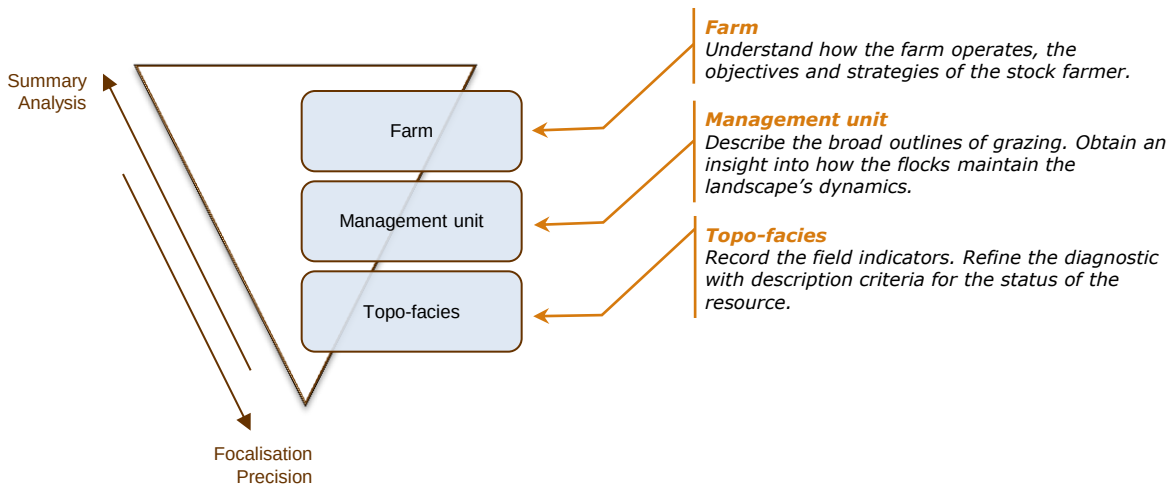
Change of scale

An original element in this method is the integration of several levels of analysis in the eco-pastoral diagnostic. This change of scale deals with a practical and methodological question which is fundamental to both the environmental issues and the agricultural and economic issues.

The gateway to the diagnostic is the description of the farm which facilitates a global understanding of how it operates while explaining the objectives of the farmer. We gradually "scale up" (*i.e.* working on smaller and smaller units), identifying the links between grazing and the status of the environment, initially in general with regard to the "management units" then in greater detail with regard to the "topo-facies" by describing increasingly refined elements of the habitat (species indicating a dysfunction, traces of bare soil, plant cover, etc.).

After refining the diagnostic to small units, we return to more global levels by summarising the elements collected in the field with a view to crossing the ecological and pastoral objectives and suggesting any practical adjustments that may be necessary.

The scaling movement works in both directions, as shown in the figure below:



Crossed perspectives: the stock farmer – pastoralist – naturalist trio

The method incorporates agricultural and environmental aspects in a complementary manner as the diagnostic is fed by the crossed perspectives of two technicians: a naturalist and a "pastoralist" (stock farming technician). The stock farmer, who is the main person concerned by the diagnostic, is also included in the discussion, representing the "3rd member of the trio" on which the method is founded. The approach is therefore jointly developed and coherent: it not only takes account of the territorial issues but also the needs and objectives of the stock farmer on his farm.

The diagnostic therefore offers the opportunity to ensure genuine sharing between the three parties with their complementary know-how and skills. As the diagnostic compares two disciplines (complemented by the local knowledge of the stock farmer), it raises new questions for each of the disciplines and new avenues for common reflection.

The simplified example below illustrates the difference between two perspectives – naturalist and agricultural – of the same habitat along with the synthetic approach of the Mil'ouv diagnostic .

Naturalist perspective	**Agricultural perspective**
Specific inventory	Diagnostic of the farm / territory
GPS plotting	Pastoral resource zoning
	
Scale = m² + week	**Scale = hectare + season**
How to preserve the orchid?	How to preserve the resource?
Recommendation: no grazing from 1 May to 15 June	**Recommendation: graze grassland in spring**

How to reconcile these two contradictory recommendations?

Naturalist perspective + Agricultural perspective

Diagnostic of the farm

Zoning: diagnostic of vegetation (objectives + resources)

Scale = topo-facies

How to preserve the orchid and the resource?

Recommendation: contain *Brachypodium pinnatum* by means of grazing early and late in the season

To avoid the landscape becoming closed off, detrimental to the orchid	To promote a "second choice" resource

2

Adaptation of the method to the Albanian context

Initially designed for the French context, the Mil'Ouv eco-pastoral diagnostic method has been adjusted to make it applicable to the Has region in Albania. Initial work was carried out before the field mission then refined and explained later.

These adaptations concern:
• the integration of additional levels in the scale of analysis;
• an expansion of the subject of the diagnostic study;
• the tools, media and procedure.

The basic principles of the method remain unchanged: the stock farmer-naturalist-pastoralist trio, the change in scale between the different levels of description and analysis as well as the monitoring of the stock farmers after the diagnostic.

This 'case of the Has region' is to be seen as the first stage of an adaptation which could subsequently be improved and tested in other areas, initially in different Albanian pastoral systems, but possibly also more broadly in the western Balkans.

Photo: F. Lerin.
An inquisitive Has goat…

Adaptation 1 "Territorialisation" of the diagnostic

In the French case, operated by the Mil'Ouv programme, the relationship between the methods and the territory seemed sound in light of the fact that the referentials and the methods & tools used and combined had been developed in this specific context taking account of a certain diversity as well as clear common characteristics.

By attempting to transfer the method to a radically different context, the spectrum of diversity is extended and the type and anchorage of the stock farming systems in the societies, value chains and local environment appear more clearly and require additional work. "*Studying the relationships between stock farmer and territory means abandoning the idea of generic and uniform innovations which could be applied without reference to the diversity of the local stock farming contexts, be they spatial cultural or socio-economic"* (Manoli *et al.*, 2011). The 'territorialisation' of the approach should thus be made more explicit.

A territorialised approach

A multidisciplinary concept, the "territory" shall be envisaged in all its dimensions:
• **spatial:** the territory is a demarcated geographic area (sometimes administrative but not necessarily) with specific pedoclimatic, geomorphological and/or geographic characteristics;
• **socio-economic, cultural and historic:** the territory is the "*place where the local identity, the standards and stakeholders' notions are developed (…) which then interact under the impetus of motors of global and local change which play on the dynamics of stock farming*" (Manoli *et al*., 2011);
• **agronomic and ecological:** the territory is the source of fodder resources and ecological processes subject to increasingly significant environmental issues;
• **landscape:** the works of J.P. Deffontaines instigated an attempt to understand the complementarity between the farmers practices and the potentialities of the environment (Deffontaines, 1998).

Increasingly territorialised studies in France…

In France, the territorial aspect is often taken into account in studies concerning stock farming. This is the case, for example, of numerous systemic studies incorporating a precise intermeshing of scales (crop and stock farming system, production system, agrarian system). Studies of the stock farming product chains increasingly focus on the (local and global) dynamics of the territory (Napoléone *et al.*, 2015). Using the notion of "multifunctionality" of agriculture has strengthened this localised territorial dimension of the sectors and agricultural systems. Agriculture does not only supply products (agricultural and non-agricultural) to the markets as well as the processors, traders and consumers; it also "maintains" the landscapes and (sometimes) serves to protect the environment and to maintain a certain balance between the territories (Hervieu, 2002).

…but hardly at all in Albania

In Albania, agricultural studies are scarcely (or not at all) linked to the notion of territory and are even less the subject of landscape descriptions or analyses. Certain studies represent the start of a territorialisation (Gauvrit *et al*., 2006, Marku, 1999, Zogo, 2011, for example), but these are often analyses of sectors or agrarian systems. The notion of

territory (including a landscape analysis) was a much more recent phenomenon – and is primarily (but not exclusively, see Segré, 1999, Stahl, 2010 in particular) linked to works carried out as part of or parallel to the BiodivBalkans programme: Garnier, 2013 et 2014, Dupré la Tour A., 2014, Medolli, 2013 and 2014, Lopez, 2013, Crouteix, 2013, Michaud, 2015.

An analysis of agrarian landscapes and landscape ecology is nevertheless essential in Albania where stock farming systems are both highly diversified and based on the use of natural resources.

Certain stock farming (or agriculture) methods, generally intensive, call on production methods enabling them to overcome the constraints imposed by the environment in which they are found. These stock farming methods can thus be studied independent of their environment. In contrast, however, pastoral stock farming is entirely bound to the environment it uses: not only does it call on the fodder resources the habitat provides, it also affects the vegetation dynamic and helps shape, maintain and develop the landscape.

In Albania, pastoral stock farming is fundamental and predominant. It has selected and uses a wide range of local breeds adapted to their regions (Kume *et al.*, 2008), with fodder largely provided by local pastoral or agro-pastoral resources. To study these systems, the farm scale is insufficient. Stock farms must be considered on a broader scale within the cultural, socio-economic and landscape environment in which they are located.

A landscape analysis on the scale of the entire massif

The massif is a specific whole which differs from its environment from a geomorphological point of view. At this level, we can observe in detail the elements of the landscape and the organisation of the farmed and natural spaces which bear witness to the agrarian history and current use of the territory.

The preliminary study to the eco-pastoral diagnostic conducted in the Has district (Garnier, 2013 and 2014, Medolli 2013 and 2014) was carried out at different levels, initially that of the Has territory as a whole (agrarian history, socio-economic context, stock farming practices, sector study, etc.). This descriptive analysis identified sub-sectors in the massif and made it possible to choose the karst plateau for a second analysis on a more refined scale: this is the focus for the majority of Has goat farms which the BiodivBalkans programme believed to be a promising case for the creation of a protected geographical indication in Albania.

In France, the regional or territorial scale is not a significant element in the format and use of the Mil'Ouv method – doubtless because this level is implicit in light of the accumulation of existing knowledge and the territorial anchorage of the technicians and specialists involved. In Albania, however, we feel that a regional-territorial analysis at the level of "pastoral massifs" identified, described and zoned is a necessary dimension, essential to a contextualised characterisation of the stock farming systems and the accompaniment of the pastoral farms. This necessity corresponds to the situation of the very weak accumulation of knowledge of these territorialised stock farming systems which, even when they exist at the level of the local stakeholders, do not consist of referentials. The need to introduce this scale of analysis also relates to other factors, such as the existence of large areas of "common land", as we will see later.

Adaptation 2 From ‘open habitats’ to all grazed areas

The Mil’Ouv diagnostic as designed for France focuses on the evolution of the dynamic of open pastoral habitats. This decision is meaningful for a LIFE+ project as these habitats exhibit major conservation stakes at the European community level, where there is a general and massive trend towards the decline of pastoralism and the closing of habitats.

Rare, endangered or representative natural habitats in the European Union have been identified for conservation within the Natura 2000 networks (habitats, fauna, flora directives). Among these habitats, grasslands such meadows and heathland benefit from European conservation commitments with an obligation of results. The European evaluations indicate that open habitats are among the least well preserved habitats within the continent and therefore represent a major conservation objective.

Natural habitat: area combining the physical and biological conditions necessary to the existence of an animal or plant species (or group of species) (definition of the Museum of Natural History, France).

The LIFE+ Mil’Ouv project is incorporated into the implementation and management objectives of the habitats directive of the Natura 2000 network. The open habitats targeted by the Mil’Ouv diagnostic were selected for their significance in terms of conservation: wetlands; heathland, bush and scrubland; cut meadows; grassland on bare surface soil and grassland on well-developed deep soils. Deciduous forests, conifer forests, mixed forests and changing shrub vegetation are considered closed landscapes and are therefore not concerned by the Mil’Ouv project in its French context.

However, while the Mil’ouv method focuses on open habitats, it is nevertheless applicable to other habitats. When the situation and the objectives are suitable (or require it), the diagnostic can be extended to other habitats, in particular more wooded areas, and this is the case in Albania.

When defining the scope of the diagnostic, it is not so much the ecological characterisation of the habitats as the use that is made of them which is important: irrespective of whether they are open or closed, we can therefore envisage examining all habitats of ecological and pastoral interest. In the case presented below, the shift from ‘open habitats’ to all grazed areas including all grazed forest areas is a necessary adaptation of the Mil’Ouv method.

Incorporating wooded areas

Grazing does not always solely concern open habitats but may also involve closed heathland, shrubland or woodland: this is referred to as sylvo-pastoralism. Very common in Albania (Mehmeti, 1998; Mehmeti *et al.,* 2005), this pastoral system combines fodder resources from the herbaceous stratum and shrub, or even tree, stratum. These fodder resources enjoy the advantage of being diversified and available all year round.

In the Has district, studying only open habitats would have been too restrictive as more than half of the karst plateau is covered with forests with high ecological and pastoral stakes. These forests are used for their wood and/or as fodder for the flocks on the plateau. Goats graze there for large parts of the year and they are given oak leaves during the winter (Garnier, 2014).

Has goats and kids feed on oak leaves.

A stack of leaves drying for winter fodder.

Adaptation 3 Introduction of '*lagja*' in the analysis scale

In France, the most pertinent level to conduct the diagnostic is farm level as it generally represents the largest unit where ownership, management and use intersect. In Albania, in contrast, grazing land is collective and the circles of management and use do not always overlap. Determining the analysis unit therefore becomes more complex and the upper levels must be incorporated.

Grazing land is "common"

While a certain number of meadows close to villages are land where ownership, management and use are purely private, grazing land above this first circle is municipal or national and grazed by flocks belonging to several owners. The collective management situation of these rangelands is thus particularly complex. This is all the more true as it was doubly disturbed by the long period of collectivisation and by a process of 'devolution' of the ownership of forests and pastureland from the state to the municipalities, then of their management to the beneficiaries (in the form of rights of use over periods of different lengths). This process of devolution is ongoing and remains relatively vague for the national and local actors (Bernard *et al,* 2014).

There is not therefore one stable community management system of ranges nor one contractual system sponsored by the state (and its forestry services) or by the municipality. These are just 'de facto situations' combining land ownership pretentions, recognised levels of access and usage and progressive practices negotiated at different levels (Bernard *et al.*, 2014, Crouteix, 2013; Lopez, 2013). In Albania, it is therefore entirely necessary to introduce an analysis scale for these common pastoral spaces, in particular by demarcating "pastoral massifs" where stock farmers practices are conducted.

The family farm is spatially included in a broader territorial organisation which impacts on pastoral rights of use, ownership rights and practices. Thus, in parallel to the administrative intermeshing of management competences and responsibilities (state > region (*Qark*) > municipality (*bashkia*)*), the practical organisation of the management and use of ranges is conducted at more limited levels (village (*fshat*) > neighbourhood (*lagja*) > farm).

What is a lagja?

In Albania, the *lagja* refers to a 'neighbourhood' of the village where a lineage (*fis)* or part of a lineage lives, i.e. members with a family relationship (*kushëri, 'cousins'*) and the same family name. More particularly, however, the *lagja* has a territorial dimension as it is a clearly demarcated sub-unit of the village. The *lagja* therefore has a name (the name of the family that occupies it) and precise limits (De Rapper, 1998).

(*Previously, the district (*rreth*) was an additional administrative level situated between the region and the municipality. There are now 12 regions (*qarqe*) in Albania.)

Sometimes the limits of the village (*fshat*) and the neighbourhood *(lagja*) can be superimposed, as in the case of villages comprising a single neighbourhood. Otherwise, the village, is divided into neighbourhoods (*lagja*) which constitute a level defining use whereas ownership of the land remains at the village level.

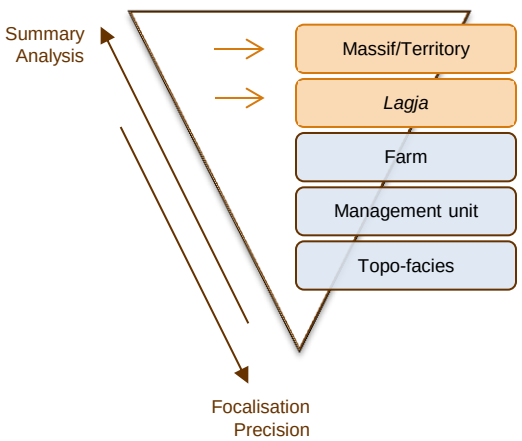
In the villages, it is therefore common to see:
- grazing zones accessible to all the flocks in the village,
- others which are divided into sectors for grazing with each sector corresponding to a *lagja*.

The same is true for certain forestry zones managed by the municipality belonging administratively to a village and where everyone in the village can bring their flock, but which are subdivided into private (family) sectors for the use of wood and of leaves for fodder.

Understanding the use of a common area

When the pastoral space is common – this is the case in the Has district where ownership, management and use are allocated to several people – the management units of this space is thus defined at the collective and not the individual level. Sometimes, pastureland and forests are also used for other purposes (gathering aromatic and medicinal plants, cutting wood, etc.) which play a role in the vegetation dynamics. It is necessary to meet all the users of a single space in order to take account of what uses they make of it and the interactions observed. Problems linked to common land, as common land, may be identified whereas these would not be very visible, if at all, during individual interviews.

In the case of the Has district, the *lagja* is the smallest common management unit of the pastoral territory. Meeting the members of the *lagja* must become a new stage in the diagnostic with a view to understanding the collective organisation and the objectives of using these common areas. Whether it is a *lagja* (in the case of the Has) or other forms of organisation and management of the common land, this scale is as essential as the diagnostic at the level of the massif.



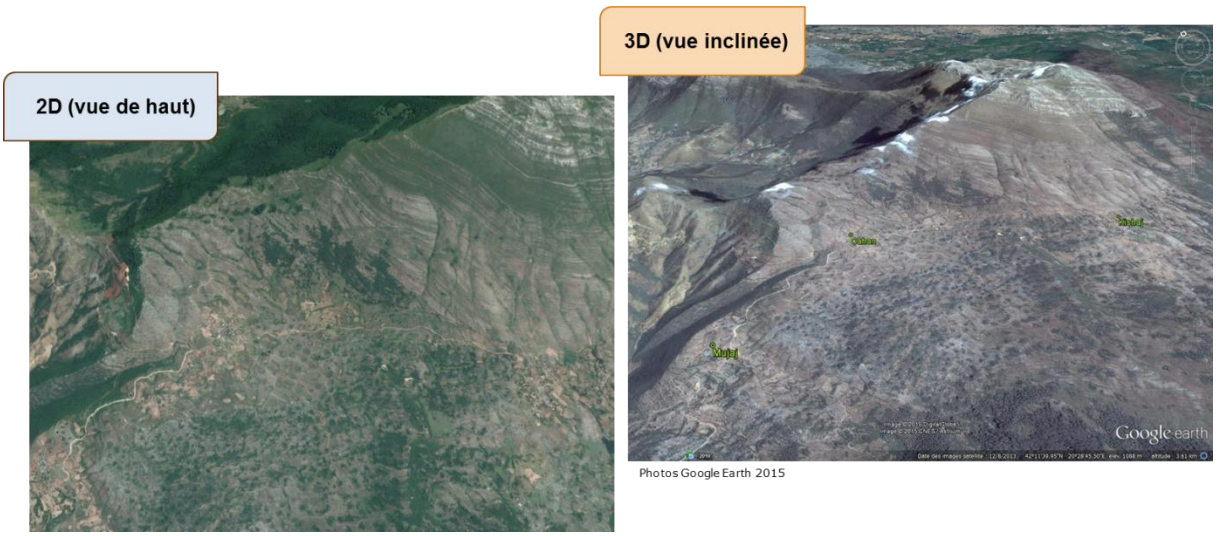
Introduction of two levels in the diagnostic scale

Adaptation 4 Adaptation of the tools

(A) Shift from 2D media to 3D media

Albanian stock farmers rarely need to read maps… unlike French farmers, they do not need to demarcate their plots online on a satellite photo for the purposes of the CAP forms! It is therefore sometimes impossible, and often embarrassing for the stock farmer, to base a discussion and the identification of grazing lands on a 2-dimensional topographical map.

Satellite photos, which are clearer and closer to reality, should be favoured. However, the precision and fluidity of the interviews can be improved even further by changing from a 2D photo to a 3D image, i.e. with an inclination showing relief. Tests carried out during interviews in the BiodivBalkans programme show that questions are more clearly understood and discussion are much more precise if 3D representations of the territory and the land covered are used.



Photos Google Earth 2015

(B) Adaptation of the questionnaire

The final adaptation of the Mil'Ouv method relates to the questionnaire developed to obtain a global understanding of the farm. This questionnaire serves as a support for the interview, conducted as a discussion, by proposing specific questions for reference.

It is designed to:
- provide an inventory of the practices, perceptions, expectations and needs of the farmer with regard to open habitats;
- describe and characteriser the structure of the farm, the production objectives, its autonomy and the share of pastoral habitats in the flock's feed;
- the flock feeding strategy in relation to the habitats used and the desired resources.

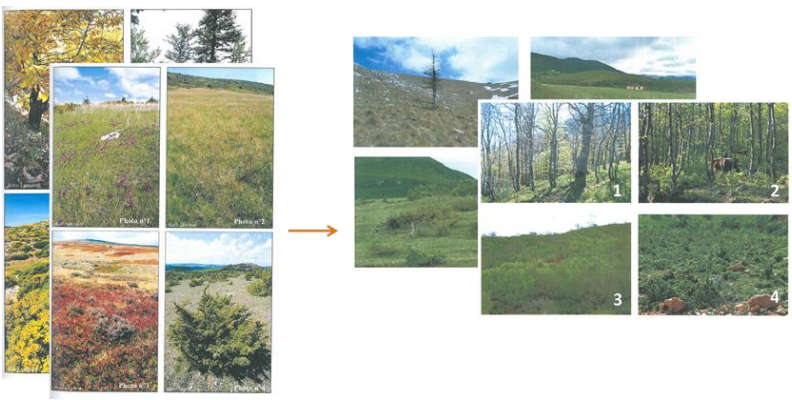
Focusing on the issue of open habitats, this questionnaire can nevertheless easily be adapted to other questions.

In the ‘case of the Has’, and more broadly speaking in the Albanian context, it was necessary to modify certain questions to make them more appropriate to the administrative and social context in Albania.
The questions concerning the CAP, for example, were eliminated. Similarly, labour is rarely employed in the Has, and the question “number of LUs including voluntary and seasonal workers?” was changed to “number of people working on the farm (including family): (1) full time, (2) part time?”. This provides an approximate idea of the labour working on the farm even if this often comprises family and is “informal” in nature.

LU: labour unit. It corresponds to the equivalent of a person working full time on a farm.

Other questions, while very precise, were deliberately left in the questionnaire. Although Albanian stock farmers do not have to submit such precise declarations of their flocks or land as for the CAP and while they rarely keep recorded accounts of their stocks, they are generally capable of answering these precise questions. And even if the answers given are sometimes approximate, it is nevertheless interesting and even essential to have an idea of sizes.

Finally, in the adapted questionnaire, the issue of open habitats is no longer the core question. The “photo board” recommended by the Mil’Ouv has been retained. Originally designed to identify open habitats providing a clear definition during the interview, this board is used in the Albanian case as a support for discussing the different habitats (in particular with the *lagja*): which habitats are present? How are they used? What are they called (local names which may vary from one region to another)? What are the issues in these habitats? etc. The photos on the Mil’Ouv board have thus been replaced by photos of the Has, characterising the different habitats.



Generally speaking, the questionnaire has been modified and streamlined to make it more accessible to stakeholders who are very familiar with their profession, their flocks and their territories but who are not used to explaining their practices. This adaptation is just as necessary for the Albanian technicians and investigators who are relatively unused to this type of exercise. Like the French questionnaire, the Albanian questionnaire remains very broad and can be adapted to other contexts and issues. This new questionnaire is presented in appendix 4 (it should be noted that the original questionnaire developed by the Mil’Ouv programme for the French context is available at http://www.lifemilouv.org/).

3

Having been modified to make it applicable in Albania, the eco-pastoral diagnostic method was tested and the adjustments were refined during a one-week mission to the Has region conducted in July 2015. The following section presents a summary of this mission, including the procedure, the field elements, the results and conclusions drawn from the exercise and an overall perspective.

The case of the Has district in Albania

Photo: F. Lerin,
The 'big sinkhole' ('*Gropa Hurdha e Madhe*' in Albanian),
close to the summit of Mount Pashtrikut

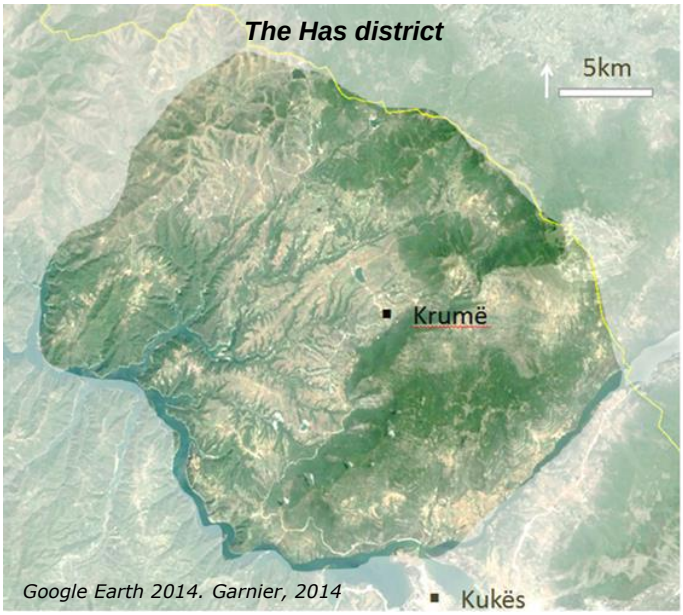
The Has district, contextual elements

It is necessary to enjoy a basic familiarity with the territory in which an eco-pastoral diagnostic will be carried out in order to ensure it is correctly prepared, which implies familiarity with the socio-economic, historical and landscape context, knowing who the decision-makers are and what their roles are within this territory, what stock farming systems are present, etc. A brief overview of these elements is presented below.

Within the framework of the BiodivBalkans project, the Has district was subject to an in-depth study characterising the stock farming systems, the use of pastoral resources (Garnier, 2013 and 2014) and the methods of commercialising animal products (Medolli, 2013 and 2014). It would have been impossible to conduct the eco-pastoral diagnostic without this preliminary study which serves as the analysis of the geomorphological, landscape, historical, social, economic and environmental elements of an agro-sylvo-pastoral territory. It should thus be recalled that the diagnostic presented here is the continuation of a broader study on which it is based.

A territory with a strong pastoral component

The Has is one of the smallest districts in Albania (440km²), with no less than 63% of its surface area covered by forests, meadows or grazing land, making the region suitable for pastoral stock farming. The climate is continental with cold, snowy winters and hot dry summers.



With a high level of forest coverage and challenging topography, the Has long remained a “passive” territory characterised by low-output subsistence crops and specialised in pastoral stock farming. The scarcity of fodder resources in winter limited the size of the flocks. Only certain large families could drive large flocks down onto the plains of modern-day Kosovo in a phenomenon of reverse transhumance.

The process of “socialisation of production means” implemented by the Albanian Worker’s Party (PTA – the communist party in the country) in the wake of the Second World War introduced a collectivisation of all Albanian agricultural land and the nationalisation of the forests and pastureland (Civici, 2003). In the Has, large-scale forest clearing was witnessed at this time, allowing large swathes of arable land to be opened up, along with the intensification and expansion of agriculture. As elsewhere in Albania, all hilly land was terraced to enable the development of specialised arboriculture. Consequently, the Has changed from a predominantly pastoral system to an agro-pastoral system with a strong agricultural component (Bernard *et al*., 2014).

The fall of the regime in 1991 led to a sudden de-collectivisation with a return to private ownership and the fragmentation of arable land. For want of production means, intensive agriculture was abandoned in favour of a more extensive agro-pastoral system. The previously farmed land in the Has was gradually abandoned and the forests returned (Garnier, 2014). This phenomenon was exacerbated by a massive rural exodus towards the cities and abroad (Guri *et al*., 2014). During this process, the families living in the Has hurriedly developed a small-scale subsistence livestock farming activity with a few animals and the land that had been distributed to them. Today, they practise family agriculture based on the cultivation of a few ‘*dynym*’ of agricultural land and stock farming, with the majority of production intended for self-consumption (a *dynym* corresponds to one tenth of a hectare, i.e. 1,000 m²).

Old terraces dating from the communist period, now abandoned

The families often combined several activities, either agricultural or extra-agricultural. Depending on the case, stock farming is the main activity or a self-consumption activity in addition to other activities. Almost half of the families in the Has own at least one cow (for self-consumption) while large flocks of cattle are rare. On the other hand, small ruminant farming is often more specialised with larger flocks representing an income-generating activity for the families.

Type of stock farming	Number of farms concerned	Average number of animals per farm
Cattle	2,091	3.3
Goats	153	60.2
Sheep	336	32.8

Structure of stock farms in the Has.
Source: A. Garnier (2014), based on census data from the PAZA project, 2010-11.

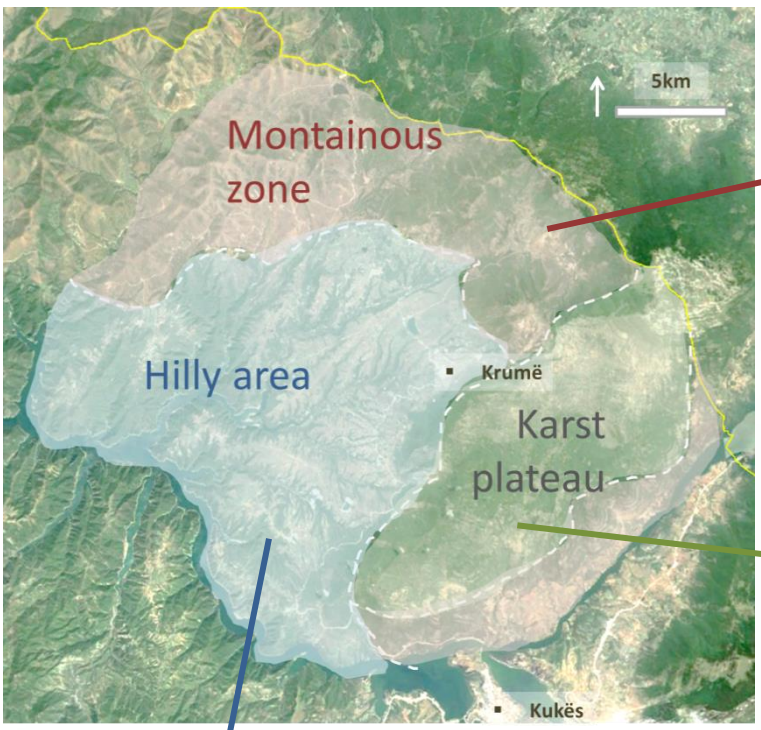
Remittances from abroad are of the utmost importance in the domestic economy with numerous payments sent by one or members of the lineage working abroad. Although irregular, it is a source of income which is sometimes reinvested in the agricultural activity.

Three distinct agro-ecological and landscape sub-areas

The medium-altitude (500-700m) "**hilly area**" is home to the majority of farming land in the Has, in particular on two fertile plains (Fajza-Zaharisht and Kruma) where the state farms were located under the communist regime. This is the part of the Has where the landscape has been subject to most change, with large-scale forest clearing, strong agricultural intensification, the construction of hill reservoirs and the terracing of hills already mentioned.

On the edge of the territory in the north and east of the Has, the "**mountainous zone**" forms a border with Kosovo and the neighbouring Albanian districts of Kukës and Tropoja. Not very fertile and difficulty to irrigate, this area covered by deciduous trees and scrubland is used for stock farming and chrome mining.

The third sub-area was the focus of the eco-pastoral diagnostic. Due to an abundance of sylvo-pastoral resources, the "**karst plateau**" is where the famous *Dhia e Hasit* (Has goat) breed of goat is farmed. Located at an altitude of between 1,000 and 1,500m in the south-east of the district, this plateau is covered by a large oak and beech forest as well as extensive meadows and grazing land, with a reduced *ager* concentrated in the sinkholes, small circular formations typical of karst plateaus.




Mountainous zone


Karst plateau


Hilly area

Sinkholes: these are small circular depressions ranging from a few metres to tens of metres in size, formed when the limestone is dissolved by rainwater, causing the land to subside. The entire karst plateau in the Has district is scattered with numerous sinkholes, the intensity and regularity of this phenomenon making it a quite remarkable and exceptional landscape (Krutaj *et al.*, 1998).

Sinkholes in Cahan

A farmed sinkhole on the Has karst plateau

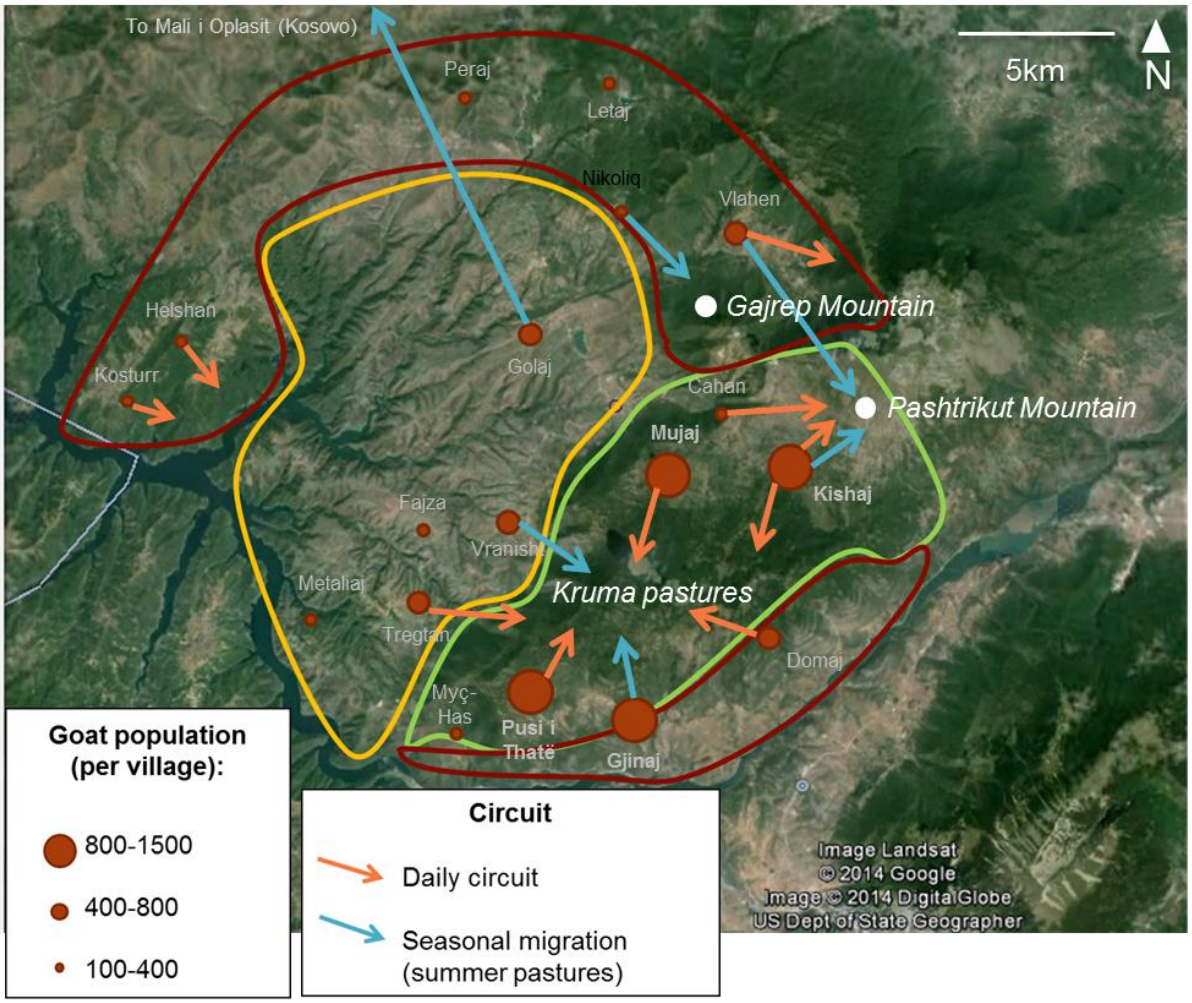
The Has goat, a hardy breed on the karst plateau

The Has goat, renowned for its hardiness and interesting meat production, is primarily bred in the Has district (Hoda *et al*., 2011) and more particularly on the karst plateau (Garnier, 2014). This goat is the foundation of the economy of numerous stock farming families. It is one of the key elements of the “production” of the landscape and the biodiversity proper to the karst plateau.

Flock of Has goats, kid and billy presented by its shepherd.

The stock farmers traditionally select their goats according to certain criteria, thereby creating a homogenous and easily recognisable breed with a long red coat in summer (which whitens slightly in winter), silky fur with a long fibre, a certain hardiness (resistance to cold, long legs), high fecundity (fecundity rate estimated at 110%-115%) and a high level of milk and meat production. A goat produces 110 to 230 kg of milk per year with a milk fat rate of between 3.2 and 4%. The kids weigh between 2.9 and 3.2 kg at birth with an average daily gain of 170 g (Kume *et al.*, 2008). The BiodivBalkans project targets the kid meat of this breed with a view to introducing a quality and original label (in particular a geographic indication).

In the Has district, the goats are primarily bred on the karst plateau: of 9,212 goats identified in the district (PAZA project, 2010-11), just over half live on the karst plateau (53%) or in the surrounding area, i.e. in the villages with access to the pastoral massifs: extensive mountain pastures and oak forests. This is where the so-called “pure” flocks are to be found. The further west you go within the district, the more the flocks consist of a mixture of different breeds of goat. The karst plateau and the adjacent mountain, Mount Pashtrikut, are the centre of goat production in the Has, not only because they provide suitable grazing land but also because goat farming is an appropriate means of using this space with very little *ager* land but considerable woody and herbaceous resources.



Geographic distribution of goat flocks and use of rangelands in the Has district

Source: A. Garnier (2014), based on census data from the PAZA project, 2010-11 and the interviews conducted in the Has district in 2013-14

The flocks on the karst plateau and the surrounding areas are taken to the mountain pastures of Kruma or the flanks of Mount Pashtrikut. When they are further away from these mountain pastures, some come to live in these summer pastures for several months. Generally speaking, the goats graze where there is herbaceous pastureland renowned for its quality and where there are extensive areas of grazing forests.

Demarcating and defining the “pastoral massif” and its sub-areas requires work prior to the eco-pastoral diagnostic itself it. In Albania, this work is not easy to undertake as such spatial and territorial descriptions concerning the localised stock farming systems are neither an academic not technical tradition – even if the elements facilitating this work exist in a somewhat fragmented and uneven manner and are sometimes difficult to collect.

Stages of the eco-pastoral diagnostic

Scale	Objectives	Time
STAGE 1: MEETING WITH THE STOCK FARMERS (page 44)		
Territory (Has) Massif (karst plateau)	***Create initial contact with the stock farmers*** • Explain the objectives of the diagnostic; • Understand the expectations of the stock farmers; • Plan the week with the stock farmers.	½ day
STAGE 2: LANDSCAPE ANALYSIS (page 45)		
Massif (karst plateau)	***Acquire an overview of the plateau*** • Familiarise ourselves with the zone studied; • Understand the organisation of the space and its limits.	½ day
STAGE 3: GLOBAL UNDERSTANDING OF THE *LAGJA* (page 46)		
Lagja Management units (MU)	***Understand the organisation of the lagja territory and its pastoral system*** • Understand the spatial and decisional organisation of the *lagja*: identify the limits of the *lagja* and the different management units (flock type and size, seasonality, etc.); • Identify the problems and challenges resulting from the use of the pastoral area.	½ day
STAGES 4 and 4 B: GLOBAL UNDERSTANDING OF THE FARM (page 48)		
Farm Management units	***Conduct an inventory of the stock farmer's practices and perceptions*** • Talk to the stock farmer about his grazing practices, his perceptions of the quality of the resource; • Characterise the broad outlines of the stock farming system and its sway in the pastoral space; ***Understand the flock feed system*** • Explain the flock feed system in detail; • Understand the feed system in relation to the spatial organisation of the territory.	½ day/ farmer

STAGE 5: ECO-PASTORAL DIAGNOSTIC (page 52)

Management units (MU) Topo-facies	***Understand the interaction between the farming method and the status of the habitats present*** **Part 1: visit the pastoral areas with the stock farmer** • Acquire an overview of the pastureland and the expectations of the farmer on his land (identifying any dysfunctions); • Assess the dynamics of the habitats/landscapes; • Identify the ecological and pastoral issues in the different MUs; • Share these initial observations with the farmer. **Part 2: refine the diagnostic for certain topo-facies of particular interest (dysfunctions, specific objective, etc.)** • Describe the topo-facies based on descriptive criteria (productivity, seasonality, circulation, etc.); • Link the pastoral practices and vegetation behaviour in the same management units; • Cross the ecological and pastoral issues; • Discuss possible developments and changes in pastoral practices.	½ day / farmer

STAGE 6: REVIEW: OBSERVATIONS, DISCUSSIONS, RECOMMENDATIONS AND OUTLOOK (page 59)

Territory (Has), Massif (karst plateau), If possible: village, *lagja*, farm	***Review the diagnostics*** • Present the strengths and weaknesses of the stock farming practices implemented; • Present the problems observed to instigate collective reflection and discussion focussing on the solutions to be provided; • Identify precisely the developments/changes to the practices to be introduced.	½ day

STAGE 7: ACCOMPANIMENT* (page 67)

Farm	**Monitor the stock farmer's practices in the long term** • Adjust or refine the changes to the practices; • Evaluate the impact of these changes in the environment and on the farm; • Satisfy the technical needs and demands of the farmer;	1 day/year minimum

**In the case of the Has district, this stage was not carried out as the team had a limited amount of time in the field.*

Stage 1 Meeting with the stock farmers

Objectives

• Explain the objectives of the diagnostic, present the stakeholders of the diagnostic,
• Understand the expectations of the stock farmers,
• Plan the week with the farmers.

Example: meeting with the Has goat stock farmers' association

This meeting was the opportunity for the different participants to introduce themselves:
- BiodivBalkans (François Lerin, Besmira Medolli, Alice Garnier),
- Mil'Ouv (Benjamin Sirot, naturalise at the CEN L-R, Julien Marie, naturalist in the PNC, and Fabienne Launay, pastoralist at Idele),
- RASP (Petrit Dobi and Naim Pacala),
- one Albanian naturalist and Albanian one forestry worker,
- the members of the Has goat stock farmers' association, i.e. the stock farmers with the largest flocks of goats in the district.

The stock farmers briefly presented the way in which they manage their flocks and identified certain problems relating to the pastureland. Their main concerns are as follows:

- difficulties in adapting to climate variations which affect the fodder resources and health of the animals;
- the lack of water sources in certain zones, limiting their capacity to travel far from the village, especially in summer;
- the link between the quality of the fodder resources and the remarkable quality of the products (milk and meat);
- a desire to find better markets for the meat and possibly even export;
- a desire to live in a less precarious manner while maintaining the current quality of life, the family organisation, the profession, being in contact with the animals and nature;
- the observation that the landscapes are becoming closed due to a general decline in the number of animals in the Has;
- the pollution of pastureland near the chrome mine (land which is therefore no longer used).

A discussion was launched regarding the commercialisation of the products and the proponents and implications of introducing a GI for Has goat meat.

During this week spent in the Has, the diagnostic was conducted in two villages of the karst plateau, Cahan and Mujaj, where 3 stock farmers were interviewed belonging to 3 different '*lagja*' (1 in Cahan and 2 in Mujaj). This choice provided a more diverse overview of the habitats used by these stock farmers: in Cahan, relatively open pastureland facing Mount Pashtrikut and in Mujaj, more wooded habitats near the large forest on the karst plateau.

Ideally, as many stock farmers as possible should have been interviewed from each *lagja* with other animals (sheep, cattle), but as time was limited, the decision was taken to conduct more in-depth interviews with these 3 Has goat farmers.

Stage 2 Landscape analysis across the massif

Objectives

• Familiarise ourselves with the zone studied,
• Understand the organisation of the space and its limits.

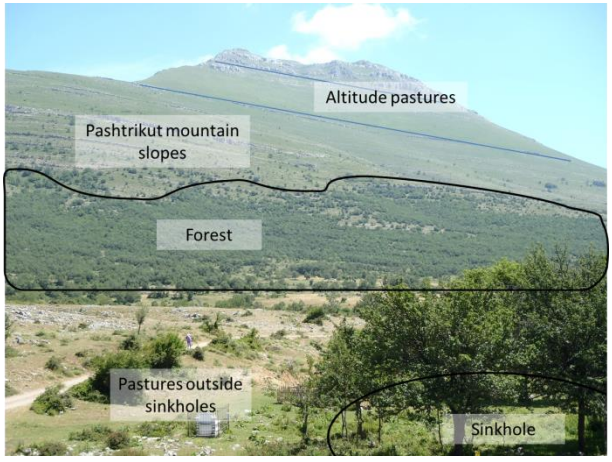
Media required

Satellite image, maps (in Albania, the town hall or district forestry services have management plans and maps of plant/forest cover at village or municipality level. These media are not necessarily easy to obtain)

Procedure

This stage is essential for all the diagnostic operators who are not familiar with the zone studied. It involves taking the time to visit the massif, observing the organisation of elements of the landscape, either natural or anthropogenic such as the villages, grazing zones, forest massifs, farmed areas, etc. This provides an idea of the distances, relief, type of soil and vegetation comprising this massif and helps examine its use, both past and present. Throughout this stage, it is possible to take photographs, annotate the maps, draw or schematise observations. Never hesitate to change viewpoint, to stand at the high points to obtain an overview, to go into wooded massifs and take the time to observe.

Example: observation of the landscape in Cahan



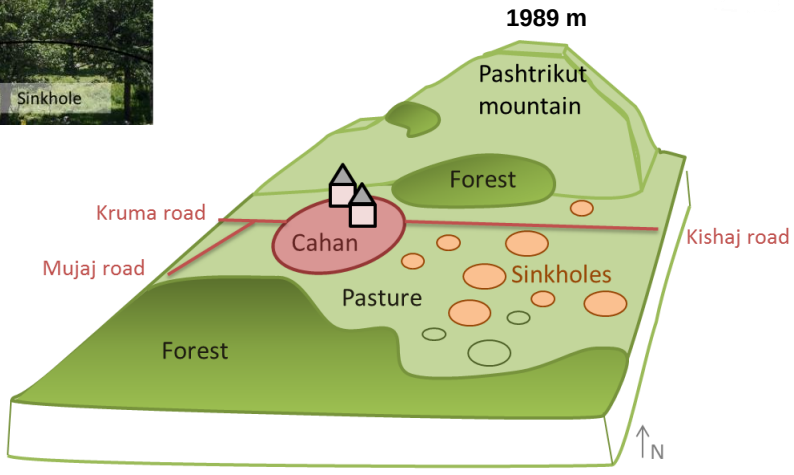


Photo and diagram illustrating the organisation of the landscape in Cahan

Stage 3 Global understanding of the '*lagja*'

Objectives

• Understand the organisation of the territory of the *lagja* and its pastoral system: how are decisions taken, what are the links between the stock farmers;
• Understand the spatial organisation of the *lagja*: identify its limits and the different management units (flock type and size, seasonality, etc.);
• Identify the problems and challenges resulting from the use of the pastoral area.

Procedure

The aim is to bring together as many members of the *lagja* as possible to acquire the most comprehensive overview possible of the use made of the pastoral area. The interview shall be carried out like a discussion during which everyone can express their opinion. The point in holding a collective meeting is to assess the consensual aspects or, on the contrary, those aspects which are disputed or subject to different interpretations (for example time sequences, limits and "traditions", etc.).

- Identify the limits of the *lagja* on an aerial photo (or if not a map) asking one of the members to draw it himself.

- Evaluate the number of the stock farmers who use this area as well as the size and type of their flocks (including equines).

- Discuss within the group and on the photo/map, identify the different zones of use of the pastoral area (management units) according to the type of animal grazing there and the season when they are taken there. Note the terms employed to designate these elements (the photo board (appendix 4) may be used as a discussion support to determine the type of habitat).

- Evaluate the quality of each of these zones in terms of fodder production.

- Highlight the problems linked to the use of the pastoral area in general or of certain habitats in particular.

The inhabitants of Cahan draw the boundaries of their village on an aerial photograph

Example: the organisation of the pastoral area of the Cahan lagja

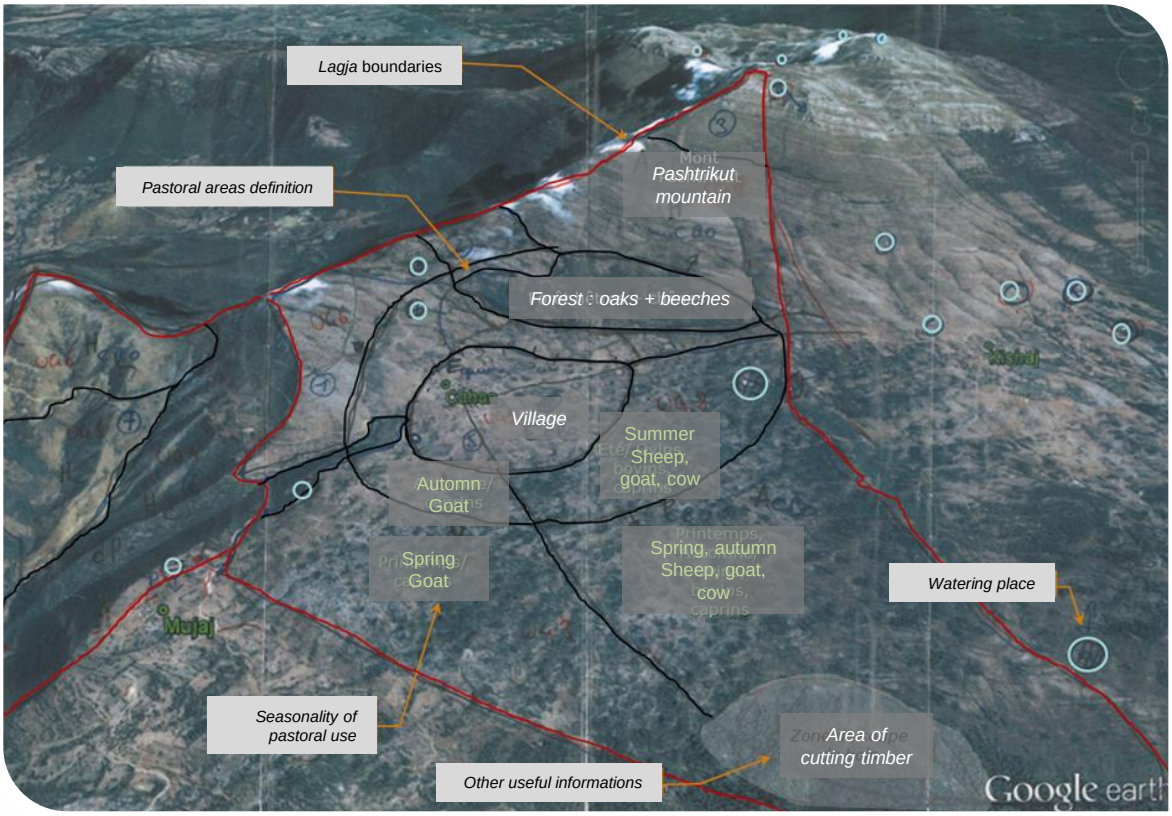
There is only one *lagja* in the village of Cahan. The limits of the *lagja* are therefore the limits of the village. However, if we take a closer look at the significance of this boundary, we note that it is essentially administrative: the flocks from Kishaj (the neighbouring village) sometimes stray onto the territory of Cahan (and vice versa), in particular on the Mount Pashtrikut rangelands.

With the exception of the private fields and meadows, the territory of the *lagja* is intended for collective use for grazing, but individual use for hay.

In Cahan, there are 15 families. Only one stock farmer owns a large flock of goats (110). The other families have flocks of sheep and possibly some goats.

Number of animals in the village: 150 bovines, 300 ovines, 200 caprines, 10 equines, 6 donkeys.

In Cahan, a specific type of guarding has been introduced for sheep and certain cattle: the stock farmers combine their flocks to supervise them as a whole, each taking turns.



The annotated aerial photograph of the Cahan pastoral area

Problems raised during the discussion with the *lagja*:

- There is a phenomenon of proliferating brushwood in the sinkholes and certain pastures. This sometimes poses a problem as the pastoral resource is diminishing;

- There is a desire for the beech and oak forest to be conserved for wood-cutting reasons. However, the forest area is grazed, thereby limiting tree regeneration. The members of the *lagja* wonder to what extent the two are compatible.

Stage 4 Global understanding of the farm

Inventory of stock farmer's practices and perceptions

Objectives

- Conduct an inventory of grazing practices, the stock farmer's perceptions concerning the rangelands he uses,
- Describe and characterise the structure of the farm and the production and rangeland management objectives,
- Measure the feed autonomy and the proportion of pastoral habitats in the flock's feed,
- Characterise and understand any difficulties encountered by the farmer in managing the environments and the existing scope for manoeuvre.

Media required

Aerial photos or maps to demarcate the territory of the farm.
Interview guide (appendix 4).

Procedure

Use the interview guide presented in the appendix. To obtain complete and detailed answers, it is important to conduct this interview as if it were a conversation and not a succession of closed questions.

Discussion of the stock farming practices in Arben Cahani

Batching a flock of sheep

Batch: animals grouped physically and managed in the same way. Example: a batch of ewes + she-lambs + rams, a batch of male lambs, a batch of goats + kids, etc.

Feed autonomy: proportion of feed produced by the farm in the total feed consumed by the livestock. It measures the level of independence of the farm with regard to the outside in terms of feed for its livestock.

Stage 4b Global understanding of the farm

Flock feed system

Objective

Define a “pastoral profile” identifying major events (farrowing, weaning), the habitats used by the flock and the resources desired.

Procedure

This work involves crossing information concerning the animals (physiological stage, batching, etc.); elements concerning the resources used (type, period and method of use) and the feed supplements provided; and other elements clarifying the farmer’s choices. An aerial photo of the *lagja’s* territory makes it easier to identify the management units (see stage 3).

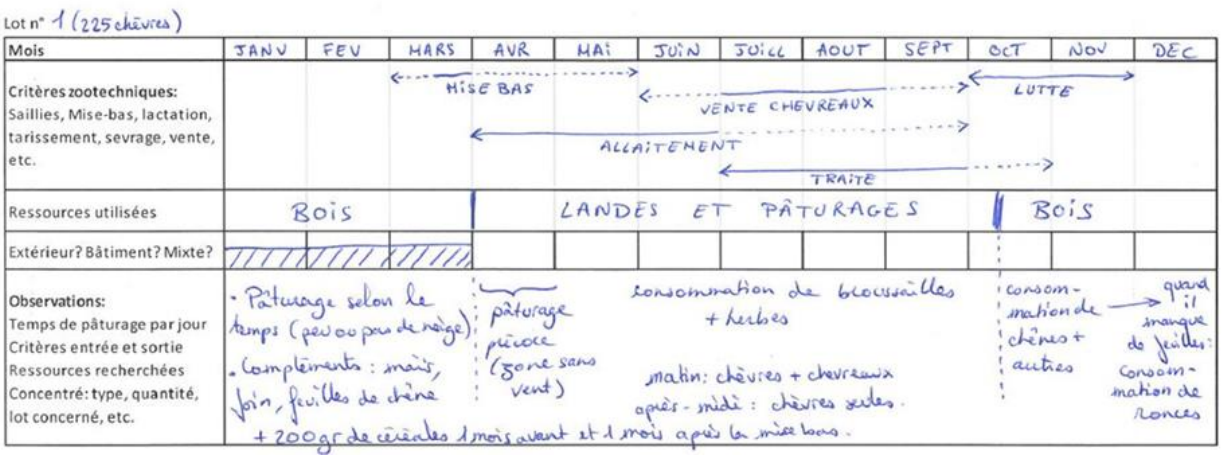
1. Identify the zootechnic events of the batches (mating, farrowing, drying off, etc.), the movements of the batches (sorting, change in number) which will allow the evolving needs of the animals to be materialised.

2. Identify periods spent indoors or on the rangelands, together with the management units (MUs) concerned (the MUs may differ slightly from those determined with the *lagja*. The divisions may be refined with the stock farmer according to his own use of the pastoral area).

3. Characterise the vegetation of each management unit as well as the resource desired. Indicate the entry and exit criteria for each change of management unit.

4. Indicate the feed supplements and concentrates given to the animals (period, type of feed and quantity per animal).

Example: pastoral profile of the batch of goats and kids of a stock farmer in Mujaj



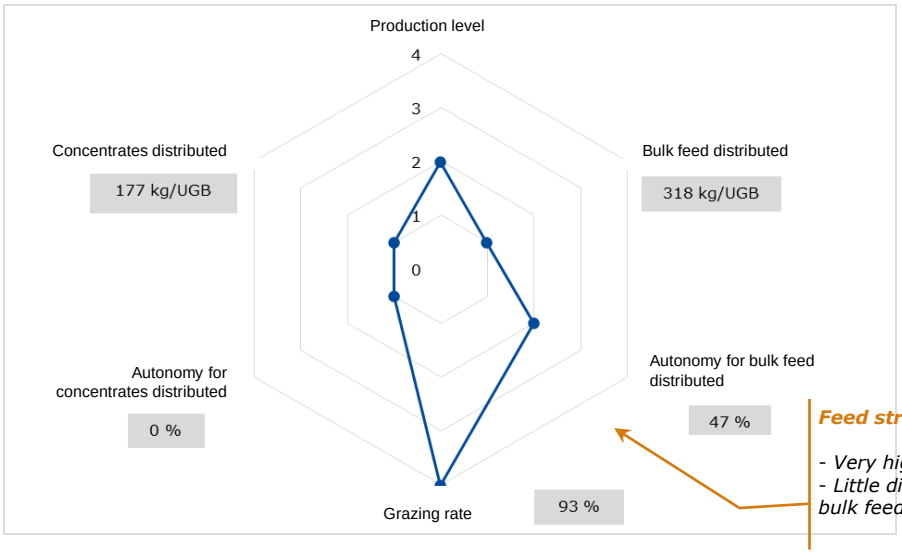
Feed strategy radar

According to the data collected during the interview, it is possible to produce graphs helping to interpret the results.

Feed strategy radars, for example, make it possible to compare situations between farms (same production and/or same territory) and to monitor inter-annual differences on the same farm. They characterise the farm's feed strategy using 6 axes scored 1 to 4 (1 = low, 4 = high):

- The production level (it is important to first establish a link with the local references. Here, as it is a question of young goat meat production, we have adopted the number of kids/number of females inseminated. However, as there are no local references, we have extrapolated the results based on references for Mediterranean ovine meat systems);
- The quantity of bulk feed (fodder, grass) distributed per livestock unit;
- The level of autonomy for bulk feed;
- The quantity of concentrates (cereals and/or feed) distributed per livestock unit;
- The level of autonomy for concentrates;
- The grazing rate.

Example: two "radars" representing stock farming in the Has district

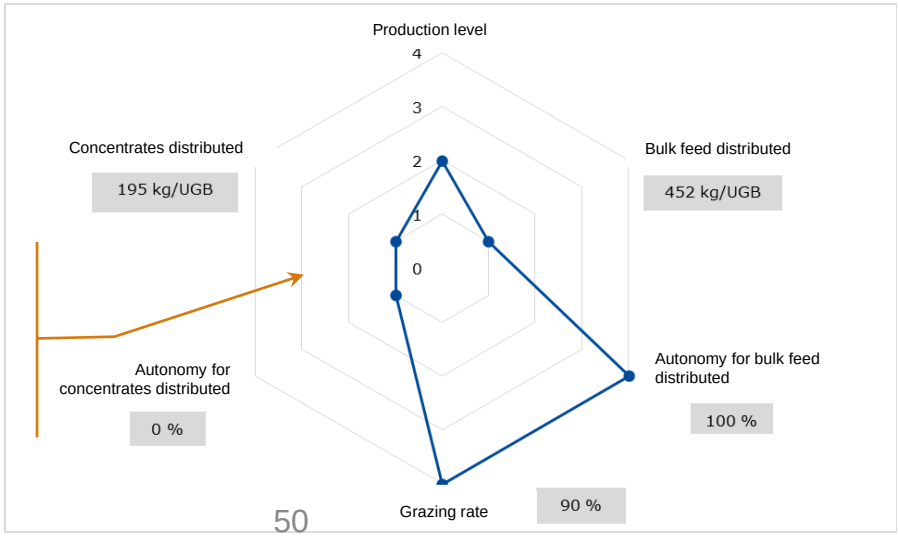


Goat flock feed strategy (225 animals) in Mujaj

Feed strategy for this flock :

- Very high grazing rate.
- Little distribution of concentrates or bulk feed, very low autonomy.

Goat flock feed strategy (110 animals) in Cahan

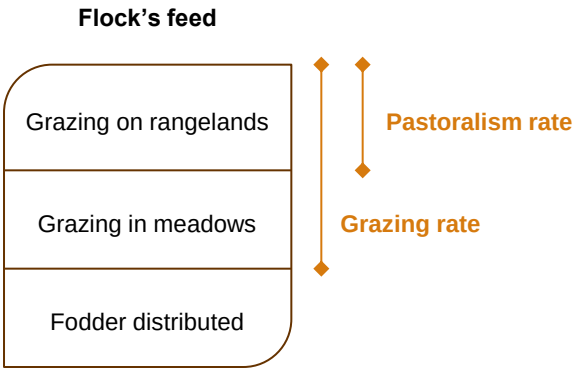


Feed strategy for this flock :

-Very high grazing rate,
-Concentrates: little distribution, low autonomy,
-Bulk feed: little distribution but very high autonomy.

Pastoralism rate: proportion of rangelands in the flock's feed.

Grazing rate: proportion of pastureland (meadows + rangelands) in the flock's feed.



LU (livestock unit): unit of measurement used to compare or aggregate numbers of herbivores, species or different categories according to their consumption of bulk feed (grass, fodder, etc.). By definition, 1 LU corresponds to a dairy cow weighing 600 kg and eating 4,750 kg of dry matter per year (source: Agreste and INOSYS stock farming networks). Equivalences between animals are defined using coefficients according to their feed: a goat approximately corresponds to 0.17 LU.

Shepherd leading his sheep to a "lavogne" in Cahan (Has, Albania)

Stage 5 Eco-pastoral diagnostic

Objectives

• Understand the interactions between grazing and the status of open habitats.

Scale of the management unit (MU)
• Identify the major grazing trends on the different MUs,
• Obtain an overview of the link between grazing and the dynamics of the habitats,
• Determine the main ecological and pastoral issues of the farm,
• Share these initial observations with the stock farmer.

Scale of the topo-facies
• Refine the diagnostic in certain MUs of particular interest (dysfunction, specific objective, etc.) by calling on descriptive criteria (status, functioning, potential of the habitat, etc.),
• Discuss the initial results observed at the topo-facies level.

Media required

Grazing description sheets, eco-pastoral diagnostic at the MU level and the topo-facies level (see appendix 4).

Procedure

The results are obtained using the record of a series of field indicators to be observed at two levels within the management unit:
- the management unit as a whole,
- the topo-facies within this management unit.

1. First visit of the territory on foot with the stock farmer (and/or the shepherd if different), to identify the broad trends on the management units. On each management unit, the aim is to observe the pastureland present and the maintenance of the plant dynamics by the flock, to identify and understand any management problems and to identify the expectations of the stock farmer in order to obtain an overview of the ecological and pastoral issues on these MUs.

2. Share the initial observations within the trio with a view to identifying any adjustments necessary to the practices on certain MUs.

3. Second visit to these MUs to refine the diagnostic at the topo-facies level.

4. Summary for each MU subject to a diagnostic using the information collected at the topo-facies level.

With regard to the results and the subsequent elements for consideration, the diagnostic can be used as a support for a discussion between the stock farmer and the technicians concerning any adjustments, changes or maintenance of practices.

(This means of conducting the diagnostic is not the only method. It is advisable to adapt case by case according to the situations encountered.)

Criteria to be recorded in the field

A series of simple and functional criteria allow each topo-facies to be characterised. These criteria can thus be used by everyone, technicians and stock farmers alike.

Description criteria for the pastoral resource

- **Natural habitats present, productivity and attractiveness:** evaluation of the pastoral resource available in terms of quantity and quality.

Example for this topo-facies at the foot of Mount Pashtrikut:
- Herbaceous cover: 60%
- Grass: low productivity *(festuca ovina*)
- Herbaceous legumes: moderately palatable
- Edible and accessible wood: low
- Possibility of edible fruit: yes (oak, strawberries, wild berries)
- Herbaceous species with good resource conservation: *lamiaceae, Sanguisorba minor, Festuca glauca, Festuca ovina, aretemisia*.

- **Flexibility of use (resource conservation, shadow effect):** capacity to stagger periods where the fodder resource is available. For example, certain species are advantageous due to off-season production at the end of spring or at the end of the season, such as certain herbaceous strips which remain green at the end of summer or are kept fresh due to the shadow effect of the trees and shrubs present.

Heathland in Mujaj
"*I noticed the extent to which the heathland on the karst plateau is shaped by the goats. It is a beneficial resource as it involves wood (oak, ash, hornbeam, etc.), which can be used 8 months out of 12*." Benjamin Sirot (CEN L-R)

- **Circulation of the flock:** presence of physical or topographical barriers, etc. which can make a resource inaccessible to the flock. It should be noted that it is more the "structure" of a rangeland that makes it rich than the presence of a species .

Criteria for status of conservation of the habitats

- **Species indicating dysfunction (over-use):** the presence of ruderal species* and nitrophilous species* indicates a drift in the plant population linked to a eutrophisation of the area (through significant fertilisation, intense grazing, etc.). It is important to detect these disruptions as they are detrimental to the pastoral resource and the status of conservation of the environment. **/!** Beware, however: species deemed to the ruderal in one habitat can be part of the population of a different grazed habitat. A subtle perspective is required!

***Ruderal species:** species fond of disrupted or unstable open habitats.

***Nitrophilous species:** species which primarily grown in nitrogen-rich soil or water.

On this old former meadow, it is easy to imagine a significant presence of cows providing a large quantity of dung, as nettles have developed. The nettle is a plant indicating excess organic matter in the soil.

- **Presence of bare soil (over-use):** too high a level of consumption of herbaceous plants on naturally unproductive soils is likely to result in bare soil zones in the long term.

Presence of bare soil and appearance of rosette-forming plants, 2 elements which often indicate overgrazing.

- **Accumulation of biomass, litter (under-use):** the presence of litter indicates a low level of plant consumption. Litter refers to grass which dries and accumulates from one year to the next when it is not consumed.

Here, the accumulation of litter has created a nest favourable to the germination and development of woody plants.

Controlling the dynamics of woody plants

Crossing the dynamics of the woody population (adults and regrowth) with the impact of grazing on this population identifies any problems concerning the control of woody plants and suggests potential solutions.

DYNAMICS OF WOODY PLANTS	EFFECT OF GRAZING ON WOODY PLANTS		
	No impact	**Weak impact**	**Strong impact**
Expanding population (no mortality, significant regrowth)	No control of the dynamics of wood plants through grazing	Insufficient grazing to fight against the current dynamics of woody plants	
Stable population (no mortality, no regrowth) or (mortality, significant regrowth)	Stable or diminishing woody population, without grazing being factored in	Grazing contributes to maintaining the status of the habitat without reversing the woody dynamics	
Diminishing population (high mortality, no or minimal regrowth)		Reversal of the woody dynamics accentuated or caused by grazing	


F. Launay

Goats in brushwood in Mujaj

If the aim is to reopen certain areas of the karst plateau which are relatively closed, it is possible, for example, to increase grazing pressure by taking goats there and controlling grazing so that they remain there a long time.

Formulating recommendations:

There is not one single solution that could be applied in every situation: the recommendations resulting from the diagnostic must be envisaged according to each specific case in light of the context, the objectives and the stock farmer's possibilities.

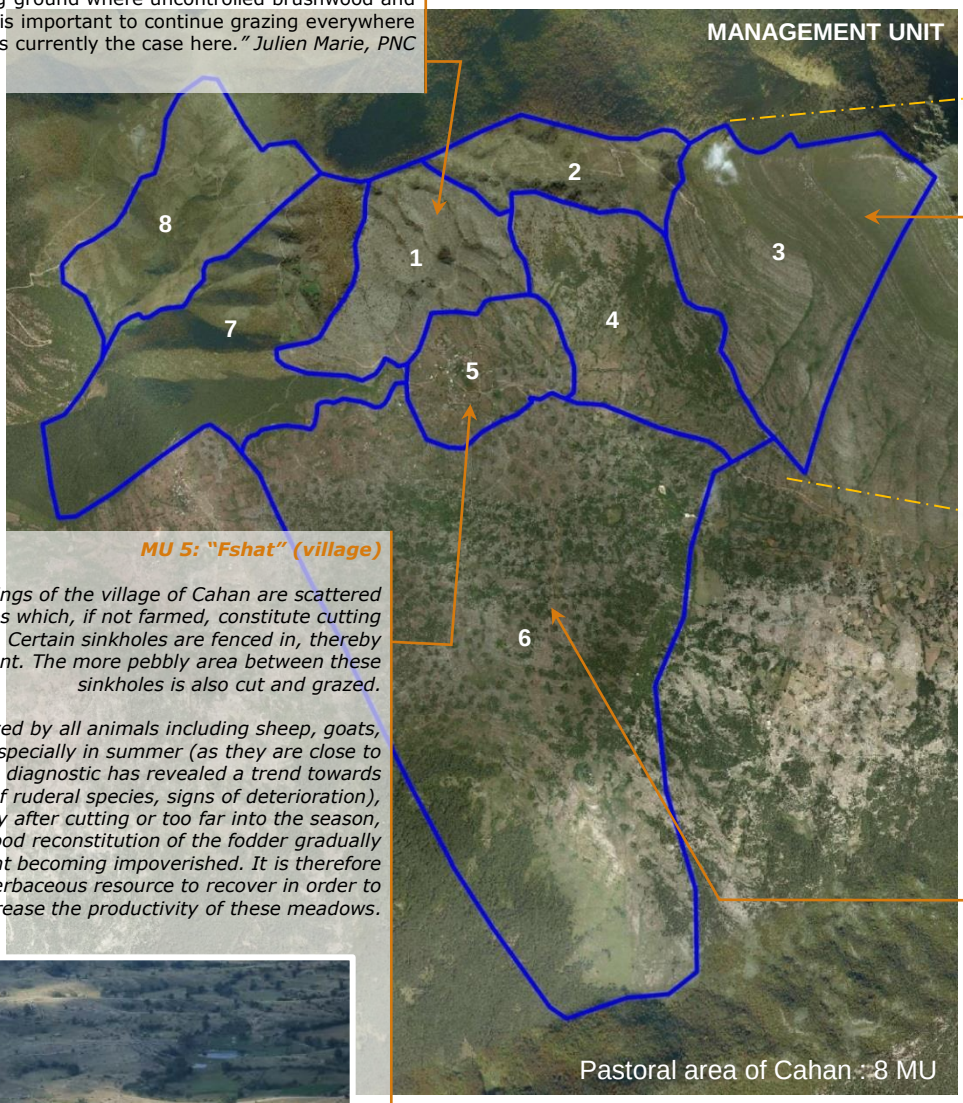
Depending on the case, it can be advisable to conserve, reopen or allow habitats to become closed. It depends on the desired objective for the zone concerned! It is not a question of favouring open or closed habitats but of encouraging a certain level of diversity and remaining wary of uniformity… It is precisely this complexity of landscapes and the **patchwork structure** of plant formations that enables biodiversity to be maintained. These choices must be made collectively as we are dealing with common areas and pastoral resources.

Example: brief overview of the problems raised by the MUs of the lagja, used by a goat farmer (110 animals) in Cahan

MU 1: "Boka"

This is an open landscape with certain areas of brushwood (rosaceae, junipers, small copses). It is a highly interesting zone from both an ecological and pastoral standpoint: it is home to a wide variety of flowers providing a varied resource for animal flocks, including brushwood.

Does this encroaching brushwood pose a problem? *According to the goat farmer in Cahan, it is not a threat as it is not increasing very much in this zone.* "If it is managed by the animals, brushwood is not a problem and is even seen more as an advantage for the resource. In the field, it is observed that zones are not yet closed, and the farmers continue to take care of them. There may be problems on sloping ground where uncontrolled brushwood and erosion is observed. It is important to continue grazing everywhere which is currently the case here." *Julien Marie, PNC*



MU 5: "Fshat" (village)

The immediate surroundings of the village of Cahan are scattered with private sinkholes which, if not farmed, constitute cutting and/or grazing areas. Certain sinkholes are fenced in, thereby facilitating management. The more pebbly area between these sinkholes is also cut and grazed.

This MU is highly grazed by all animals including sheep, goats, cattle and horses, especially in summer (as they are close to watering holes). The diagnostic has revealed a trend towards over-grazing (presence of ruderal species, signs of deterioration), due to grazing too early after cutting or too far into the season, thereby preventing a good reconstitution of the fodder gradually leading to the environment becoming impoverished. It is therefore important to allow the herbaceous resource to recover in order to increase the productivity of these meadows.

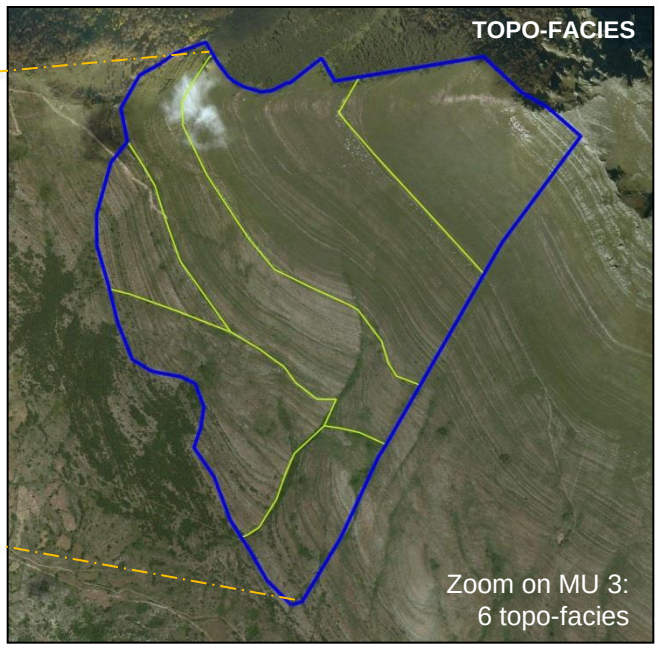

O. Crouteix

MUs 5 and 6: with regard to these two MUs, it is advisable to transfer the pressure from the areas close to the village (MU 5) towards more distant areas (MU 6). Reducing the pressure in the over-grazed sinkholes and increasing it in those being invaded by brushwood would ensure a general increase in the productivity of the sinkholes.

MU 3: "Mali i Pashtrikut"

Mount Pashtrikut exhibits a remarkable pastureland used by sheep, cattle and goats throughout a large part of the year. The pastoral resource is rich and abundant here, adapted to many uses, while the vegetation is relatively stable: there is little risk of over-grazing or under-grazing as the altitude means that it is a relatively stable, mountainous herbaceous landscape. It is nevertheless not unknown for natural barriers (stones, depressions, etc.) to form obstacles on Mount Pashtrikut: the animals circumvent them, creating zones which are less well grazed and begin to be populated by brushwood.

Recommendations:
- guide the animals through these zones and leave tem there for longer periods to increase the grazing pressure,
- diversify the focal points and access routes,
- remain vigilant concerning the closing-off dynamics caused by the growth of low woody plants as well as the need to maintain accessibility to the resource and the pathways by means of manual clearance.



Brushwood and Riparian forest invading riverbeds, obstacles to the flocks

MU 6: "Zona e hurdhave" (sinkhole zone)

This MU is also scattered with sinkholes, although these are not private and less visible: they are less well demarcated, not fenced in and are often inaccessible (brush, trees). Located further away from the village, they are less well grazed and the hay is rarely cut. When it does exist, hay production is well below potential production (3-5 tonnes/year). It could be beneficial to reopen certain sinkholes if necessary, considering a new form of management through grazing in order to avoid them gradually becoming inaccessible again in the medium term.

Early encroachment of brushwood around a sinkhole

Complete afforestation

Example of a flora survey at topo-facies level in a clearing in Mujaj

A flora survey was conducted in a cut and grazed clearing within a beech wood in Mujaj. Within ten minutes, 37 species were recorded on an area of 25m². While non- exhaustive, this flora survey illustrates the diversity of flora in a particular location (climate, exposure, altitude).

- *Stachys officinalis*
- *Prunella laciniata*
- *Trifolium ochroleucon*
- *Trifolium alpinum* – Alpine clover
- *Geranium sanguineum* – bloody geranium
- *Arrenatherum elatius* – tall oat-grass
- *Inula helenium*
- *Populus tremula* – quaking aspen
- *Plantago media*
- *Leucanthemum vulgare* – ox-eye daisy
- *Linum campanulatum*
- *Hieracium pillosela* – mouse-ear hawkweed
- *Festuca cf. rubra*
- *Danthonia decumbens*
- *Teucrium montanum*
- *Sanguisorba minor* – small burnet
- *Poa pratensis*
- *Potentilla neumaniana*
- *Doronic sp.*
- *Genista sagittalis* - broom
- *Lotus sp.*
- *Lotus cf. corniculatus*
- *Centaurea montana*
- *Cirsium dissectum*
- *Briza media*
- *Rinanthes minor*
- *Carex sp.*
- *Anthoxanthum odoratum* – sweet vernal grass
- *Euphrasia viscosa*

Survey in a clearing

Daisies

In this clearing, in the best-exposed areas benefiting from the most heat, the population is enriched by certain more Mediterranean species:

-*Carlina acanthifolia*
-*Thymus serpyllum*
-*Artemisia sp.*
-*Anthyllis sp.*
-*Anthyllis vulneraria*
-*Cirsium sp.*
-*Bupleurum baldense*
-*Bromus erectus*

This mountain meadow has a clear pastoral interest as it is highly productive, in particular in relation to the other habitats identified in this zone. However, it exhibits weaker resource conservation and a very strong ecological interest in light of its rich flora an fauna (insects, avifauna, etc.).

Stage 6 Review: observations, discussions, recommendations and outlook

Objectives

• Conduct a review of the diagnostics: observations, strengths and weaknesses of the stock farming practices implemented.
• Present the problems observed to instigate discussion as well as individual and collective reflection (lagja, village, massif), focussing on the solutions to be provided.
• Identify precisely the developments/changes to the practices to be introduced.

Procedure

The review shall be conducted at every level. At the end of each diagnostic, a review is carried out with the stock farmer, giving rise to personal recommendations and possibly to the implementation of an accompaniment process (see stage 7). It is then carried out at more inclusive scales such as a *lagja*, a village or all the villages of a massif, where decisions are collectives.

It is a question of establishing a collective discussion focussing on the themes and problems raised with the *lagja* or the stock farmers. This should give rise to collective reflection concerning the practices and help identify solutions to the problems encountered – which will focus on both individual and collective objectives.

Example of a collective review: the meeting in Kruma (Has)

In this case, the review provided feedback at the level of the massif – the karst plateau – which serves to support the collective geographic indication project for Has goat meat.

Organising a meeting in Kruma brought together the members of the Has goat stock farmers association – including the three farmers who participated in the diagnostic.

Due to a lack of time, the restitution of the personal review for each stock farmer was kept to a strict minimum and was not presented during the meeting. The emphasis was placed on a collective discussion concerning the problems raised during the diagnostic. The details of these discussions is presented below.

The review meeting in Kruma

Over-grazing / Encroaching brushwood

The meadows, some of which are in sinkholes, are grazed and sometimes cut. They exhibit a strong ecological and pastoral interest. During the diagnostic, two trends were revealed concerning these meadows: those that are located close to the village are subject to high grazing pressure whereas those that are further away tend to be under-grazed leading to encroaching brushwood.

What do you think? Have you noticed this?

"*There is greater pressure in the sinkholes close to the village; we travel to the ones that are further away less often."*
"*Out there, there is brushwood in the sinkholes and around them*"
"*In the past, when there were more flocks, they was less brushwood*".

Is encroaching brushwood a problem to you?

"*I'd like to see only meadows and no brushwood at all!"*
"*But shade is important too, it's useful for the animals*"
"*Under-grazing is the main problem because it allows brushwood to grow. But we are not against a little brushwood for shelter, as long as there are also open habitats*".

Sinkholes belonging to people who have left have become tangled with brushwood… Do land ownership issues prevent sinkholes from being reopened? In France, for example, those who stay generally have access to the land of those who have left, but is that the case here?

"*Yes, it's no problem. We can reopen the sinkholes of others. Even if they have left we can manage and use them*."

In this case, we can recommend reopening sinkholes which have been taken over by brushwood by applying strong grazing pressure. It is then a question of keeping them open by bringing livestock on a regular basis, providing access to a resource which can prove advantageous, particularly in summer because these more 'closed' sinkholes offer a certain amount of shade. This would also enable the pressure to be reduced close to the village.

Nevertheless, the flocks are generally forced to stay close to the village due to issues of distance and limited access to water, limiting the maintenance of these more distant areas. It is possible that the change in practices occurs under certain conditions, such as access to water sources in these more distant areas for example.

Maintaining watering holes

Watering holes play a role in the attractiveness of certain zones: they are framework elements of the pastoral space. In the Has, we note that there are numerous, well-distributed watering holes. Maintaining them is nevertheless problematic. If the livestock trample the clay, the tightness of the reservoir is broken.

Who is responsible for maintaining these reservoirs?

"*Whoever uses it*"… "*At the same time, the whole village uses it*", "*How can we maintain the reservoir when it's the state that should finance the maintenance but doesn't?"*

Why not implement collective maintenance of the reservoirs, at the level of the *lagja* or village?

"*The small reservoirs belong to the entire village, from the person who has 3 cows to the person who has a large flock of goats or sheep. But it is the largest and more specialised farmers who have most to gain from maintaining the reservoir. The problem is that the others also use it but don't necessarily want to contribute to the maintenance. So that poses a problem*."
"*We have conflicts between goat, sheep and cattle farmers. It's the cattle owners who neglect the reservoirs…", "There are places in Albania where people keep cows, but we don't.*"
"*I have a solution! If all of us stock farmers join forces and submit a request to the town hall or the municipality to reconstruct and maintain the reservoirs, we could maintain them ourselves every year. But for the moment, we need a large investment to repair them. I would be happy act as spokesperson to ask the town hall to restore the reservoirs. After that, it's up to us not to destroy them again*."

Lavognes in Cahan

A lavogne was recently built in Cahan. The stock farmers do not use it because it was badly designed and badly built (the plastic waterproofing was made from an unsuitable, fragile material which was quickly torn. A stock farmer explains: "*They issued a call for tender but no one consulted us… they would have been better advised to give us the money and we would have done something useful for our farms*."

Heathland and woodland – between forest management and pastoral use

During the week-long diagnostic, the issue of forest management for firewood or lumber in the forests (which area also grazed) gave rise to numerous interesting discussions…

Mujaj heathland shaped by goats:

It could be said that these habitats – between very open woodland and closed heathland – have been shaped by the teeth of goats.

Heathland grazed by goats

This type of heathland is located in areas some distance from the village where the soil is deeper. Invaded by brushwood, this habitat is very interesting in pastoral terms as woody plants represent a resource for goats. The presence of goats helps keep areas open where a wide variety of herbaceous vegetation can develop. However, this habitat quickly becomes closed again if the goats are not brought here often. In Mujaj, cutting branches for fodder also helps to keep the habitat relatively open.

The Mujaj beech wood:

The Mujaj beech wood (old trees on limestone soil) exhibits genuine ecological value. On a European scale, beech woods of this type represent a natural habitat that has greatly diminished. The evaluation of the impact of grazing on woody plants revealed that the presence of goats does not impact forest regeneration. As the pastoral resource is also relatively weak here, goats pass through quickly and without any real consequence, eating only a few brambles at the end of winter. This wood is populated by numerous beech trees with considerable regrowth of young beech and oak trees. This beech wood therefore exhibits a good balance between pastoral use and forest management, neither threatening the other.

The small clearings created in this wood are particularly interesting as they allow light to enter while maintaining a forest atmosphere, thereby encouraging growth of herbaceous and shrubby vegetation which can be grazed.

Cahan Forest (MU 4):

Destroyed during the communist period, this forest is beginning to grow back. At present, the stock farmers are wondering : how to rediscover a forest environment while conserving the pastoral resources?

There are few conflicts relating to the use of resources. Cahan Forest has been divided between the members of the *lagja* for wood cutting purposes although grazing is permitted everywhere for everyone. Most of the time, however, those who extract the wood are stock farmers themselves. The problem is thus the same for everyone.

How to reconcile wood production and the fodder resource?

The trees in this wood (primarily beeches and oaks) would appear to be evolving safely. The leaves are cut to provide fodder for the flocks and they are also grazed, but globally speaking, afforestation does not appear to suffer any negative impacts.

In zones where brushwood is encroaching, it may be interesting to create access to enable animals to continue grazing as it is a versatile resource available in large quantities.

A priori, it is a question of ensuring this balance is maintained with the regeneration and development of the trees (forest management) and fodder resources available (pastoral management). The combination of the two is "s*ylvo-pastoral management*" which would benefit from being a little better organised – collectively: choice of trees to maintain, to prune, period and place of grazing, etc.

Case of other highly diversified woods:

Other woods further away from Mujaj, are a significant pastoral resource, but certain zones are becoming closed off despite the fact that there is a great deal to be consumed within them. One for the goat farmers in Mujaj notes that "*little by little, it is becoming more and more complicated for stock farmers to graze their animals there*."

"*When we pass by and notice it is closing up, it is also up to us to take a tool and cut the branches so that it does not grow too much*" (a stock farmer during the meeting in Kruma).

As one of the objectives of this stock farmer is to increase the size of his flock of goats, it is possible that in the long term, he increases the pastoral pressure in this zone so that the wood, so rich in pastoral resources, can be put to better use.

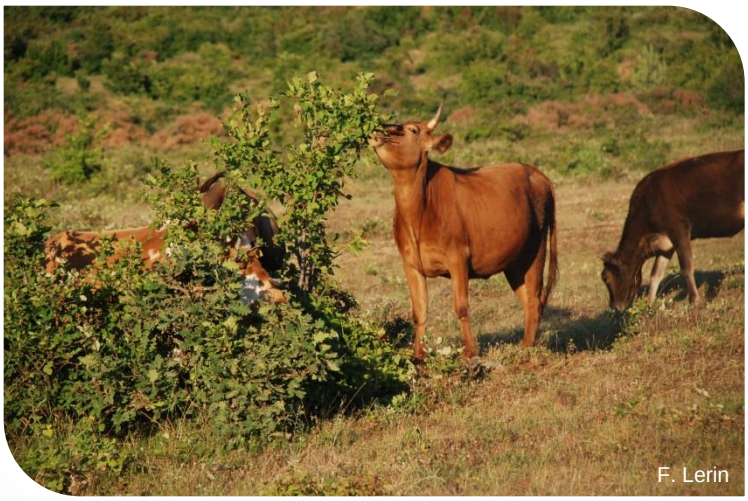
Stock farmers' know-how and knowledge, an asset to be preserved

The diagnostic team noticed the extent to which the stock famers' know-how and knowledge are extensive and technically oriented. The stock farmers encountered are very familiar with each plant eaten, by which animals and during which period.

The hellebore, for example, with its highly toxic flowers and leaves, is a plant traditionally used in popular Yugoslav medicine in the field of preventive or curative toxicology for men and livestock. While it was commonly used in the past, it has become less common in the Balkans, in particular with the appearance of new medicines at the end of the 19th century (Tucakov, 1957). In the Has district, however, the stock farmers interviewed continue to use diluted hellebore to treat a range of ailments, in particular mastitis. It is important that this knowledge be maintained through transmission from one generation to the next.

The importance of shepherding

In both Cahan and Mujaj, equines (donkeys and horses) and most bovines are left to roam free, generally grazing excessively around the villages. While herded, sheep and goats are given little direction despite the fact that certain areas would benefit from increased grazing pressure to ensure they remain open.



Free-grazing cattle

Herding goats in the Has district

Fodder autonomy

On the karst plateau, feed autonomy is high. Little fodder or concentrates are purchased, in relation to the total consumption of the animals. It should be noted that goats consume less hay than sheep or cattle and that this characteristic would encourage a certain specialisation.

The ground conditions, the climate (dry in summer, cold in winter with frequent variations) and the lack of arable land and farm machinery nevertheless represent obstacles to agricultural production on the karst plateau. Despite the fact that stock farmers enjoy fodder autonomy close to 100%, they have very little safety margin in difficult years. This is particularly the case when the winter is very long and the animals do not graze very much.

The diagnostic raised an interesting point: in one of the goat farms studied, births were staggered, sometimes lasting until the autumn. This obliges the farmer to feed the animals until the following spring. Focussing reproduction on a shorter period would limit the staggering of births, thereby avoiding the need to provide the young animals with feed supplements in winter and reducing spending linked to the distribution of these supplements.

Complementarity of animals on the plateau, a strength for the management of the habitats

Whereas sheep and cattle primarily feed on the herbaceous stratum, goats are happy to eat the shrub stratum. The different animal species eat different vegetation and what is rejected by some is sometimes eaten by others. There is therefore a certain complementarity between the different types of animal in managing the vegetation.

This complementarity also ensures a certain diversity on the plateau (heathland, open habitats, woodland, etc.) and this often improves the management of the areas concerned: complete grazing of the herbaceous cover, improved control of encroaching brushwood, etc.

There is therefore considerable benefit, both pastoral and ecological, in retaining the 3 species of animal both at the level of a management unit (improved management, diversity of species, etc.) and at the level of a massif (diversity of types of habitat).

Wealth of resources and considerable biodiversity

The agro-ecological observation is clear and highly positive: the rich, spontaneous biodiversity on the plateau and on Mount Pashtrikut is optimised and preserved by he stock famers, their know-how and their practices thanks to large-scale interdependence between man and nature.

Studying the topo-facies highlighted the diversity and quality of certain pastoral resources:

- considerable diversity of woody resources (oak, beech, hornbeam, cornelian cherry, hazelnut, hawthorn, blackthorn, willow, etc.), with a strong shadow effect and the possible use of these resources in both summer and winter,

- very high productivity of the meadows, in particular in the sinkholes, for cutting and regrowth at the end of spring with average resource conservation,

- calm grazing land in the undergrowth, protected from the wind and cold in winter,

- a diversity of natural habitats such as grasslands with a rich variety of aromatic plants which not only ensure the quality of the feed resource and stimulate the animals' appetite but also help limit veterinary treatment.

On the plateau, we observe that a wide variety of natural habitats exist spontaneously due to the microclimates, variations in altitudes, soils, orientations and exposures. These natural elements are complemented by past and present anthropogenic modifications: by implementing a range of practices, humans diversify the landscapes and vegetation thereby creating a natural patchwork. On the plateau, the natural habitats are closely interwoven with one another: there are numerous meadows with the forests, dry grasslands in the heaths, ponds, groves of shrubs and hedgerows within the cut or farmed sinkholes, etc. This fine intermeshing of habitats provides innumerable ecotones which are known to promote fauna and flora.

The link between man and nature on this karst plateau is particularly striking. The rich biodiversity of the location resonates closely with the practices employed by the stock farmers and their families in a close relationship with nature: wood-cutting, grazing, harvesting of plants, farming and harvesting on small, varied plots of land, diversity of flocks and breeds, etc. This close relationship has certainly asserted itself by necessity more than by choice and it is in no way a question of attempting to freezing it but of preserving it within its own evolution…


F. Lerin

Ecotones: ecotones refer to the ecological transitions between two different juxtaposed habitats.

Stage 7 Accompaniment

Objectives

• Refine, adjust of maintain the pastoral practices,
• Maintain the work dynamic initiated with the stock farmer,
• Monitor the evolution of the habitats.

Procedure

Following the diagnostic, the stock farmers may introduce certain adjustments or modifications and/or maintain existing practices, either individually or collectively.

We can envisage another visit on site (for example at the end of the grazing season) to evaluate the effects of the change in practices and to conduct a review with the stock farmer. If precise monitoring is implemented on one or more management units, the ideal approach would be to return to these areas based on division into topo-facies and to adopt the indicators described in stage 5 (cf. page 53). It is therefore possible to monitor the changing practices and dynamics of the habitats over time in order to target the recommendations as precisely as possible.

The accompaniment must be carried out in accordance with the farmer's objectives and requirements and the time available to him.


F. Lerin

Team discussion to determine the agro-sylvo-pastoral management recommendations


F. Lerin

Conclusions, perspectives

The eco-pastoral diagnostic conducted in July 2015 in the Has district is a first such experience in Albania. In light of the little time we were able to devote to it, it can only be seen as one possible avenue for a pastoral, ecological and rural development approach adapted to the national context in Albania. While only a potential avenue, it has been consolidated by the results presented here which illustrate the relevance and utility of the method developed in France and "transferred/adapted" within the experiment on the Has plateau.

Of the three central elements of the method: (1) a diagnostic combining the knowledge and approaches of a trio of actors (a naturalist, a stock farming technician and a producer); (2) a "scalar" analysis of the practices and objectives of pastoralism on a given territory; and (3) jointly-determined recommendations and the monitoring of their implementation, only the third point remained at the embryonic stage in our case in light of the fact that it was not applied within an institutional framework which could have enabled the recommendations to be "set" and validated, thereby facilitating support and monitoring over time.

This experience nevertheless enables us to consolidate the practical and cognitive means of addressing the pastoral question in Albania. Whatever the case, it provided us with arguments in favour of an agricultural policy taking account of these forms of agriculture with a "high natural value". Elements enabling us to advocate participatory support mechanisms for the agro-ecological practices so common in the country and so necessary to the rural development of mountainous zones (and to extracting the full economic potential from the products derived from these practices).

The experience also enabled us to pursue our work as "*knowledge brokers*" with regard to goat farmers in the Has district and to work with them on their pastoral practices as well as their use of the habitat and fodder resources.

Recognition – demonstrated by the diagnostic experience – of their know-how and knowledge of the territory was a defining moment both for the on-going programme and our brokerage role. It enabled us to better incorporate the environmental injunction into the support process for the current collective action.

When returning the eco-pastoral diagnostic to the stock farmers in their association (with a view to promoting the development of a Geographic Indication for young goat meat from the endemic "Has goat" breed), we observed the extent to which they mastered their practices and how they gradually took ownership not of the environmental dimension (they were already familiar with this), but of "the words" of this environmental dimension in defending their interests and the survival or their activity.

The description and incorporation of these pastoral practices into the “specifications” of the Geographic Indication gave rise to tense and heated discussions between the stock farmers to determine grazing times, weaning periods, types of supplement, etc., as well as the link between the product and its immaterial, landscape-related ecological attributes (sinkhole plateau and Mount Pastrikut, pastoral forests, etc.). They also showed the technicians and administrators present the importance of stock farmers’ involvement and the essential nature of their effective participation in a process of producing knowledge for and about the management of these natural and productive areas.

This experience also consolidated our intention to incorporate the agro-ecological dimension in future actions and programmes in Albania (in particular the European instruments for accession (IPA) and the cooperation projects for the development or conservation of nature, financed by intergovernmental organisations of bilateral cooperations).

The Has region is both a remarkable natural landscape (to quote the terms of the landscape conventions, UNESCO and the European Landscape Convention) and an “ingenious” (FAO) agro-sylvo-pastoral system. It could therefore become one of the operational experimentation and learning sites for sustainable rural development and, based on the available evidence, should integrate networks of protected sites such as Natura 2000.

The description (albeit only partial at present) of the environmental qualities of the Has agro-sylvo-pastoral system illustrates the key role of effective and well-thought-out practices of local stock farmers for these areas. Here, the environmental protection and rural development of a difficult and marginal zone go hand in hand. Maintaining open habitats, implementing jointly-developed landscape resource management strategies and promoting agro-biodiversity are the key elements of territorial strategies and objectives. In one way or another, the stock farmers must assume a central role in defining these “territorial projects” and the support measures must take account of the constraints facing them and the barriers to the development of their activities in order to improve their natural resource management and produce positive externalities, both environmental and landscape-related.

Flock of Has goats on the slopes of Mount Pashtrikut (with the sinkhole plateau in the background)

Stock farmers are, of course, not the only parties involved in defining these projects. Public action (national, regional or municipal) and the programmes and projects implemented should help them to incorporate their strategies into broader environmental, territorial and heritage-related issues. In the case of the Has district, and to further emphasise the exceptional qualities of this region (although this is the case of numerous rural areas in Albania!), it is important to pay greater attention to other heritage-related elements which have been neglected (such as the exceptional rural habitat or archaeological remains) or even destroyed, such as the rangelands and landscape around the villages devastated by the mining industry (search for micro-deposits of chromium on communal lands) without any compensation or reparations.

Experimenting with the eco-pastoral diagnostic of the Life+ Mil'Ouv programme has thus enabled us to refine the arguments for including the analysis and defence of agro-sylvo-pastoral systems at the heart of comprehensive territorial strategies and making more efficient use of the aid and pre-accession tools and programmes.

Rural housing heritage endangered

Abandonned archeological heritage

'Chrome disaster' near Cahan

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Glossary

English	Albanian	French
ash	fresh	frêne
batch	Tufë, kope	lot
beech	ah	hêtre
billy goat	cjap	bouc
border	kufi	frontière
bovine	gjedhi	bovin
bull	mëzati	taureau
caprine	të dhirta	caprin
Common Agricultural Policy (CAP)	Politika e Bujqësore e Përbashkët (PBP)	Politique Agricole Commune (PAC)
corn	Misër	maïs
cow	lopë	vache
district	rreth	district
eco-pastoral diagnostic	diagnostikë ekologjiko-pastorale	diagnostic éco-pastoral
encroachment of brushwood	ripyllzim natyror	embroussaillement
ewe	dele	brebis
field	fushë, arë	champ
fodder	foragjere	fourrage
fodder autonomy	autonomia foragjere	autonomie fourragère
forest	pyll	forêt
garden	oborr	jardin
Geographic Indication (GI)	Tregues gjeografik	Indication Géographique (IG)
goat	dhi	chèvre
grass	graminace	graminée
grass	bar	herbe
ash	fresh	frêne
batch	Tufë, kope	lot
beech	ah	hêtre
billy goat	cjap	bouc
border	kufi	frontière
bovine	gjedhi	bovin
bull	mëzati	taureau
caprine	të dhirta	caprin
Common Agricultural Policy (CAP)	Politika e Bujqësore e Përbashkët (PBP)	Politique Agricole Commune (PAC)
corn	Misër	maïs

grazing	kullotë	pâturage
hay	sanë	foin
hazelnut tree	lajthi	noisetier
herbaceous	barishtor	herbacé
herbaceous stratum	shtresa e barit	strate herbacée
hornbeam	shkozë	charme
house	shtëpi	maison
kid	kec	chevreau/cabri
lamb	qengj	agneau
landscape	peizazh	paysage
legume	bishtajore, leguminoze	légumineuse
lineage	fis	lignage
Livestock Unit (LU)	Njësi Blegtorale (NjB)	Unité Gros Bétail (UGB)
management unit (MU)	njësi e administrimit (NjA)	unité de gestion (UG)
massif	masiv	massif
meadow	livadh, lëndinë	prairie
municipality	komunë	commune
municipality	bashkia	municipalité
natural habitat	habitat natyror	habitat naturel
neighbourhood	lagja	quartier
oak (high forest)	lis	chêne (futaie)
open habitat / environment / landscape	zonë e hapur	milieu ouvert / habitat ouvert
ovine	të leshta	ovin
ox	kau	bœuf
pastoral	pastoral, barior	pastoral
pastoral area	hapësirë pastorale	espace pastoral
pastoral resource	burim pastoral	ressource pastorale
patchwork landscape	mozaik i peizazhit	mosaïque paysagère
ram	dash	bélier
rangeland	kullotë	parcours
region	qark	région
scrub	shkurre	broussailles, garrigue
shadow effect	efekt hijëzimi	effet d'ombrage
she lamb	runëz	agnelle
shepherd	bari, çoban	berger
shrub stratum	shtresa e shkurreve	strate arbustive
shrubby oak (thicket)	dushk	chêne arbustif (taillis)
shrub	shkurre	arbrisseaux, arbustes
sinkhole	hurdhë	doline

Appendices

Appendix 1

The gradual coupling of agriculture and environmental questions in France

At the end of the Second World War, France witnessed an intensification of its agriculture to satisfy an increase in the production and self-sufficiency objectives in terms of feed products. The rural landscape underwent radical change with the abandonment of agricultural land and major regrouping. It was only after the first oil crisis in 1974 that any thought was given to a more economical and autonomous form of agriculture. Little by little, environmental issues also began to be incorporated into agricultural strategies at national, local and even farm levels (Crépin *et al.*, 2014). Successive reforms of the CAP consolidated the agro-environmental measures of the 2nd pillar and, since 2013, the CAP has offered farmers payment for the environmental goods and services produced.

Today, the environment is at the heart of the debate: the idea – still very widespread – that environmental issues are constraints on productive agriculture, and would therefore be of only secondary importance, is called into question by the broader vision that agricultural sustainability cannot ignore these questions (Poux, 2009). Sustainable agriculture boasting high environmental performance and high natural value is an increasingly common concept while forms of agriculture conducive to biodiversity are actively promoted.

Farmers, pastoralists and naturalists now meet, discuss and work together to develop territorial projects. The LIFE+ Mil'Ouv project is in line with these agro-ecological objectives (Crépin *et al.*, 2014).

Appendix 2

The Mil'Ouv diagnostic: the development of a French diagnostic created in response to the environmental provisions of the CAP

In light of the objectives of the Natura 2000 sites (habitats and species of community interest), the agro-environmental diagnostic methods applied at farm and plot level are insufficient to define management recommendations (according to the comparison of 15 agro-environmental diagnostic tools (CEN L-R, 2003)). The indicators of biodiversity used in these methods do not enable a link to be established between the level of biodiversity and the practices in place (CEN L-R, 2011); these methods are therefore unsuitable as decision aids prior to drafting a Natura 2000 site contract. It was thus necessary to create a new diagnostic tool.

Within the framework of the CTEs* and CADs*, an environmental diagnostic protocol was created by a collective in the Lozère *département* in France to evaluate biodiversity on farms with a view to better identifying conservations issues and guiding the choice of actions to be implemented. The CEN L-R, in close collaboration with naturalist associations, was keen to develop this regional tool. Between 2001 and 2003, several diagnostics tests were conducted in the Natura 2000 zones.

With the appearance of the territorialised AEM in 2007 and the need to improve the incorporation of Natura 2000 objectives in their status of conservation, the CEN L-R worked with the Parc National des Cévennes to update and enhance this diagnostic method, giving rise to the farm biodiversity diagnostic in 2008. This diagnostic was then refocused on biodiversity and adapted to use outside the Natura 2000 scope, resulting in the Mil'Ouv diagnostic. This was improved and tested: more than 200 diagnostics were conducted between 2008 and 2014.

* The CTE (land management contract), introduced in France in 1999, was a contract signed between a farm and the state designed to pay farmers for goods and services rendered to society.

* The CAD (sustainable agriculture contract) replaced the CTE in 2002. It was a new contract mechanism encouraging farmers to develop a project incorporating the environmental, social and economic functions of agriculture. In particular, it focused on the contribution of farms to the conservation of natural resources and the occupation and development of rural areas.

Appendix 3

Overview of selected French eco-pastoral and evaluation methods and tools relating to the management of open Mediterranean habitats

Based on the report produced in collaboration with Mil'Ouv within the framework of the GENA (Agricultural management of rural natural areas) professional degree at SupAgro Florac (Buffin *et al*., 2014).

Method/tool	Brief description of objectives
Characterisation of the vegetation and its dynamics	Evaluate of current grazing serves to optimise the dynamics of woody plants.
Pastoral referential per plot	This is a database pooling technical references concerning the use of rangelands produced over the course of between 10 and 15 years of work. These sheets are designed to help technicians when performing a diagnostic of how pastoral areas are used by animals. They cannot be used without a priori study of how the farm's feed system works.
"Grenouille" (frog)	Characterise the feed value of heterogeneous habitats by their structure (herbaceous or with tree stratum). Upgrade what is 'coarse'. Create and maintain 'patchworks' of cover where the presence of several vegetation strata is deemed conducive to the habitats of species requiring protection.

Evaluation of grazing on rangelands and Alpine pastures	This is a post-grazing-season diagnostic tool designed to evaluate the level of vegetation removed by a flock. It facilitates an annual pastoral management appraisal.
Strat'Alim	Describe and characterise the flock's feed system. This helps better identify the share of farmed land, pastoral land and natural habitats in the flock's feed.
Rangeland diagnostic	Characterise the rangelands. Evaluate their use. Identify any dysfunctions. Recommend improvements in use to be introduced. It also takes account of the environmental objectives.
Diagnostic of farm biodiversity	Identify the natural heritage conservation objectives and evaluate the related status on farms in order to propose agro-environmental measures to conserve or promote it. Inform farmers and increase their awareness of the natural heritage of their farm.
Flowery meadows	Share visions of cutting meadows and pastureland containing numerous species. Measure the biodiversity of natural meadows: local juries observe the presence of indicator plants which bear witness to the floral variety on the plot of land. Show that farmers play an essential role in conserving natural meadows and their environmental functions.
Fodder rummy (game)	Game to imagine alternative scenarios to current stock farming practices adapted to changing objectives or contexts. Use a game as easy means of approaching the subject and a fun way of encouraging tangible reflection. Play in a group to encourage discussion between players.
Pastoral rummy (game)	Game increasing awareness of the impact of rangelands management on the durability of the resource.
Functional analysis	Analysis and diagnostic methodology concerning the use and management of fodder and pastoral areas. The aim is to understand a farm's feed strategy based on feed demand (adopted by the farmer) and the resource. Facilitates subsequent analysis and adjustment of this strategy.
Menu method	To design the sequence of feed resources during a watch (or how to stimulate the flock's appetite). It is a version of the frog 'shepherding'. It is a model of how to steer a flock's desire to eat during a half-day circuit. Show the importance of the rangeland's diversity with regard to the flock's appetite.
Pâtur'Ajuste	Involves making adjustments to pastoral management after observation of the flock's impacts on the vegetation to make good use of the pastoral resource, to recognise and adjust all the feed resources useful to the flock within the parks. Facilitates adaptive pastoral management to achieve agricultural and ecological results.
La Fichade	Improve the incorporation of ecological and pastoral diagnostics with each other and at farm level. Enable good management of the environment while satisfying the stock farmer's production objectives. The activities of the 'pastoralism' unit are designed to encourage discussion between entities and the emergence of joint projects while satisfying specific demands (development of eco-pastoral management plan).

Buffin *et al*., 2014 created a typology of these methods, classified as follows:

- **“Comprehension” methods:** these are the most inclusive methods. They correspond to the development of à framework, a procedure to be followed. They are not directly operational in the field, calling more on analysis and reflection.

- **Advisory methods and tools:** these are a little less inclusive but nevertheless call on a certain coherence to produce management recommendations. These methods have specific access and often require other complementary methods for an integral diagnostic.

- **Resource characterisation methods:** these methods focus specifically on one or more description or evaluation criteria of an element (generally a resource) which is taken into account in the diagnostic. Alone, they are insufficient for a complete and coherent diagnostic. They are only just considered a tool but can serve as a “method” or a “tool”, depending on the context in which they are used.

- **Evaluation methods:** these are used exclusively for monitoring, to provide feedback on the recommendations. These methods can only exist if actions have already been implemented; they complement and can be incorporated into other more inclusive methods.

Appendix 4

Questionnaire – Global understanding of a farm

Investigator:
Date:
Farmer:
Village, neighbourhood (*lagja*):
Telephone:

General presentation, trajectory and project

The aim of this section is to establish a relatively open discussion with the farmer and to identify certain general elements to obtain a better understanding of his farming system.

1. Could you tell me about your farm? Its history, trajectory and development?
When the person presents their farm, what aspects do they highlight?

2. Today, what is the main concern on the farm?

3. Do you have any projects? Do you want to make or have you planned any changes?

Perception and role of open habitats in the farming activity

4. What do you call these habitats? Local terms.
Show photos asking what the habitats are called locally.

5. Which of these habitats are present here? Which do you use? How do you describe them? Feel free to mention others that are not shown in the photos.

6. Do you see any interest in brushwood?
Yes No
Why?

7.a. Do you see lumber management as a constraint or an advantage for your stock farming activity?

7.b. Are there other activities (other than stock farming) which represent a constraint or advantage for your activity?
For example gathering aromatic and medicinal plants, etc.

Evolution of open habitats

8.a. Have you noticed any evolution in these areas over the past 25 years? At *lagj*a level and at the broader territorial level.
Encroaching brushwood? Change in forest? New reservoirs? Opening of the habitat?

8.b. Is the evolution of these areas problematic?
Yes/No
Why?

9. Is it problematic when these habitats become more closed?
Yes/No

10.a. Have the climatic variations of recent years impacted your practices?
Yes/No No opinion
How? Why?

10.b. Have other elements altered your practices?
Yes/ No No opinion
How? Why? (For example, the establishment of reservoirs in the village, new infrastructures: roads, dairies, etc.)

Management of pastoral habitats, limits and scope for manoeuvre

11. Have you already experimented with techniques in these pastoral habitats? Would you be willing to make changes? Breed, flock size, new grazing land, new type of feed, etc.
The aim of this question is to determine if the stock farmer is capable of change.

12. Do you buy cereals? Concentrates?
Yes/No
Which ones? Quantity? Period of distribution?

13. Do you think it is possible to make better use of the pastureland with the flock?

14. What are your constraints to making better use of the pastoral habitats?
Labour, time, access to water, equipment, distance and access, etc.

15. In relation to using the pastoral habitats, what are your needs and expectations?

Habits, expectations and opinions concerning information and advice

These are open questions in the form of a discussion. The aim is to understand the farmers' position with regard to advice and what their relationship is with their professional environment.

16. Do you call on advice? What are your usual sources of information? Form? Your opinion?
If no answer given, suggest: Veterinary? Other farmers? Technicians? etc.

17. Do you work with the forestry services?
Yes/No
If yes, how and why?

18. Do you think it could be interesting and useful?
Why and how?

19. Would you be willing to share your practices and your know-how?
Yes/No
If yes, in what form?

Flock feed system (StratAlim)

Farming year documented (year n):
Climate conditions year n*:
Climate conditions year n-1*:

* Description of climate conditions in the farming year:

Very good	Year without variations, deemed exceptionally good throughout the year
Good	Year deemed good
Average	Average year without marked variations
Poor	Year with more or less marked variations impacting on the resource
Very poor	Exceptionally bad year with strong and/or accumulation of variations

Work and labour

Number of people working on the farm (including family):
• Full-time:
• Part-time:

Prospect of farm being taken over by children?
Yes/No/Do no know

Is the flock worked in common with others (collectivisation)?

Production and commercialisation workshop

Type of farming *sheep, cattle, goats, other*	Production *Milk, meat, mixed, other*	Sector/market	Share in family income *And time this activity takes*
1:			
2:			
3:			
4:			

Flock 1 (one table to be completed per workshop)

Type of workshop Dairy sheep? Meat sheep? Mixed sheep? Etc.		
Type of herding *All open-air, open-air part of the year? Other?*		
Animals: specify • Mothers • Young (age) • Males	Number:	Breed:
Number of females mating		
Productivity (number of young weaned)		
Litres of milk per female mated		
If meat *Type of product? Quantity? Annual quantity? Live weight per animal? Age?*		
If dairy *Quantity of litres? Quantity processed?*		

Flock 2 (one table to be completed per workshop)

Type of workshop Dairy sheep? Meat sheep? Mixed sheep? Etc.		
Type of herding *All open-air, open-air part of the year? Other?*		
Animals: specify • Mothers • Young (age) • Males	Number:	Breed:
Number of females mating		
Productivity (number of young weaned)		
Litres of milk per female mated		
If meat *Type of product? Quantity? Annual quantity? Live weight per animal? Age?*		
If dairy *Quantity of litres? Quantity processed?*		

Surface areas and land

In dynym (1 dynym = 1/10th hectare = 1,000m²)

Total surface area	
Surface area owned	
Surface area rented or loaned (written or oral contract)	
Other surface areas used for farming or cutting *e.g.: communal property with individual usufruct (hay cutting)*	

Detail of farming and pastoral areas to be completed

For information: 1 hay stack = approx. one tonne of dry hay

	Area in dynym	Estimated rate of dry matter per *dynym* cut (+ grazing = no. days x no. animals)
Permanent meadows *> 10 years without being worked*		
Temporary meadows (TM) legumes pure		
TM grasses pure		
TM multi-species		
Annual fodder crops		
Annual catch fodder crops (inter-crop)		
Grain cereals not grazed		Rate of dry matter per *dynym* of feed straw
Grain cereals early grazed or grazed on stubble		Rate of dry matter per *dynym* of feed straw
Other areas used by the flock		
Other areas farmed but not used by the flock		
Areas not farmed • Potential for use by the flock • Unusable		

Grassland	
Bush, scrub, heath	
Wetlands	
Sinkholes	
Wood	
Open habitats (if no detail)	
Others	

Summer pasture
Is the flock taken to summer pastures for a certain period?
Yes/No

If yes, how long (in days)? When?

Where?

How many animals are taken? (LU calculation)

Fodder and concentrate management (including feed straw)
DM = dry matter

	Quantity and rate of DM *Specify unit*	Comments (type)
Coarse DM harvested year n-1		
Coarse DM purchased		
Coarse DM sold		
Initial stock (year n)		
End stock (year n)		
Concentrates harvested year n-1		
Concentrates purchased		
Concentrates sold		
Initial stock (year n)		
End stock (year n)		

Buildings

Type of building *Permanent building, pojat, other*	Area	Function *Rearing, storage, etc.* *For which animals?*	Number of animals per building

Mapping

Obtain satellite photos / maps of the areas used by the herb or map on GIS with the farmer: indicates the areas through which the flock passes (management units). Depending on time, determine the open habitats.

Schedule (simplified functional analysis)

Complete the table (following page) using a diagram to indicate the majors farming events (mating, farrowing, lactation, drying, weaning, sale, etc.), the grazing periods and the types of habitats used (meadows, rangelands, scrub, fields, etc.) according to the farmer.

• **Major events:** mating, farrowing, lactation, drying, weaning, sale, etc.

• **Types of habitats used:** open habitats? Meadows, rangelands, scrub, fields, etc.
Try to identify the open habitats as well as possible.

• **Observations:** grazing time per day, entry and exit criteria, desired resources, feeding, concentrate (type, quantity, batch concerned), etc.

Outside

Building

Mixed

Conclusions

Expectations in relation to the project?

Suggestions?

Comments following the interview?

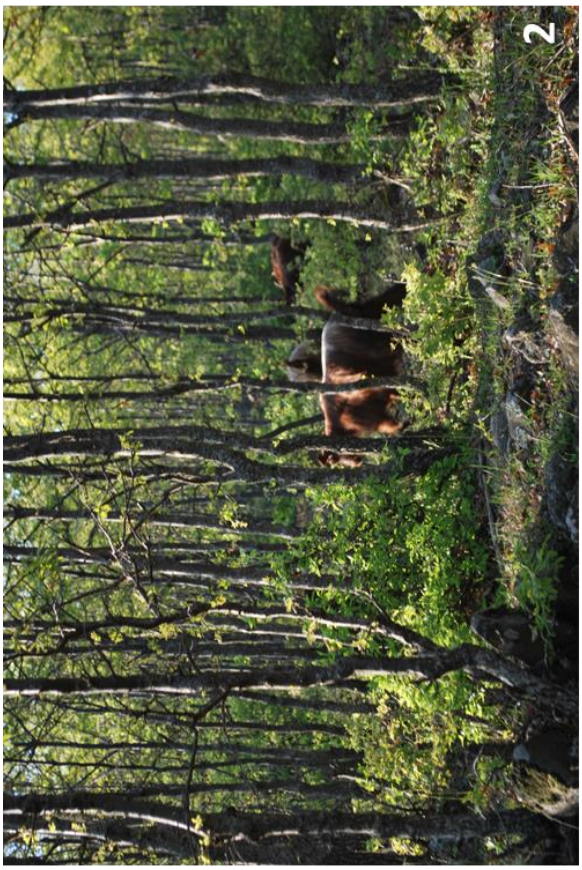
Batch n°

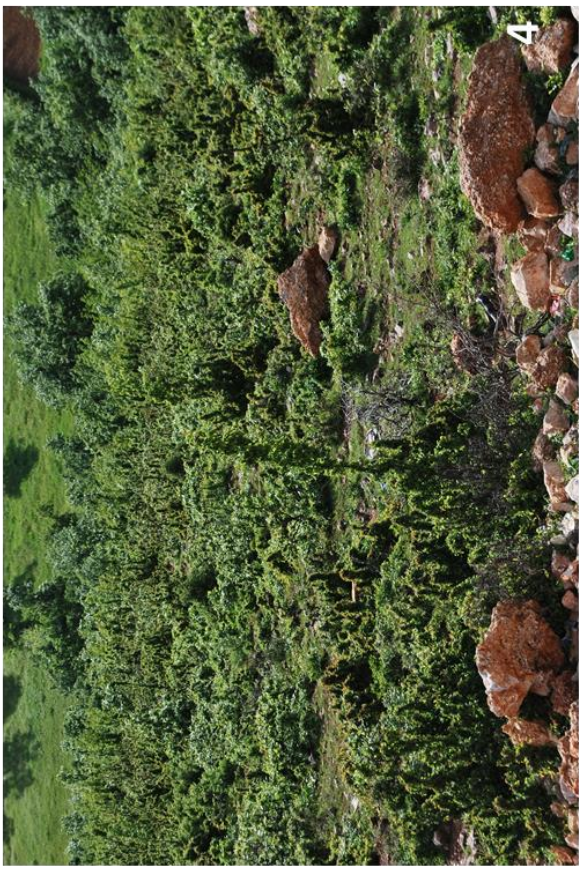
Month												
Zootechnic events: mating, farrowing, lactation, drying, weaning, sale, etc.												
Resources used												
Outside? Building? Mixed?												
Observations: Grazing time per day Entry and exit criteria Desired resources Concentrate: type, quantity, batch concerned, etc.												

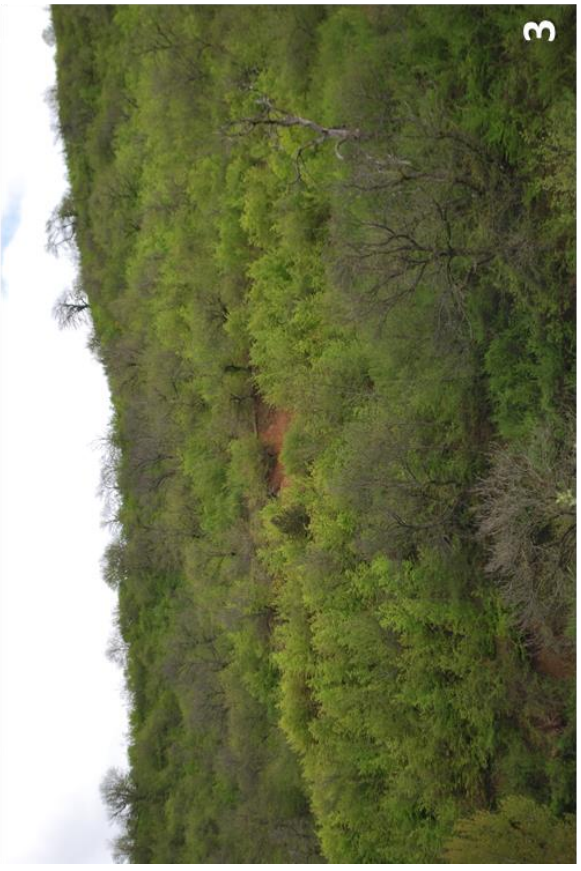
Batch n°

Month												
Zootechnic events: mating, farrowing, lactation, drying, weaning, sale, etc.												
Resources used												
Outside? Building? Mixed?												
Observations: Grazing time per day Entry and exit criteria Desired resources Concentrate: type, quantity, batch concerned, etc.												

Photo board








5


6


7


8

Table 1: General description of the management

Name of management unit				
Number of parks *(if divided)*				
Total area *(ha)*				
Open environment area *(ha or %) and types (grassland, heathland, etc.)*				
To be completed if no diagnostic of MU **Predominant type of plant cover** *(bush & scrub, grassland on shallow soil, grassland on evolved soil, meadow)*				
Used by the farmer since:				
Is the **distance or access** in relation to the centre of the activity a constraint? *Yes? No? If yes, how? No route? Difficult access? Too far?*				
Predation pressure Yes? No? Specify (wild board, foxes, dogs, wolves, other?) If yes, what are the consequences?				
Evolution of the vegetation?				
Evolution of the feed resource?				
Particular sensitivity of the MU to climate variations? Specify the consequences for management?				

Table 2: Description of grazing on the management unit (according to the stock farmers)

Name of management unit:

	Period 1	***Periode2***	***Period 3***	***Period 4***
Season of use				
Duration (in days) *Specify times (24 hours les less)*				
Types of animal (*batches*) **Number and physiological stage**				
Type of resources desired *(grass in full growth, young woody growth, fruits, clearing of refusal by another batch) Take all resources in account!*				
Type of grazing *Continuous? Rota? Rationed? Mixed? Controlled release? On rangeland? Free?*				
Entry control *Entry criteria for each period*				
Exit control *Exit criteria for each period*				
Early grazing *Yes? No? Duration?*				
Fences *Yes? No?*				
Present beforehand *Yes No?* *If **no**, reasoned fencing for precise pastoral management?*				
Provision of cereals / concentrates *Yes? No? Quantity? Type? Why? Precise location? Change of location?*				
Watering method *Precise location? Change of location to guide the flock?*				
Provision of salt and minerals *Precise location? Change of location to guide the flock?*				
Feed supply or short grazing *Yes? No? Quantity? Quality? Why?*				

Method of distributing fodder *Precise location? Change of location to guide the flock?*				
Circulation of animals *Observation of stock farmer*				
Other amenities *Immobilisation? Soil stabilisation? Prohibition of grazing? ...*				
In the event of shepherding: what guides the herding? *Means (dog? stimulus? circuit according to attractive zones? Etc.)*				
Management of rejection of herbaceous plants *Yes? No? If **yes:*** *Management method? (crusher, fire, other – please specify)* *Frequency and period?*				
Management of brush *Yes? No?* *Management method (mulcher, chain knife, hammer? Line planting? Global? Location? Fire? Global? matting? Guided? Other?) Specify. Frequency and period?*				
Additional maintenance (work) *Yes? No?* *Dung spreader? Harrow? (why? frequency?)* *Stone removal? If yes, how?* *Over-sowing? (specify, date and why?) Other? Specify and why?*				
Fertilisation *Yes? No? Where?*				
Liming *Yes? No? Frequency?*				
Irrigation *Yes? No? Period? Frequency?*				

Change in management? (Since? Why?)	
Assessment of pastoral management and organisation of this MU: Satisfactory or not? Why?	
Project(s) on this management unit	
Confirmation with the stock farmer of the role of the management unit (functional analysis link) *Role in flock's feed? Interest? If no, why not? Examples: securing the system? Transition? Useful at certain periods? Why?*	

To be completed if the management unit (or part of it) is cut					
Area cut *(ha or %)*					
Harvesting method *Silage? Hay? Taping?*					
Cutting dates					
Yield *rate of MS/ha or number of bales* *+ weight*					***Total***

ECO-PASTORAL DIAGNOSTIC: AT MANAGEMENT UNIT LEVEL	
NAME OF FARM:	**DATE:**
NAME OF MU:	

Reminder, if necessary, of the important info concerning use *(number of animals, physiological needs, burning, crushing, etc.)*	
Access to the management unit *Comments:*	Easy Moderate Difficult
"Flock comfort" *(Shade, flat area, rest area, etc.)*	Satisfactory Unsatisfactory
Record on orthophoto of the MU: *topo-facies, point of anchorage (water, salt, fodder), striking topographical elements, etc.*	

TO BE COMPLETED AT THE END AFTER DOCUMENTING THE "TOPO-FACIES" TABLES:

SUMMARY AND EVALUATION OF THE MANAGEMENT UNIT		
Number of topo-facies retained and % of each topo-facies in the management unit		
Pastoral interest in current condition	Weak Medium Strong	
Ecological interest/stake	Moderate Strong Very strong	
Dysfunction and possible improvements (quite simple and not costly)		1. Immediate or medium-term problems and MU cannot be improved 2. Immediate or medium-term problems that can be improved 3. No immediate or medium-term problems

Specifications, general comment and specific remarks**:** *status satisfactory or not, potential, stakes, sustainability, etc.*

Pastoral interest:

Ecological interests and stakes:

Dysfunctions and possible improvements:

Initial impressions concerning current pastoral use*: consistencies, inconsistencies, possible adjustments, scope for manoeuvre*

To be completed afterwards: estimated number of LU days/ha (based on referentials)

ECO-PASTORAL DIAGNOSTIC: AT TOPO-FACIES LEVEL

TOPO-FACIES NO. OR NAME:	MU NAME AND FARMER

NATURAL HABITATS PRESENT AND COVERAGE

COMMODITY	
Movement of flock *1 (impossible) to 5 (easy)*	
Key elements of relief I relation to movement of the flock, grazing (steep slop, gullies, etc.)	

PRODUCTIVITY / FEED ATTRACTIVENESS / RESOURCE CONSERVATION				
Dominance of grasses *Comments:*	Low productivity	Medium productivity	High productivity	Mixture
Herbaceous cover	%			
Herbaceous legumes (palatable) *Comments:*	Absent/low	Medium presence	Abundant	
Woody plants (shrubs, trees, creepers), edible and accessible *Comments:*	Absent/low	Medium presence	Abundant	
If present *Comments:*	N.a.	Evergreen	Mixture	
Possibility of edible fruits *Comments:*	Yes	No		
Parasol effect on grass (presence of trees and brushwood allowing light through) *Comments:*	Absent	Low presence	Medium presence	Omnipresence
Herbaceous species with good resource conservation *1 (absent) to 5 (highly abundant)*		*Species concerned (cf. list):*		

DYSFUNCTION INDEX: UNDER-USE				
High presence of litter, accumulation of biomass *Comments:*	Absent	Low (localised)	Medium (patch areas)	High

DYSFUNCTION INDEX: OVER-USE				
Trampling marks/bare soil *Comments:*	Absent	Low (localised)	Medium (patchy areas, sheep tracks)	High
Impact on vegetation *(stunting of herbaceous species, plants with rosettes, very close grazing)* *Comment :*	Absent	Low	Medium	High

PLANT DIVERSITY / TYPE OF POPULATION		
Specific diversity of herbaceous species *Comments:*	1 or 2 dominant species Diffuse diversity with some mono-specific tasks	Diversity per task Diffuse diversity
Ruderal species (cf. list) *1 (highly abundant) to 5 (absent)*		*Species concerned:*
In the event of burning or crushing: response of vegetation *(strong rejection, spread, exhaustion, dominance of 1 or 2 species)*		

DESCRIPTION OF THE WOODY AND REGROWTH STRUCTURES (young *seedlings and rejects)*

Species and quantity		**Age of the population**			**Structure of the population**			**Structure of regrowth**				**Optimisation of woody plant dynamics**
Note the name of the species and the quantity (2, 3 or 4) *		Young	Old	Mixed	In front	In tasks	Diffuse	In front	In tasks	Diffuse	* Qty	*(See e.g. below: 1C, 3B, 2D, etc.)* *

OPTIMISATION OF WOODY PLANT DYNAMICS: **HELP**

*** QUANTITY**

1.: Absent
2.: **W**eak presence
3.: Medium presence
4.: Abundant

*** WOODY PLANT DYNAMICS**

Case 1: expanding population
(no mortality, major regrowth)

Case 2: stable population
no mortality and no regrowth) **or** (mortality and major regrowth localised on existing massifs: densification).

Case 3: regressing population
(high mortality and no or limited regrowth)

*** EFFECT OF GRAZING ON WOODY PLANTS**

Case A: no significant impact on woody plants.

Case B: low impact on young and adult plants.

Case C: high impact on young and adult plants.

Specifications concerning impact of grazing:

Examples to be ticked if necessary:
o*Browsing of the year's shoots,*
o*Major branching,*
o*Trampling,*
o*Peeling,*
o*Ball, umbrella or candle,*
o*Absence of very young plants around the adults*
o*Presence of young plants around adults protected by an unconsumed herbaceous stratum.*

B. Sirot

F. Lerin

For more information and to download the documents,
visit:

www.lifemilouv.org