

## PASTOFUTUR

**Analysing pastoral livestock farming through its multifunctionality and associated ecosystem services to strengthen public action**

## BIOSEFAIR Metaprogram

### Project summary: 2022 - 2024

**June 2024**

Pastoral activity is currently the subject of much debate regarding its future forms, its place within territories and its role in socio-ecosystems. This is particularly true in Mediterranean mountain regions, which in recent decades have shifted towards a residential and tourist economy and are facing rapid forest expansion as well as the effects of climate change.

Pastoral activities are carried out in areas that are most often subject to multiple uses. They must contend with potentially contradictory demands: maintaining food production, contributing to the conservation of iconic species, managing natural risks, and controlling landscape dynamics in areas at the interface between agricultural lands, grasslands and forests.

Our collective of INRAE and CIRAD researchers is conducting a participatory research project in the Alpes-Provence-Verdon Community of Municipalities. This project aims to help identify actions that will promote the long-term preservation of pastoral activities within the region, in conjunction with other existing activities. To this end, our work employs systemic approaches, such as those operationalised by the concept of ecosystem services. This research alternates between individual interviews with stakeholders, institutions and groups concerned with the future of pastoral farming in the region and workshops involving a wide range of stakeholders

to enable the co-construction of strategies that could facilitate the articulation between multiple uses in the territory.

## Results

The main results obtained during PASTOFUTUR can be organised around the following four dimensions:

### 1- Identifying the actors and interactions involved around pastoral livestock farming activities

The project enabled specific work to be carried out to identify, describe and analyse the interactions between pastoralism and a variety of human and non-human actors, as expressed by livestock farmers during individual interviews (end-of-study internship by E. Casanova, Agricultural Engineer). As an example, two contrasting ideotypes broadly describe the diversity of attitudes embodied by livestock farmers towards wolf predation. One pole, “Master and control”, characterised by a strong desire to protect herds and a small number of guard dogs to limit conflicts with other users, contrasts with the other pole, “Adapt and follow the rhythm of the sheep”, which prioritises the well-being of the herds and relies on a large number of guard dogs to give them freedom. These two ideotypes, associated with contrasting practices in the field, are rooted in different visions of the profession of farmer or shepherd and open up various possibilities for its redefinition in a context of global change.

The results of the individual interviews were then reused in a workshop with local farmers and shepherds. This enabled these interactions to be validated, prioritised and qualified from the perspective of those involved in livestock farming (Figure 1). While certain points of convergence emerged, such as the shared difficulty of grazing in forests, farmers and shepherds also expressed a diversity of views with regard to other actors. For example, the relationship with protected flora is expressed positively by some, who place it at the heart of pastoral practices, while others see it more as a constraint that is more or less complex to integrate into herd management.

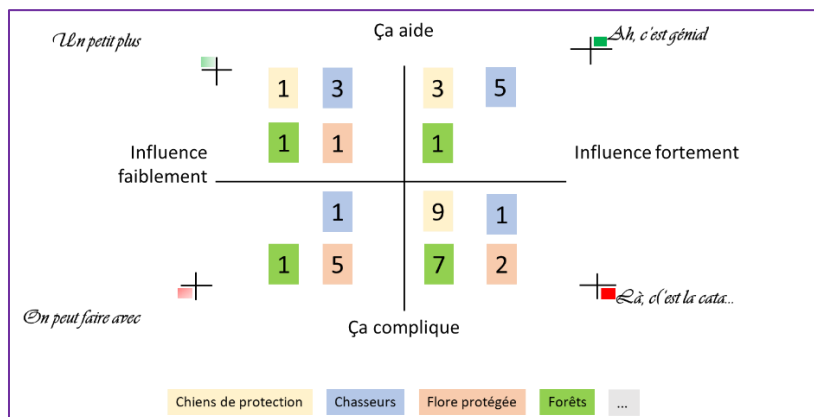


Figure 1: Classification of interactions around pastoral farming (selection of human and non-human actors from those developed during the workshop)

### 2- Characterising multiple uses of spaces used for pastoral activities

Two thematic focus areas enabled us to work on characterising compromises or ways of coordinating pastoral activities and other activities, in silvopastoral areas on the one hand and

in summer pastures frequented by those engaged in tourist and recreational activities on the other.

Silvopastoral areas are, by definition, used for at least two activities (pastoral and silvicultural), and their management is a key issue in a context of climate change and increased pressure on pastoral resources. Our study of four sites with contrasting silvopastoral issues and configurations was based on the concept of ecosystem service bundles to express the expectations of the stakeholders concerned, as well as the compromises or synergies in multi-use situations (final year project by M. Simler, Agricultural Engineer). The results highlight the disparity in the expectations expressed by stakeholders with regard to silvopastoral environments, each prioritising specific ecosystem services linked to their use(s), even though a shared interest in landscape aesthetics is expressed and could constitute an interesting starting point for future collaborative work.

In these areas, which are often presented by stakeholders as places of compromise, the study has identified the perceived influence of different practices on the environment's ability to provide the expected services. It has also identified certain levers for better coordination of multiple uses (e.g. shared land management tools, financial support for stump grinding operations, etc.), while also integrating biodiversity issues (e.g. prior agreements on grazing schedules, phasing of work, etc.).

Pastoral activities coexist with other activities, particularly tourism and outdoor recreation. Interviews and a participatory workshop helped to refine the specification of the stakeholders concerned and the associated issues (Figure 2). This work highlights a profound crisis in the local socio-ecosystem centred on the implementation of herd protection measures associated with the return of the wolf. Relationships between local stakeholders appear to have changed profoundly, calling into question traditional occupations and activities and impacting the perceived collective identity of the region. We have begun an analysis of the situation and the focal points of these conflicts, whose scale and repercussions exceed the technical, financial and organisational limits familiar to local stakeholders and the research team and which remain at the heart of dedicated public policies.

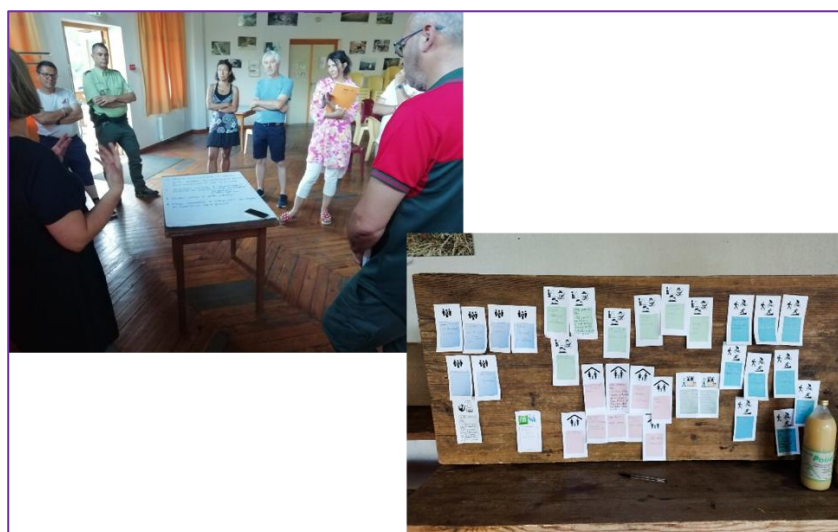


Figure 2: Group workshop and stakeholder input based on a set of cards developed for the occasion.

### 3- Identifying favourable conditions for collective management of the environment

Based on previous work, a series of three group workshops aimed to help identify the conditions for the long-term sustainability of pastoral activities within the territory, in conjunction

with other activities (Figure 3). Given the complex dialogue situation encountered, significant work was done to mobilise key stakeholders in order to facilitate exchanges between them. We paid particular attention to the methodological approaches used to support the facilitation process, for example by developing a set of cards dedicated to their preparation within the research team and by drawing inspiration from innovative design methods during the workshops. After sharing what was important to each participant, the discussions focused on identifying issues that could be addressed locally and possible solutions. Among the avenues explored was the desire to build a realistic and attractive image of the region, one that would better integrate existing activities and communicate more effectively, particularly to tourists from outside the region who are perceived as having little knowledge of local realities.

Workshop participants also highlighted the need for better sharing space, which could involve providing clearer explanations of the reasons behind the practices and rules put in place, in order to encourage acceptance and compliance and thus potentially elicit more appropriate behaviour from a wide range of stakeholders. This series of activities enabled participants to articulate their individual positions in a way that had not been done before and to engage in a constructive exchange about future options for a shared territory. However, taking action and making it operational remains a real challenge, which seems to involve a process of profound reconfiguration of interactions between stakeholders and with regard to ecosystems, all of which are simultaneously subject to significant exogenous factors of change. The same applies to the structuring of a sustainable arena for dialogue between stakeholders, which is far from guaranteed at this stage due to the fragile capacity for mobilisation of many participants.



*Figure 3: Group workshops, working atmosphere and presentation of results*

#### **4- Developing tools to support the collective approach (modelling, visualisations):**

A prototype model integrating multiple uses of the landscape has been developed: it shows the spatial intersections between activities, opening up the possibility in the medium term of having a tool for facilitating discussion of the rules for implementing practices and their link to changes in the landscape. However, overall, the tools to support the development of shared solutions as we had initially imagined them could not be fully implemented but could include at medium term: production of spatial information specific to the territory, development of

prototypes of graphical interfaces and visualisations accompanying the multi-agent model, and simulations of changes in the territory and interactions between actors based on management choices. The long time required to create conditions conducive to listening and sharing has not allowed us to implement them so far, but these tools remain relevant for a possible future phase of transdisciplinary work.

## Valorisations

T. Raffaillac, N. Boukhelifa, E. Crouzat, F. Stark, J.-P. Müller, J. Lasseur. (2023) Développement d'une interface de simulation multi-agents pour la gestion concertée des territoires pastoraux de moyenne montagne. *Annexes des Actes de la 34e Conférence sur l'Interaction Humain-Machine*, Avril 2023, art. 6, pp. 1–6.

<https://dl.acm.org/doi/10.1145/3577590.3589606>

T. Raffaillac, N. Boukhelifa, E. Crouzat, F. Stark, J.-P. Müller, J. Lasseur. (2024) Supporting Interdisciplinary Research with Cards-based Workshops - A Case Study on Participatory Planning for Mountain Pastoralism. *Extended Abstracts of the 2024 CHI Conference on Human Factors in Computing Systems*, May 2024. <https://doi.org/10.1145/3613905.3637107>

Lasseur, J, Crouzat, E. et al. (2024) Pastofutur - An on-going research-action project on pastoral farming in a local community of Southern French Alps. *Communication durant la Conférence 'GASL - Multifunctionality of Livestock Grazing Systems'*, Montpellier (France), Avril 2024. <https://www.livestockdialogue.org/events/events/others/action-network-event/en/>

Darré, W., Couix, N., Dutilly, C., Crouzat, E. et al. (2024) Conflits de valeurs, sentiments d'injustice et participation autour de la place du pastoralisme dans les Alpes de Provence et du Verdon. *Communication acceptée au Congrès international des sociologues de langue française*, Ottawa (Canada), Juillet 2024.

En préparation :

Stark, F., Crouzat, E. et al., (in prep.) Managing multiple uses in multifunctional landscapes – An ecosystem service – based approach in sylvopastoral contexts

Lasseur et al., (in prep.) Transformations des métiers pastoraux en montagne méditerranéenne et interactions multi-acteurs au sein des projets de territoire

### ➤ Scientific mediation activities and interactions with society

Hosting a screening and discussion during the transhumance festival (Revendran 2022 – Colmars-les-Alpes, attended by around 100 participants)

Couix, N. et Lasseur, J., (2025) Malgré les plans loup successifs, une cohabitation toujours délicate dans les Alpes du Sud. *The Conversation* <https://theconversation.com/malgre-les-plans-loup-successifs-une-cohabitation-toujours-delicate-dans-les-alpes-du-sud-259728>

### ➤ Public policy support activities

Contributions to the fact-finding mission « The role of pastoralism in land use planning, the causes of its decline and the consequences for the sustainable development of rural areas »

(National Assembly Committee on Sustainable Development and Land Use Planning, Mr J.-Y. Bony et Ms M. Pochon, Members of Parliament)