What does adapting to the reappearance of the wolf mean for sheep farmers in the Southern French Alps?

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SUMMARY - Wolves have been coming back for several years in the southern French Alps. In two valleys of the Mercantour national park, they have been present for 15 years. Sheep farmers have to adapt their farming systems to this presence. We carried out surveys among the sheep farmers *i)* to describe the strategies they adopt to protect flocks *ii)* to pinpoint the organisational effects that these strategies have on the pastoral system. We studied immediate and mid term effects of this presence on sheep farming systems. Sheep farms are maintained on this area but this is due to a lack of alternatives for sheep farmers. Over the medium term, this questions the maintenance of sheep farming. Our surveys also underline specific difficulties for some farming styles in adapting to these new production contexts. So over the medium term the diversity of farming systems will be re-defined. In the short term, the adoption of the protection plan is a major disruption of the pastoral system. Gathering flocks into a night paddock in particular is not considered by the farmers as relevant to their local know-how. The result emphasises the difficulties in reconciling the organisational flexibility needed by the pastoral sheep system with the rigidity of the norms defined for the protection plan as administratively defined. The obligation for breeders to conform to such a plan has as a consequence a loss of farmer control concerning interactions between flock and grazed territory. Our results underline the need to reconcile these contradictions to ensure a positive contribution of sheep farming to biodiversity conservation policies in pastoral landscapes.

Key words*: pastoralism, sheep, farming system, wolf, diversity, perennity*

The return of the wolf to the French Mediterranean region (1992) changes the perception of livestock farming as being overall favourable to the environment. The presence of the wolf engenders modifications to practices likely to endanger the sustainability of some livestock systems and the contribution of this livestock system to land management. We carried out a study in two valleys of the south Alps (Vésubie and Roya). It involved analysing how at local scale the question of the future of livestock farming is posed by livestock farmers, and how medium-term changes to production structures and equipment are envisaged: is the perennity of sheep farming or certain livestock systems in question?

In addition we were interested in changes in the shorter term concerning livestock practices. In particular, do the proposals concerning flock protection call these practices into question or not? And if so, how?

We will present the transformations in livestock farms associated with the presence of the wolf; we will then discuss the consequences of these modifications and the support provided for the transformations of these farms to ensure their perennity and their contribution to land management.

THE PRESENCE OF THE WOLF AND CHANGES IN SHEEP FARMING.

Analysis of the medium term evolution of farming activities.

At regional level, from the end of the Seventies to the mid Nineties, the increase in flock sizes and the improvement in work productivity directed development actions. Local specificities such as the abundance of grassland areas were not at that time considered by players in the regional sheep farming business as a resource that made it possible to establish its development. During these years, there was a significant increase in the size of flocks, as well as forage intensification and the development of « off-season » production. The regional sector showed that it was possible to develop modernised farms but to the detriment of the use of « natural » areas, less favourable to farming activity. Following the P.A.C. reform of 1992, specialisation and growth in flock sizes continued. But the setting up of the grass premium limited the interest in increasing the productivity of arable land and made natural areas attractive again. The development of agri-environmental structures to favour maintenance by the grazing of natural areas accompanied this redeployment (Lasseur, 2005). By devising new skills, the farmers reintegrated marginalised resources into their production systems. But the future remained uncertain between the consolidation of livestock systems taking advantage of pastoral resources or falling back on cultivated areas in logic of production intensification. It is the contribution of sheep farming to territorial dynamics by maintaining open spaces by grazing, integrated into a mosaic associating cultivated areas and forest areas which is at stake.

How to tackle the question of changes in livestock farming practices?

Questions of the maladjustment of livestock farming practices to the new conditions created by the presence of the wolf or conversely the maladjustment of protection measures to existing farming systems are central to the debates concerning the possibilities of cohabitation between livestock and wolf. We will treat this question via the example of a key measure of the French flock protection programme: the installation of night paddocks grouping the animals together as a substitute for the practice of "free sleeping areas ".
If the question of the change of practices is considered in logic of "transfer of knowledge", this debate is soon decided: the “right” practice simply has to replace the unsuitable way of doing things. Two categories of farmers are then distinguished: those who make efforts to adapt by adopting the recommendations and the others. With this category of recalcitrants, it involves using sufficient power of conviction, if need be stigmatizing their practices (wandering flocks are mentioned for example), even considering coercive measures such as conditioning refunds for animals that are victims of predation to the adoption of this practice. To move forward, it seems to us more useful to consider questions of innovation as elements which ask farmers to redefine the meaning of their activities (Leguen and Sigwald, 1999, Lémery, 2003). This then gives rise to a work of reconstruction which takes place in the very centre of the profession and in interaction with players involved in the environment. This reconstruction contributes to various arbitrations concerning practices operated by the farmers, between what they think is possible, desirable, or unthinkable to implement. To understand on the one hand the meaning of such or such a practice and its redefinition with regard to coherences, or systems of practices worked out by the farmers, and on the other hand concerning the meaning which they give to their activities seems us essential to help new ways of doing things to emerge. We will tackle this question of the change of practices

from interviews with farmers aimed at identifying the relations which the farmers establish between their practices, local standards and their different ideas about their work.

LIVESTOCK FARMING IN VESUBIE AND ROYA

The very pastoral character of livestock farming in Vésubie and Roya (10 months of grazing a year) makes them very exposed to risks of predation. This, coupled with the fact that considerable predation has been going on for a number of years, justifies the choice of location for the study to identify stumbling blocks between livestock farming and the presence of the wolf that can be applied generally, even if they do not appear with the same intensity in other contexts. The agricultural census (R.A.) of 2000 numbers 40 sheep farmers and a total flock of 10,000 ewes. Between 1988 and 2000, dates which cover the arrival of the wolf (1992), the evolution of local sheep breeding was close to that of the department: reduction in farm numbers (- 45 %), increase in flock size (from 120 to 190 ewes). Between 1979 and 1988, the number of farms and livestock grew (respectively by 10 % and 32%). As for cattle farming, it collapsed. Predation appeared in a context of "professionalisation" of sheep farming for meat operated by a population of young farmers, who converted cattle farming into sheep farming when they became established.

We met 15 livestock farmers (nearly 50 % of the farmers in the area), crossing criteria of farm location, age of farmers and size of flocks to maximize the diversity of situations. During non-directive interviews, we approached various themes at the level of the farm and local farming systems. These topics were divided into two main headings; structural and organisational evolutions in the medium term, and changes in daily practices. We focused on grazing practices with regard to risks of predation (Lasseur *et al.*, 2007). We retranscribed the interviews and, for the various analysis themes selected, we carried out a speech analysis enabling us to locate links between a practice and the arguments put forward to justify it. This enabled us to identify the various relations between material methods of carrying out a practice, conception of the work and the social position to which this conception is attached (Darré *et al.*, 2004).

The medium term evolutions of livestock farming activities

The first years of predation, shortly after a period when a considerable number of young farmers set up in business, saw the disappearance of a number of older farmers who were on the margins of these development dynamics. During this time, a very small number of the younger farmers reconverted their activity. For the majority of the farmers, the question of reconversion or abandonment of their activity was not posed at the time. They did not imagine that the predation would continue.

At the present time, the question of the farmers in place abandoning livestock farming is no longer posed (however we note that two have recently left farming). But the fact of continuing livestock farming is not based on a dynamic point of view. They remain farmers because they cannot see what else they can do. These farmers judge that it is not reasonable to set up in farming in the sector at the present time. This is argued from a series of negative elements concerning their situation:

- economic dependence with respect to support measures gives the feeling that the future depends more on political decisions of dubious perennity than on the quality of their work. This is reinforced by the amount of the supports associated with the « wolf plan ».

- working conditions becoming more difficult because of practices that have to be implemented to protect the flocks, made even more difficult by the lack of mountain equipment.

- the capacity to confront attacks is linked to their distribution among the flocks present. The idea that the situation is bearable is therefore associated with the presence of the farmer collective. Nobody wants to be the last farmer present in the area but each of them is convinced that the problem will soon arise.

- protection measures to be set up, perceived as imposed from "outside", call into question what their work really means for a number of farmers (cf. below).

Only the newly-established farmers consider that it is reasonable to settle. They reveal a strong passion for this work and think it is normal "to be permanently with the flock" even if it places great constraints on their way of life. But here predation seems an additional obstacle to the success of the installation project, especially if it takes place outside the family framework.

The farmers are pessimistic about the future of local sheep farming. They are not very inclined to settle their children and the difficulties of taking over farms outside the family framework seem greater. Few elements seem to prefigure the emergence of forms of livestock farming allowing cohabitation with wolves. Lastly, the presence of the wolf would reduce the diversity of the forms of livestock farming: the few small herds associated with multiple job holding are threatened; specialization and the exclusively pastoral character of the work are reinforced (abandonment of mowing grasslands).

The practices of grazing and night paddocks

The links between setting protection measures in place, the changes in practices associated with this and the conception the farmers have of their activities are analysed in connection with the installation of night paddocks. We show how the reference framework by the farmers of good practices is completely changed.

The judgement on changes of practices comes down to the meaning the practitioner gives to his trade. For the sheep farmers interviewed, this meaning is structured around three main points: *i)* To make the best possible use of grass at grazing to feed your flock, minimizing recourse to food distributed in the sheep-fold is a criterion of technical excellence. *ii)* To produce fine lambs with grass. A well-managed flock grazing at pasture is evaluated with regard to the average weight of the lambs sold at the end of the summer. *iii)* To have them eat mountain grass by ensuring good perennity of the resource and thus minimize purchases of food in the future.

Farmer practices aim at ensuring respect for these three preconditions and thus limit the system of practices to be implemented. The evaluation of what is possible in terms of change of practice also comes down to what seems acceptable with respect to others. We distinguished two dimensions of this judgement: *i)* the relationship with the risk of predation.

the idea that the risk of having a few ewes eaten can be reluctantly accepted is opposed to the idea that it is absolutely essential to protect the herd and secure oneself against any predation. *ii)* the farmer's work. Here, the idea that it is necessary to be permanently with the flock is opposed to the idea that shepherding activities have to be reconciled with other activities, in particular social relations and family life.

With respect to the recommendation to use night paddocks to protect the flock, we analyse how three choices of flock management are identified compared with these analysis methods:

i) Not to make night paddocks, but to lead the flock towards the least dangerous sleeping places.

So the farmers accept a certain amount of risk which they consider all the more limited as they have confidence in their guard dogs. The argument is based on the idea that for a night paddock to be effective, all the ewes and dogs have to be gathered together there. This would suppose a close guard on the flock all day long. This would be all the more necessary, difficult to carry out and disturbing for the flock, if the flock is large and the mountain steep and (or) overgrown. This prospect is associated with disturbance for the animals and loss of growth for the lambs. It is considered preferable to use free sleeping places, directing the flock towards the least dangerous places. With good anticipation, the whole of the flock will be there with the dogs for the night. This choice is associated with large flocks, difficult mountains, and is based on the idea that the shepherd's work consists in managing a subtle balance between what he imposes on the animals and the margin of freedom he leaves them, as the ewes know what is good for them.

ii) To remain with the herd as much as necessary and have recourse to the night paddock only if it is compatible with good management at grazing.

This alternative, which reduces the risks of predation, conditions the use of the night paddock to the certainty that it does not adversely affect management at grazing. The flock must not be disturbed or returned in the evening before it has had enough to eat. There is a debate about the ability, under these conditions, to reconcile normal life and good grazing for the animals. In particular in summer when the time grazing ends can be very late. It is recognized locally that few farmers can have recourse to this practice; the size of the flock, the nature of the mountains and the mountain equipment must lend themselves to it. From this point of view a farmer has an emblematic position; he leads a large flock and returns it every evening and is seen as not neglecting his animals. From the point of view of the other farmers, this is carried out to the detriment of his personal life, and few of them, except the young farmers, say they are prepared to endure this rhythm of life.

iii) To return the flock every evening to paddocks to have peace of mind even if it means calling good grazing practices into question.

This choice is justified by the need of these farmers to eliminate any risk of predation, not to be anxious for the flock and to be able to sleep. This practice is often implemented by farmers who consider that "they" force them to adopt such practices or in a transitory way by farmers who are temporarily confronted by very high predations. This choice is not in line with what these farmers regard as good grazing practices. This leads them to express a judgement devaluing their activities.

So, the installation of night paddocks in a generalized site leads farmers either to considerably increase their work constraints if they want to keep to their good practice references, or, if they want to reconcile guarding and other activities, to implement practices which come outside the reference framework which locally characterise a good farmer.

HOW IS THE EVOLUTION OF LIVESTOCK FARMING TO BE ENVISAGED?

Our case study was carried out in the particular context of the very pastoral valleys of the coastal fringe of the south Alps. But convergent results have been observed, in particular with regard to the methods of changes of practices, in other studies on the French alpine area concerned by predation problems (Silhol et *al.*, 2006; Garde *et al.*, 2006). The lessons drawn from this study thus seems us to have a more general scope.

Concerning modifications to livestock farming practices, generally our study illustrates the interest of an analysis which does not isolate practices one from the other, but is interested in their overall coherence and what justifies them in the eyes of the people actually involved. With regard to the effects of predation on livestock farming practices, it is the very basis of the references of these systems which is in question. Thus the triptych which founds the system: seeking for self-sufficiency, attention paid to flock-vegetation interactions to perpetuate the resource, the whole organised around an affirmed production function, seems to us to be entirely coherent. These systems have proved their capacities to exploit difficult surroundings, and have contributed to their structuring. There are no current alternatives that can be generalised in the agricultural and livestock farming field. But one cannot exclude the risk of these activities being abandoned or the swing towards more intensive systems.

We must not deduce from this that the only solution to this question is the disappearance of one of the two parties. Adaptations to the forms of farmer activities are undoubtedly possible. The most optimistic version of these adaptations is to consider, as Flamant (2006) proposes in connection with the cohabitation between bear and livestock in the Pyrenees, that "the farmers can transform into an asset what they currently perceive as a constraint". The presence of the great predators would then become a source of dynamism by redefining the activity and its relations with society. The programmes developed by public authority would support this search for adaptation. The results of our study nevertheless stress the difficulty of this exercise and a few limitations in the present provision arrangements:

These adaptations cannot be based on recommendations of practices affecting the very heart of the coherence of systems and calling into question the meaning which farmers give to their activity, if they are thought of as transfers of solutions worked out without the farmers. Refusal to implement proposals such as night paddocks must not be interpreted as a systematic refusal to adapt to the new production context. Attempts to impose these measures either administratively or by stigmatizing those of the farmers who refuse them will not solve the problem. It can be seen how important it is to accompany this search for a solution by a comprehensive analysis of the activities.

In addition, these proposals must integrate the dynamic character of the activities. Livestock farming systems evolve under the effect of modifications to multidimensional production conditions, and it is in this movement that the search for adaptation must be found. A contrario, prevention programmes are often based on the specification of authorized types of livestock farming, for example conditioning compensations with regard to certain criteria (size of flock, management method…). It has been observed in extreme cases in certain regions that regulations freeze the forms of livestock farming and condition

compensation to respect for precisely described management methods, qualified as "traditional" ((Alves Pinto and Alves Costa, 2007).

The current French protection plan from this point of view does not seem to us to satisfy the requirements that real support work for local players would take on in a search for solutions. To a certain extent it could even be thought that local farming systems are frozen and depend increasingly on the financial support of these protection programmes. Finally the questionings of the meaning and coherence of the livestock farming systems concerned are so significant that it seems to us that the balance of burden falling on each party in questions of cohabitation between farming activity and predators should be reconsidered. Taking into account the uncertainties weighing on the link between protecting an emblematic species and preserving biodiversity, it ought to involve a whole set of measures including the regulation of the predator population.

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