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Permanence and changes in pastoral farming in the Southern Alps

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Permanence and changes in pastoral farming in the Southern Alps

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- 1 The presence of pastoral farming in the Southern Alps is a long story. Although the last Würm glaciation ended 10,000 years ago with glaciers and the glacial steppe gradually giving way to forest over the two thousand years that followed, the oldest evidence of sheep farming goes back to over 8,000 years ago along the border of the Alps at two sites in the Vaucluse and the Bouches-du-Rhône departments in France (Courtin, 1977; Ducos, 1977). Cross-referencing of pollen and pedo-sedimentary data at a large number of sites in the Alps and along the Rhone River have revealed the preponderance of mixed areas where trees were widely present within dominant grassy formations 6,000 years ago (Beeching *et al.*, 2004). The transformation of areas already undergoing expansion 5,000 years ago was revealed by the intensity of burned areas, the frequency of anthropic pollens and signs of erosion at a site of Lus-La-Croix-Haute (Argant, 2004). During the same period, i.e., at the beginning of the 3rd millennium BC, the existence of local transhumance over a part of the communities can be established, attesting to the presence of shepherding activities (Blaise, 2005). The emergence of a pastoral activity that structured the landscapes of the Southern Alps would then have occurred at just

about precisely the same time as the establishment of the post-glacial forest cover resulting from global warming. Even if the forest “climax” existed in the Southern Alps, it only lasted for a limited time before being shaped by human activities. This look at a long period of time raises questions about a “naturalness” that can only be the product of a contemporary interpretation of past events.

- 2 With a view to the future, the aim of this article is to establish the presence of sheep breeding in the Southern Alps throughout its multiple mutations that have never ceased to find new forms of organization. In response to economic crises and social transformations, the practice of grazing sheep on pastoral lands and the mobility of men and animals have always been factors contributing to the resistance and adaptation of pastoral farming. The “natural” wealth of grazingland is the fruit of a long co-evolution of ecosystems and human activities. “Natural” biodiversity, like domestic, is the contemporary result. Even if the flocks are still there, the number of people who live off of them has been considerably reduced. Meat producers in the beginning, they have become landscape producers in their own right. Although they are proud to be doubly recognized to this effect within the framework of the “social contract” represented by the Common Agricultural Policy (CAP), this recognition brings its own ambiguities. Breeders feel as if they have become marginalized today in a society that is shaped by other values, that often has an antiquated idea about their activity, and that voluntarily proceeds by injunctions that are often contradictory. Uncertainty about the future of pastoral activities in the Southern Alps has undoubtedly rarely ever been so great. The evolution of markets and consumer expectations, the CAP reform, climate change and the shepherd’s lonely struggle with the wolf are just some of the issues that could contribute to the structuring or dismantling of the future of a sector and of a region.

Crises and changes in pastoral farming in the Southern Alps

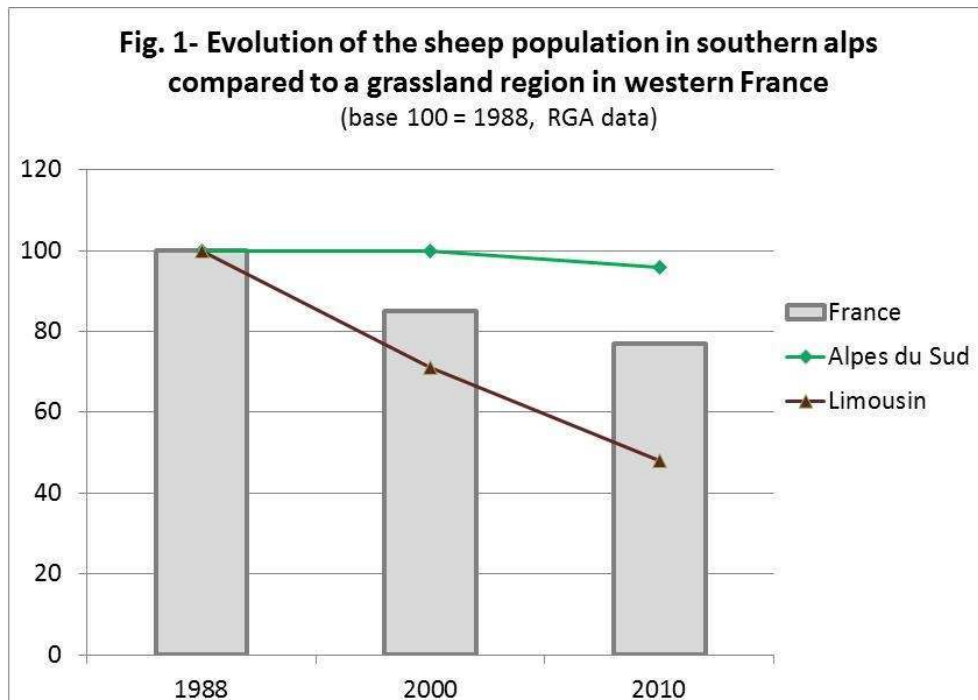
- 3 To better understand the changes underway that influence modern pastoral farming, we should take a look at the last great upheaval to affect pastoral societies in the Southern Alps after the last demographic peak that occurred between 1750 and 1850. Traditional forms of sheep farming were based on the production of manure and wool at that time (de Réparaz, 1978; de Bonneval and Lachaux, 1987), either on large sheep farms, for example, in Basse-Provence or on the Canjuers Plateau (Archiloque, 2003), or on small mountain farms where a small number of sheep were responsible for providing the essential manure. A large number of sheep grazed in alpine pastures, either as a result of transhumance or the grouping together of flocks from the valleys. Manure was an essential by-product of the flocks that grazed in alpine meadows, especially because of its distribution to mountain communities during the summer season (Lacroix, 1988). The animals had to be gathered together at night, one of the key elements, along with the low cost of labor and the strong destructive pressure of predators, contributing to the traditional means of defending the flock against wild predators.
- 4 At the end of the 19th century, a major break led to the collapse of a pastoral economy perceived today as traditional and unchanging. The main explanation for this break is obviously linked to the industrial and social revolution that dramatically changed society as a whole, drastically accelerated by the opening of borders in 1860 to wool from

emerging countries at that time, within the framework of the first globalization. However, the emergence of an environmental debate that cast doubts on sheep breeding provided a timely and adequate ideological framework to justify the departure of farmers and accompanied an authoritarian program reallocating grazingland to the forest. Toward 1850, the level of opening of mountain environments was at its peak and the overexploitation of the mountain was taking a toll on the survival of rural communities. The reason for this deterioration was the object of an animated scientific debate at the end of the 19th and beginning of the 20th century. On the one hand, “government” foresters denounced the overgrazing of sheep, saying that it was responsible for erosion and flooding, and promoted a radical policy of expropriation and reforestation. On the other hand “social” foresters were more focused on the needs of rural communities and largely relativized the role of grazing in relation to these erosion phenomena (Kalaroa and Savoye, 1986). The question was finally settled by Raoul Blanchard (1945) who showed that it was the excessive clearing of land for the precarious cultivation of crops, and not overgrazing, that was responsible for the rapid deterioration of the mountain, a practice that continued until around 1870.

- 5 In the decades that followed, the rural exodus from the arid mountains as well new sources of fertilizer led to the disappearance of the economic necessity of manure, while freeing up good cropland for the production of fodder necessary for the new forms of breeding. Public policies linked to reforestation and the rehabilitation of mountain territories accompanied this exodus and accelerated a deep change in land use. After the collapse of the two pillars of sheep breeding in the Southern Alps, wool and manure, farms began to orient themselves toward lamb production within a gradual process of specialization and expansion. At the same time, the disappearance of the wolves made it possible to do away with the need to gather the animals together at night, eliminating its economic purpose and heavy constraints. The consequences appeared to be positive for the decreasing number of farmers, the increasingly demanding sheep and the ever greener alpine pastures (Briot, 1905, *in de Réparaz*, 2000). The reconversion toward meat production within specialized farms took place in the first half of the 20th century. Since the 1950s, the number of sheep has in fact increased in the Southern Alps, particularly to the detriment of cattle. However, grazing alone is not generally sufficient to contain the forest dynamic. After the disappearance of the strong pressures on biological resources that characterized former farming systems (clearing, cutting bushes for animal litter, etc.), the natural reforestation process added to that of replanting trees in high mountain areas like in the Pre-Alps (Trivelly, 2004). Grazing pressure was redistributed, with the areas taken over by conifers being compensated for by the annexation of old croplands and the creation of new pastures whenever possible.
- 6 A new major change has taken place since the 1980s in pastoral farming. It is in progress and its outcome is difficult to predict. Nonetheless, it appears to be similar to the fracture that took place during the preceding century. Let us lay out the premises. As of the 1980s, a new opening of the borders, this time to meat, led to the growing downturn of the price of lamb (Bazin, 1985). This drop was compensated for by public assistance from the CAP, which itself evolved from support for the product and the economy towards support for sustainable development. An active policy of pastoral development was thus carried out in the Southern Alps, building on agri-environmental contracts that recognized the new skills of breeders in terms of landscape and biodiversity production (Legéard, 2004). A sharp drop in the number of sheep took place in all of the plain regions of France,

particularly the west and the center. In contrast, the effective resistance of sheep farming in several mountain regions and, in particular, in the Southern Alps, is extraordinary (Figure 1), reinforcing the sheep sector in the region. However, this balance is fragile, dependent on public financing, and the object of new accusations in the name of new environmental stakes.

Figure 1. Evolution of the sheep population in Southern Alps, compared to a grassland region in Western France



Overview of pastoral farming in the Southern Alps today

- 7 Many characteristics of the Southern Alps are more similar to mountains in the Mediterranean region than in the Alps themselves. It is a mountainous region widely devoted to sheep breeding, in contrast with the Northern Alps where cattle breeding is predominant. Thus, the southern Alps, including part of the Drôme department, account for almost 90% of the sheep population of the Alps, but only 10% of the cattle: some 650,000 resident or grazing sheep intended for lamb production, 45,000 cows, mainly for meat production, as well as 30,000 dairy goats. The Southern Alps combine the constraints of the Mediterranean and mountain climates. Summer drought and cold winters limit the periods when useful vegetation grows. To address these constraints, breeding at the pastoral level nevertheless has two major assets. The first is the very wide diversity of mobilized plant formations, permanent pasture, sward growing on surface soil, heathland and scrubland, hardwood and softwood undergrowth (CERPAM, 1996). Thus, almost 40% of Mediterranean pasturelands are wooded and 30% are heathlands (Méchain and Garde, 2011). The second asset is the wide range of elevations that make it possible to find resources for the flocks in all seasons. The mobility of sheep farming is the key to adapting to climate constraints. It can be broken down at all levels of flock feed

supply by associating highly diverse resources in the same day, by mobilizing grazing areas at varying distances depending on the opportunities and constraints and, finally, by long or short migrations. This mobility is exemplified by the word “grazingland” itself, signifying both the resource space and the movement necessary to mobilize it.

- 8 Climate constraint can also be defined in terms of its extreme variability. The annual variation in grass growth in dry pre-alpine grasslands can double from one year to the next. A severe fall drought can decrease seasonal growth by a factor of six (Garde, 1990). Feed management systems adapt to such variations using two safety mechanisms that they combine to different degrees. The first is an adjustment of the harvest area that makes it possible to get through difficult climatic years and to sell hay in better years. The second safety mechanism, which can be added to or substituted for the first, is to procure a safety margin on grazing areas by sizing them for less favorable years. The quest for food autonomy makes it possible to limit costs in all cases within an extensive logic. The contrast is great between the more pastoral systems in the Mediterranean Pre-Alps where flocks can remain in pasture up to 10 to 12 months a year, and those of the high mountains, handicapped by five to six months when the animals are kept in the sheep pen. The first mobilize large, relatively unproductive areas that provide 60 to 80% of the animals’ annual requirements (Fig. 2): approximately one hectare per sheep or two hectares per goat (Garde *et al.*, 2012). The second require large stocks of hay, have a more rigid feeding system and offer less of a security margin in terms of abrupt climate changes, with which they have less experience since the influence of the Mediterranean climate is diminished (Fig. 3). Some farmers get around this climatic constraint by moving their flocks to Mediterranean pastures. Generally speaking, mountain pastures provide food security three to four months a year. However, since they are generally used at a given time to the limit of their capacity, they therefore offer little flexibility within the framework of the annual feeding calendar.

Figure 2. Example of a feeding system for a transhumant flock of sheep in the southern Pre-Alps with collective summer pastures

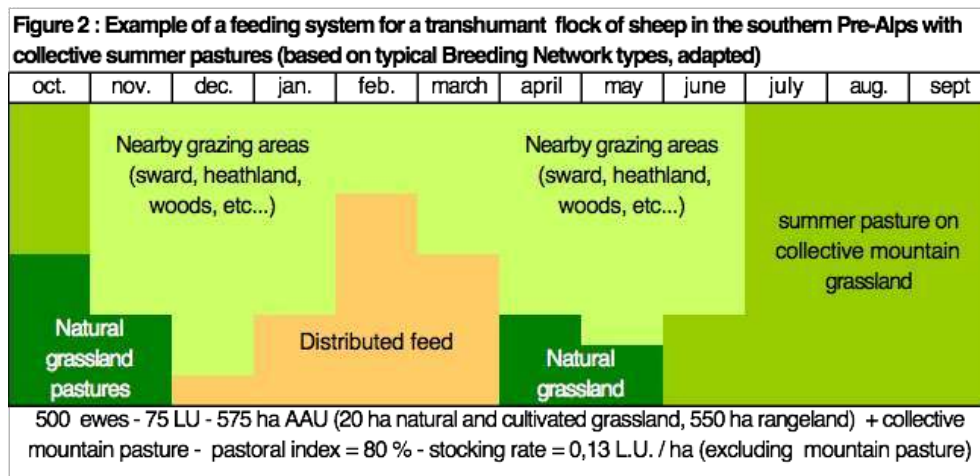
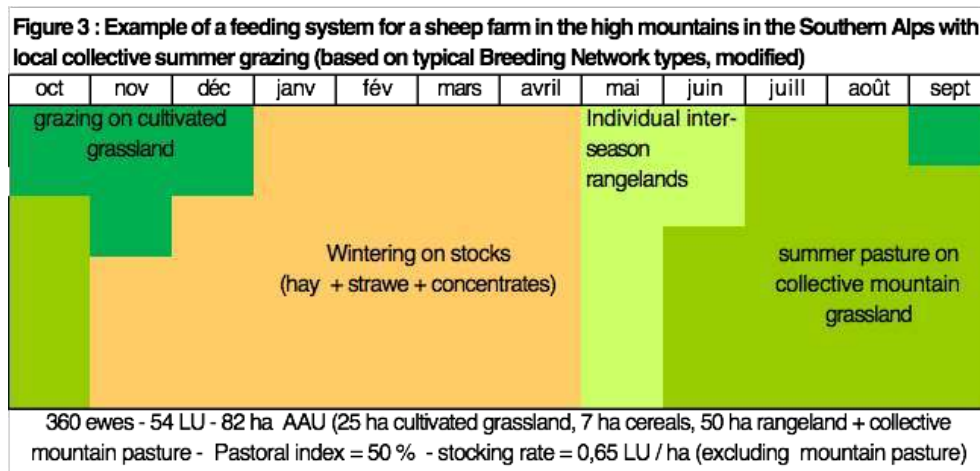


Figure 3. Example of a feeding system for a sheep farm in the high mountains in the Southern Alps with local collective summer grazing



- 9 These breeding systems in the Southern Alps have several highly original characteristics. Their pastoral character is not only linked to mountain pastures, like in many other regions of France, but to grazingland in general. Thus, the Provence-Alpes-Côte d'Azur region has 377,000 ha of mountain pasture for 355,000 ha of grazingland (Ernault and Favier, 1999; Landrot, 1999). Pastoralism is not just a seasonal summer activity but an important element as well in providing feed for the flocks in the spring, fall and winter along the southern rim of the region. The extremely wide diversity of grazed areas, the way they are interconnected, their dynamic and their link to pastureland are a source of resilience for livestock systems.
- 10 It is undoubtedly within the specific know-how of pastoral activities that the interaction between man, the domestic animal and the environment is best represented. Shepherding takes on highly diversified forms depending on the environment, the group of animals and the production objective. "Tight shepherding" is the rule of thumb throughout the daily grazing circuit for large summer herds that do not include lambs, keeping the herd as close together as possible. It is used over large areas with good visibility and is based on the highly gregarious character of a race like the Mérinos d'Arles. "Loose shepherding", which is also permanent, is very different and consists of granting a great deal of grazing freedom to ewes accompanied by their lambs in order to satisfy their lactation and growth needs in more difficult mountain pastures. The breed typical of this type of shepherding is the Mourrerous. The practice of "dispersion-orientation" consists of giving an initial impulse to the flock over an area of adapted pasture where the ewes have become familiar with their space and then determine where they will graze by themselves. Finally, in some of the valleys in the Hautes-Alpes, a different type of flock management can be found, referred to locally as "*arrage*", where the flock of the local breeder is divided into small groups of several dozen ewes that each graze on a relief that would not be possible for a big flock. The role of the shepherd is then to survey the groups of animals at regular intervals so as to monitor them and provide any necessary care, but without a daily presence (Viollet, 2012). It is of course important to mention flock management within fenced areas, which experienced a degree of development in the 1980s and 1990s, particularly with the aim of reducing labor. However, this practice, whose technicity is on equal par with that of shepherding,

reached its limit and even tapered off due to constraints linked to the multi-use and maintenance of electric fences.

- 11 “Pastorality”, to use the term proposed by O. Turquin in the preparation of this issue, is not limited to the characterization of livestock breeding systems. Mediterranean mountain landscapes are widely shaped by flock movement over hundreds of thousands of hectares. Agro-pastoral regions represent a major reservoir of biodiversity (Blondel, 2006) and thus constitute the majority of protected areas in the region (Parcs Nationaux de France, 2011). Pastoral farmers raise and preserve hardy local breeds that contribute to domestic biodiversity, particularly sheep (Mérinos d’Arles, Mourrerous, Préalpes, Brégasque) and goats (Rove, Commune Provençale). The long-standing presence and the intensity of pastoral activities have left their mark in the form of small rural dry-stone constructions. The know-how linked to flock management over grazinglands and mountain pastures has been passed down within the framework of a very strong attachment of those concerned to this cultural heritage of activities, practices, networks and exchanges. Finally, pastoral space is a mixed space. It is a world that is both natural, grazed, hunted and recreational, where wood is harvested and mushrooms and fruit are gathered. It is a space that has always been shared, discussed and negotiated between balances of power and synergies of interest. The emergence of environmental managers increasingly involved in the management of these pastoral regions has had the effect of formalizing relationships that had previously been confined to local communities. Moreover, the new ecological stakes that they promote are yet another element to be added to those that the farmer already has to contend with.

New stakes, new changes

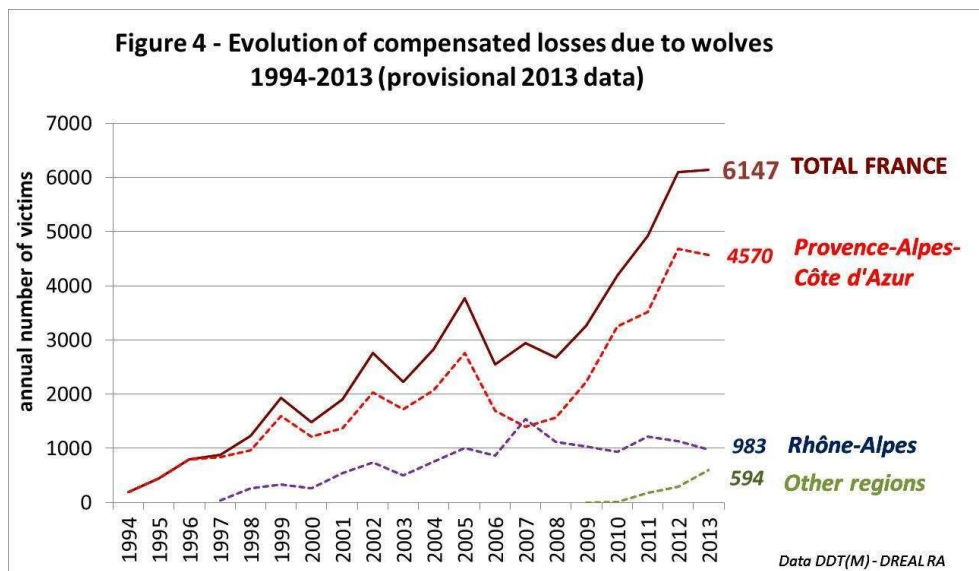
- 12 A certain number of changes have taken place in the world of pastoral activity over the past ten to 20 years. The animal farmer is first and foremost a producer of meat, milk and cheese. Preserving and developing this aspect of his profession is undoubtedly the first strategic challenge facing his future. Ensuring the production function of foodstuffs relies on the farmer’s capacity to develop his products and to decrease his expenses. Product development rests on two pillars. On the one hand, it is necessary to consolidate structuring tools at the level of the sectors involved (slaughterhouses, cooperatives, groups of producers, labeling, etc.). On the other hand, farmers organize themselves in order to explore all emerging forms of short distribution channels (direct sales, food baskets, Internet circuits, farmers’ markets/outlets, individual and collective processing and meat cutting, etc.). In all of the cases, the aim is to increase the added value of the products and to strengthen professional and social links. The control of food costs is just as strategic, particularly in view of the structural rise of cereal prices. To meet this challenge, livestock farming in the Southern Alps must reconcile its two major components, fodder and grazing. Farms that can produce sufficient quantities of hay, like those that have access to large areas of grazingland, are well positioned in relation to this challenge. The establishment of new farms and the takeover of existing ones is a key factor to the future of livestock breeding in the Southern Alps, just like elsewhere. New farms often have difficulties in stabilizing themselves and in obtaining access to fodder resources as well as to marketing channels. Help from local government agencies is often of great value but does not always make them immune from insecurity. The increasing threat of wolves sometimes even discourages people from taking over existing farms or

settling in the most affected areas. Finally, changes in the CAP are highly responsible for major livestock breeding policies. Even if some signals are encouraging, like the commitment to support mountain breeding, anxiety continues, particularly concerning the difficulty of having wooded grazingland and shrubland considered as potential pasture, or that of future access to funding for collective groups. Future decisions once again depend on the value attributed to agro-pastoral activity in these areas.

- 13 Shepherdry has always been very present in the Southern Alps, whether it was done by the farmer himself or by an employee. Sheep breeders (and to a lesser degree, goat breeders) often speak of the increasing difficulty of using a paid workforce to ensure animal management: difficulties involving the application of labor laws to the particular profession of shepherdry; increasing expectations of new populations of shepherds, often from urban environments and concerned about their working conditions and the application of these laws; job insecurity that is increasingly unacceptable to these new shepherds; heightened stress in areas where wolves are present; the surge in housing needs due to the necessity of grouping the animals together at night and difficult to satisfy due to the lack of public financing; more and more turnover as a result of the latter; and, finally, anxieties linked to the breakdown in transmission of know-how between successive generations of shepherds from highly different cultural backgrounds.
- 14 Livestock grazing is often used to meet the challenges of biodiversity. The Natura 2000 sites in the mountains of Southern France are in large part dominated by open and semi-open pastoral environments. The network of natural, regional and national parks is particularly dense in the region. Pastoral farmers have experience with agri-environmental contractualization. The coordination work of pastoral technicians and technicians responsible for protected areas shows that farmers willingly contribute to the challenges posed by biodiversity when they observe the rules of sound pastoral management recognized by the profession. Positive experiences were thus reported, for example, in the Luberon (Beylier *et al.*, 2002), Ecrins (Dobremez *et al.*, 2013) and Verdon regions, and in the Southern Pre-Alps. These examples concern open, grazed ecosystems with a high degree of biodiversity, or the management of emblematic animal species such as the Bonelli eagle, mountain avifauna, the Griffon vulture and even the meadow viper (*Vipera ursinii*) (Lisse *et al.*, 2012).
- 15 The climate change in progress today is a factor of change with widely unknown effects. It is difficult at this time to know if it will affect or favor one sector or another, and what changes it will produce in terms of farm management. Nevertheless, there are some initial elements available for reflection. The prospect of increasing climatic accidents that we often hear about will require the entire adaptation capacity of pastoral systems to meet the challenge. On the long-term, global warming should favor a longer grazing time and, therefore, a savings on feed in the sheep pen, which can be considered as a positive factor for predominantly grazing-based breeding systems. On the other hand, the development of sylvopastoralism will be an increasingly important asset, with forest grazing being one of the potential adaptation measures in view of longer and hotter summers. However, it is effectively wooded grazingland that turns out to be the most dangerous in areas where wolves are present. The predator is an increasingly important factor in future prospects for pastoral systems in the Southern Alps. This region, which accounts for some 70 to 80% of the wolf population and damage to flocks nationwide, is thus the only region in France to reconstitute its historical density of wolves. The Mediterranean mountains, where livestock breeders have a long experience in terms of

flock protection, are the most exposed to the risks associated with wolves. The presence of grazing animals throughout the year, night grazing when the temperature is high, large areas of wooded grazingland and shrubland and, finally, the greater vulnerability of the exposed ewe-lamb couple are the major risk factors analyzed (CERPAM *et al.*, 2012), which explains the very poor predation figures compared to the Northern Alps (Fig. 4). In view of this negative observation, the first wolf regulation measures that the French government attempted to put in place in 2013 turned out to be hampered by the reality of wooded and shrub-covered land, compartmentalized by protection statutes: only seven out of the quota of 24 wolves attributed for that year could be taken. Finally, the wolf represents a major factor of discouragement for pastoral farmers, given the quantity of difficulties it causes and the doubts cast on livestock breeding by its advocates.

Figure 4. Evolution of compensated losses due to wolves, 1994-2013



Sheep breeding caught between competing demands

- 16 It is within its economic, social and environmental position in relation to the expectations of society that pastoral farming can explore the pathways to its future. Broad sectors of the society express their desire for food that is healthy, local, with a low carbon footprint, farm-raised or organic. New expectations have also appeared concerning animal welfare. Pastoral farming in the Southern Alps, like in other mountain ranges, is fully in line with these current societal demands for local, more natural products, vectors of identity and character, associated with a terroir and carrying with them a strong image. However, other societal actors, sometimes even the same ones, strongly express other claims that reveal other values and another project for the future of the region. Their demand is based on a natural wilderness that is widely promoted by certain media and ecological associations. This nature should "rebuild" itself with all of the elements of the ecological pyramid organized around the diversity of big wild hoofed mammals in favorable habitats, crowned by the guild of scavengers and the presence of big predators. This claim, far from being only that of the most committed ecological associations, very precisely corresponds to the European policy of the Habitat Directive that applies to all of its member states, on the one hand, through the implementation of

the Natura 2000 network, and on the other, through the obligation at the national level to protect concerned emblematic species. The question therefore arises as to “cohabitation” between the maintenance of livestock activities concerning small ruminants and this global project to rebuild ecological pyramids at the scale of European mountain regions. For advocates of this global project, “cohabitation” would be ensured by convincing farmers to accept the presence of large predators, the technical success of which is assumed beforehand. The feedback from 20 years of experience with wolves in the Southern Alps is very different: farmers undertook major technical measures to protect their flocks, but did not succeed in keeping predation at bay. They therefore perceive the wolf as a major threat to the survival of their activity, despite the extent of financial means granted by the government to protect the flocks and compensate for losses. The region thus became a precursor in France in terms of new questions concerning the future of abandoned lands where extensive farming is carried out, and which are also the most favorable to the arrival of large predators. To shed light on the French situation, little documentation exists in the case of new zones for wolf colonization in other European countries beyond militant convictions. For example, in Spanish Asturias, different authors have observed negative reactions on the part of farmers (Bobbé, 1993; Figueroas *et al.*, 2003), which are confirmed by the local press¹. It should also be recalled that many countries affected by the arrival of wolves such as Switzerland, Sweden, Norway, Finland and the United States have adopted a wolf population control policy, with an actual decrease in the level of protection in the US.

- 17 Extensive and pastoral farming is caught between these two major societal aspirations that are strongly seen as being contradictory on the long-term by all of those involved in livestock farming. The priority of pastoral farming is above all to ensure its economic balance between the control of production costs, product development and negotiation for public funds in recognition of its environmental role. However, its production activity can only be maintained in a favorable environment in terms of infrastructures, the availability of large-scale grazing areas and the social environment. At a time in history when it must face its own challenges, pastoral farming is only fragilized by the emergence of this tension between two visions of the mountain: on the one hand, a rurality that maintains humanized landscapes but that is dependent on public financing to maintain a production that can no longer find its place alone on a globalized market, and the other new “naturalness” that is based on the promotion of emblematic species whose future is legally preferable to that of the farmers, and that represents, on the long-term, products that will promote a shift of these mountain regions towards a wilderness-based tourist economy². Pastoral activities have existed in the Southern Alps for several millennia. It is undoubtedly the first mountain region in France where “pastorality” will be confronted with the very maintenance of its existence in the decades to come as a result of new pressure groups.

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NOTES

1. *El Comercio*, 31-05-2005, 26-04-2007, 27-05-2007, 29-07-2007, 1-07-2009, 19-08-2009; *La Nueva España*, 19-08-2010. Courtesy of B. Besche-Commence.

2. See the following links: <http://www.panparks.org/>; http://ec.europa.eu/environment/nature/info/pubs/docs/nat2000/sust_tourism_annex.pdf; <http://www.rewildingeurope.com/>

RÉSUMÉS

The Southern Alps, where sheep farming is highly prevalent, is specific to the mountains of the Mediterranean region and, consequently, is in sharp contrast with the Northern Alps. The age-old practice of pastoralism that has shaped the landscapes and human societies has existed for thousands of years, questioning the emergence of the concept of naturality linked to this region. Nevertheless, the perception of the durability of an activity seen as traditional should not obscure the extent of changes that have had an impact on it in the past. In light of this, there is much to learn from the comparison between the major upheaval that affected pastoral farming at the end of the 19th century, and the current process of change whose outcome is not yet known. In both cases, changes in public policies and markets, as well as the emergence of new environmental stakes have determined or are in the processes of determining the future of pastoral farming. Faced with society's increasingly specific but sometimes contradictory expectations, the types of livestock farming widely used in pastoral areas thus appear to be the best adapted to propose "natural" and local products, but the most vulnerable as well in view of the establishment of a large population of wolves. This contradiction is indicative of the shock of values between two societal projects for abandoned land, the first, heir to a rural tradition that is responsible for maintaining a human presence in the mountains, and the second, the vector of a "naturality" based on the reconstitution of ecological pyramids.

INDEX

Keywords : sheep, Mediterranean mountains, history, grazing systems, shepherding, environment, land use, wolf, naturality

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