

ages to be 1-2 Mio \$ per year, and maybe 40% is compensated by regional governments. The main factor affecting wolf damage is the management system of livestock. In mountain areas (i.e., Cantabrian Mountains) livestock is free ranging from May to November, and the average damage caused per wolf per year can be 10 times higher than in the plain, where the livestock is always protected by shepherds. Only 20% of the Spanish wolves live in these mountain areas, but they cause 80% of all losses. Surplus killing is common, and the conflicts are very high when wolves expand into sheep areas, as for example, to the Basque Country and the Picos de Europa National Park. In the south of Spain, wolves occur in large, private, fenced states devoted to red deer hunting; they are almost extinct due to the illegal persecution through gamekeepers because of their predation on game. The wolf is by far the most controversial species in Spain, and the social conflicts and the polarization are increasing in recent years, as a consequence of the campaigns of animal right groups.

There are 500 to 1,000 Iberian lynx in sharply decreasing, very fragmented populations in the southwest of Spain. Unlike the European lynx, they almost never attack livestock and they are not perceived by local people as a problem. Hunters sometimes claim that they kill rabbits, but recent awareness campaigns seem to have improved the lynx image even among hunters.

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Testing Livestock Guard Donkeys in the Swiss Alps

Since 1995, Switzerland experiences the immigration of wolves spreading along the western Alps. Genetic studies have revealed that the animals belong to the Italian population (Taberlet *et al.* 1996). As elsewhere, the wolves cause damage in the free ranging sheep herds (Landry 1997a). Livestock husbandry is no longer adapted to the presence of large carnivores, and preventive measures will have to be re-applied in and adopted to the Swiss Alps to prevent losses (Landry 1997b). This is one of the goals of the Swiss Wolf Project by KORA. The most promoted prevention system, is the use of livestock guard dogs. Additionally, other prevention systems such as electric fences (Speeder Pac), fladry and guard donkeys are tested.

In 1995, several farmers in the Valais (southwestern Switzerland) bought donkeys to be placed with their herds. Their integration into the flock did not cause major problems. The sheep took about a week to get accustomed to their presence. It seems that a donkey of any age can be integrated into a herd, unlike with the dogs; it is nevertheless advisable to use very young animals. In the stable, the donkey is placed in a stall near the sheep, especially during lambing. However, the farmers are afraid that a donkey might crush a lamb by accident.

A donkey stallion is much more aggressive than a female or a castrated male, and donkey breeders advised against using such an animal to guard a flock. Farmers who used stallions noted their aggressiveness particularly in autumn. The donkeys ripped wool from the backs of the ewes and lifted 40 kg lambs to walk around with them. The nearby presence of other equids can incite the donkey to attack them, especially the stallion. One of the farmers had to remove his donkey because it prevented the ram to mount the sheep.

A donkey is much simpler to use than a dog and it clearly has a higher ability to adapt (change of owner, climate, activity) than the dog. No specific knowledge is needed to look after a donkey, which daily consumes up to 8 kg of hay, the same amount as 4-5 sheep. In winter (150 days), 1 tonne of hay and one tonne of straw must be reckoned. The stall must measure about 10 m², to allow the donkey to roll on the ground. Donkeys readily eat what sheep do not consume in the pens.

The presence of a donkey in the pen seems to reassure the sheep (they are less nervous). At night, the donkey remains with the sheep. One donkey even

acquired the habit of assembling the sheep every evening. Obviously, a donkey is very vigilant at night. At the least suspicious sound or smell, it starts to bray. Its voice can be so loud that it may be heard over several kilometres – so there may be some problems with the neighbours. Donkeys have shown to be very discouraging to dogs which roam around the pen (tourists' dogs). A donkey is able to recognise dogs from a far distance and to warn the sheep, which then will be less surprised by the sudden coming of a canid.

The donkey is able to run away and at the same time kick with one or both of its hind hoofs, then turn quickly and rush at the dog with its head lowered, and ears flattened on its nape. I know two cases, where a dog (a German shepherd dog and a hunting dog) were killed by a donkey in a mountain pasture when harassing the sheep. The donkey's aversion to canids is so strong that one has to be careful when using a herd dog to tend the sheep. However, in two flocks, we managed to have a donkey together with livestock guard dogs (a St-Bernard and a Great Pyrenees). Even more, the unlike animals are sometimes playing together.

The donkey normally stays with the sheep, but when at a mountain pasture, the slope is too steep, it is not capable of following them everywhere. Especially tall donkeys show this handicap. Several farmers kept their donkeys in lower parts of the pasture because they feared that the animal might fall. If the herd divides into several groups, the donkey visits them by turns, or stays constantly with one group. The use of several donkeys in a herd is not recommended because they tend to stay together and neglect the contact with the sheep.

Several farmers had problems with tourists who liked to feed the donkey and hence distracted it from its task. One donkey, however, used to rush at people who approached the enclosure.

From the first results, a donkey appears to be a good solution to protect small flocks of sheep (< 50 heads) in an enclosure. The presence of a donkey in a pen frightens people less than a large dog. Furthermore, it is not necessary to feed the donkey daily, unlike the dog. It is however, too early to conclude about the use of the donkey as a guard animal in the Alps. Its effectiveness against wolves is not yet known. Furthermore, livestock guard dogs remain the only preventive system valid for large herds.

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Should Life condition all co-financing of compensation systems to the use of preventive methods?

I think that we should divide the question "Should LIFE condition all co-financing ...etc." into two separate ones: One regarding Compensation payments through conservation projects (like LIFE projects) and another one regarding Compensation which is paid for damages through National or Regional systems (run by public authorities or other funds).

According to my opinion the answer to the question concerning the conservation projects is that, yes, LIFE should condition all co-financing to the use of preventive methods. My main reasoning for this answer is that compensation is a passive strategy, since it does not create incentives for the reduction of damage and it does not include other educational and policy tools.

However, the same question is differentiated concerning individual farmers who exercise agriculture within a range of different land types or socio-economic and environmental conditions: In some European mountainous and less favoured areas low intensity farming systems may be incompatible with the high cost of implementing some of these measures. In general, in these areas the farmers' income is lower and the cost of production is higher than in others where intensive farming systems are applicable. On the other hand, the small size or the structure of holdings which dominate the low intensity systems of agriculture and pastoralism presents further difficulties to the implementation of such measures. Consequently, a large portion of farmers would be excluded from compensation systems which are conditioned to the use of preventive measures and this,