Short Communication

PREPARING FOR THE INCREASING PRESENCE OF LARGE PREDATORS IN SOUTH TYROL: A CHALLENGE FOR ALPINE FARMING

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1. Introduction

In South Tyrol, Italy, wolves were officially eradicated in 1896 and brown bears in 1930 (AF, 2016a), although unconfirmed chronicles mention the presence of brown bears in the province until the 1970s. However, increasing populations of wolves and bears in Switzerland and Slovenia as well as adjacent Italian provinces (AGRIDEA, 2016a,b,c) raise the possibility of their reestablishment in South Tyrol (Fig. 1). The renewed presence of bears has been documented for more than ten years, particularly in western parts of the province (AF, 2016a). The wolf has also been recorded regularly since its return was genetically confirmed for the first time in 2010 (AF, 2016a).

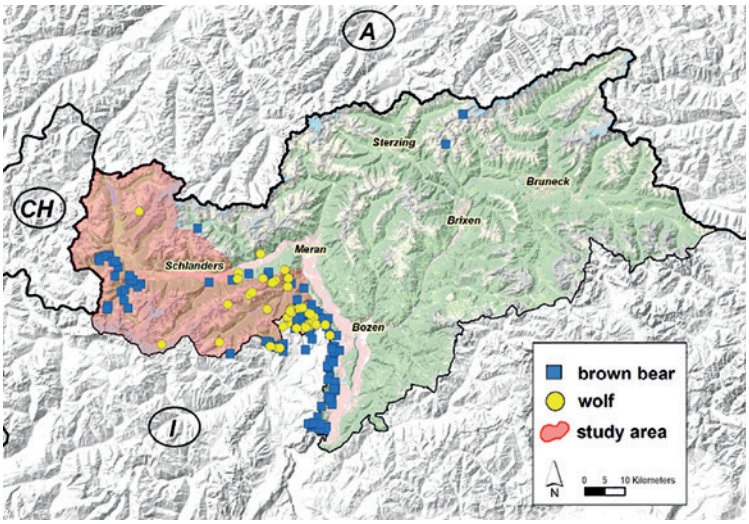

Fig. 1. Records of the presence of wolf and brown bear in South Tyrol, Italy, 2013-2015.

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The first damage to livestock by large predators returning to South Tyrol was confirmed in 2005 (Table 1). Alpine farming is highly valued in the province and around 95,000 farm animals spend the summer on alpine pastures every year (AF, 2016b). The increasing presence of wolves and bears raises the risk of further damages. Small livestock traditionally graze vast pastures in high altitudes in a free grazing system. Here, the danger of being attacked by large predators is especially high and damages at least by wolves are expected to be most likely on sheep, the most abundant species.

Table 1. Number of livestock killed by large predators in South Tyrol in 2005-2015.

	Brown bear	Wolf		
Year	Livestock*	Sheep	Goat	Cattle
2005	65	0	0	0
2006	4	0	0	0
2007	104	0	0	0
2008	43	0	0	0
2009	24	0	0	0
2010	56	12	2	2
2011	14	0	4	1
2012	31	0	0	0
2013	5	0	0	0
2014	6	19	0	0
2015	9	15	4	0
Total	**362**	**46**	**10**	**3**

*No data available for the separation into different livestock categories.

The increasing presence of large predators has usually been met with incomprehension by the rural populace, especially owners of small livestock and alpine farmers. The development implies change processes (e.g. adaptations in managing small livestock alpine farming systems / small livestock husbandry) and thus causes complications in the everyday working life of affected players. Knowledge as well as experience to handle the expected changes are lacking which results in uncertainty concerning the maintenance of small livestock husbandry and small livestock alpine farming. Affected players are unsure how to handle the new situation. Even for the administration and consultants the coexistence of large predators and livestock is new and they also lack necessary experience.

To address this issue, the Bolzano Agency for Hunting and Fishing (Amt für Jagd und Fischerei Bozen) and Stilfserjoch National Park (Nationalpark Stilfserjoch) commissioned a study on small livestock alpine farming in western South Tyrol (Moser et al., 2016). This study, developed by Büro Alpe and AGRIDEA in 2015, had three main goals:

1. To document the current situation of small livestock on alpine farms and pastures and elaborate possible adaptations of the alpine farming system and measures to protect flocks;
2. To analyse affected players and present structures of small livestock husbandry and small livestock alpine farming;
3. To develop a proposal to establish an advisory centre.

Here we present the main results of this study.

2. Study area and methods

The study was conducted in the western part of South Tyrol (Fig. 1), in the district of Vinschgau, in Ultental, Deutschnonsberg and Tisens. From July to September 2015 more than 30 alpine farms and pastures with small livestock were inspected together with representatives of the Department of Forestry as well as the owners of alpine farms and pastures and those who manage them (alpine farmers) (Fig. 2). The study focused on alpine sheep farming, because in the study area the number of sheep grazing on alpine farms and pastures (about 1,760 livestock units, LU, in 2014) exceeds that of goats (about 380 LU in 2014) considerably (FU, 2014). Up to now, sheep have been attacked by wolves more often than goats on alpine farms and pastures (AF, 2016a; Table 1).

Face-to-face interviews were conducted with different affected players (e.g. owners of small livestock, owners of alpine farms, alpine farmers) in order to analyse their roles, interests and motivations as well as the interactions between them concerning small livestock husbandry and small livestock alpine farming. Furthermore, existing structures of small livestock husbandry and small livestock alpine farming (e.g. ownership structures at alpine farm level and responsibilities at administration level) were analysed.

Fig. 2. Participants of an alpine farm inspection in the valley of Martell, South Tyrol, 2015. Photo: Cornel Werder.

3. Results

3.1. Small livestock husbandry and small livestock alpine farming

The average number of small livestock per farm in the study area was 16 sheep and 9 goats (TDM, 2016). In most cases, these consisted of regional mountain breeds rather than of economical meat breeds, underlining the traditional, sentimental and intangible value of small livestock husbandry and small livestock alpine farming for most owners. In general, owners wanted to maintain small livestock husbandry and small livestock alpine farming, but the legal protection status of large predators and their increasing presence in the study region oblige them to apply certain changes.

Currently, small livestock alpine farming is characterised by free grazing without the use of any fences on vast open terrain at high altitudes (Fig. 3). In terms of livestock units, there were around 2,100 LU small livestock on alpine farms in 2014, compared to 5,700 LU heifers and calves and 1,670 LU dairy cows (FU, 2014). Due to the current system of free grazing, the workload of small livestock alpine farming is rather low. On the other hand, this system makes it difficult to implement controlled pasturing and measures to protect flocks.

Fig. 3. Free grazing sheep at high altitudes without fences, Waldner Laugenalm alpine farm, South Tyrol, 2015. Photo: Simon Moser.

Fig. 4. Use of fencing to control grazing at high altitudes, Erigsmatt alpine farm, Switzerland, 2014. Photo: Cornel Werder.

An analysis of small livestock husbandry and individual alpine farms and pastures shows that it is not possible to implement measures to protect flocks quickly due to the structure of small livestock husbandry and small livestock alpine farming: many different livestock owners with small flocks, mainly mixed alpine farming systems with different livestock categories and predominantly free grazing system of small livestock on alpine farms and pastures. Considering these structures in small livestock alpine farming, if a solution to meet the increasing presence of large predators on the farm level is not feasible, it may be reasonable to create regional management plans that may include several alpine farms and pastures as well as currently ungrazed areas at lower altitudes, and may also consider reorganisation (including fusion) of alpine farms.

Fig. 5. Productive pastures at low altitudes on the slope between Laas village and the first forest belt, district of Laas, South Tyrol, 2015. Photo: Daniel Mettler.

Fig. 6. Horizontal electric fences to ensure better use of forage potential, Oberarni Wolfenschiessen alpine farm, Switzerland, 2004. Photo: Cornel Werder.

It is generally recommended to begin adapting the alpine farming system in a first step to prescribed pasturing: systematic management of pastures in smaller sections to maintain natural resources and to keep the animals closer together. The most important aspect of prescribed pasturing is to restrict the free grazing of sheep on pastures (Fig. 4). Electrically fenced and productive pastures at lower altitudes are needed during spring and autumn (Fig. 5) and large pasture sectors limited either naturally (e.g. by steep rocky slopes) and/or by electric fences at higher altitudes in summer. Spatial limitation of pastures facilitates control of livestock, rapid detection of predation and homogeneous herd formation. Therefore, animals need to be checked regularly by shepherds. Furthermore, spatial limitation of pastures prevents sheep from grazing mainly the highest areas and thus ensures a better utilisation of the given forage potential as well as reducing erosion (Fig. 6). Prescribed pasturing also enables the implementation of measures to protect the flock in a second step if needed.

Fenced and productive pastures at lower altitudes can provide a temporary emergency refuge in case of large predator attacks during summer to avoid premature termination of the ongoing grazing season. Sheep can be gathered there to gain control and implement flock protection measures such as night-time corrals or livestock guarding dogs. Implementation and supervision of such emergency flock protection measures is more feasible in small, fenced lowland pastures than in large pasture sectors in high altitudes due to their easier accessibility.

Temporary emergency measures provide the opportunity to develop and implement an individual strategy for the affected alpine farm. Once alpine farming systems have been adapted to prescribed pasturing, the next step towards controlled pasturing, which includes the continuous presence of shepherds with herding

dogs as well as temporary or continuous integration of flock protection measures, can be implemented more easily. Such a step-by-step adaptation of the grazing system is made possible by the currently still relatively low predation pressure.

3.2. Affected players

The most affected players in connection with the increasing presences of large predators are of course alpine farm owners, alpine farmers (managers of alpine farms), and small livestock owners. As large predators are protected by law, their increasing presence calls for adaption of the alpine farming system if affected players want to maintain small livestock alpine farming. The amount of personnel, workload, equipment and finances required depends on the individual alpine farm and the desired extent of change. It is crucial for the willingness and motivation of the affected players to implement change, but information and experience referring to the amount of additional investment is lacking. This is one of the main reasons why the general attitude of affected players remains sceptical and observant.

3.2.1. Owners of alpine farms

Owners of alpine farms in the study area are mainly (>80%) public communities or private associations, but not private farmers (AB, 2011). Alpine farming often represents an important part of the activity of these communities or associations. Furthermore, the regional agricultural structure (livestock husbandry and alpine farming vs. fruit cultivation) as well as the importance of alpine farming for the general public, authorised users and co-owners of alpine farms are crucial for the priority of alpine farming within communities or associations. The majority of communities and associations in the study area are generally interested in maintaining alpine farming. Communities or associations are usually not profit-orientated, positive about alpine farming and have a collective responsibility for financial expenses. Thus they generally represent a better prerequisite for implementing change than single private owners. Within the ownership of alpine farms, the agricultural orientation of the key decision-makers (cattle farmer, small livestock farmer, fruit farmer) is crucial for the willingness of those individuals and therefore of the communities or associations to contribute to change.

3.2.2. Alpine farmers

More than 80% of alpine farms and pastures in the study area are managed by the owners themselves or by use of exploitation rights (AB, 2011). Generally, this circumstance is also a good prerequisite to apply change processes, as usually they have a deep identification with their profession and region. For alpine farmers, the amount and importance of small livestock on their specific alpine farm plays a crucial role in their attitudes towards change processes. In case of adaption of the alpine farming system due to the increasing presence of large predators, alpine farmers are the most directly affected players. Their workload will clearly increase, both temporarily at the beginning of the grazing season as well as throughout the whole summer grazing period.

3.2.3. Small livestock owners

For the majority of small livestock owners, both husbandry as well as alpine farming of sheep and goats have a long tradition and represent a sentimental and intangible value. Thus, their general motivation to keep them alive is high. Small livestock owners pursue different strategies to protect their flocks during summer depending on their relation to alpine farms and pastures. In case of strong identification with a specific alpine farm and pasture due to exploitation rights or co-ownership, owners tend to accept (though not welcome) change processes and efforts to protect their animals on this specific alpine farm. If such identification is lacking, they may either switch to a different farm in a region where there have been no large predators so far, or switch to another alpine farm where flock protection is already established.

3.3. Administrative structures

3.3.1. Current administration

Different offices and responsible persons are confronted with the issues of alpine farming and large predators. Most tasks lie within the jurisdiction of the Department of Forestry. The Agency for Hunting and Fishing (Amt für Jagd und Fischerei) is responsible for the management of large predators and the Agency for Mountain Management (Amt für Bergwirtschaft) is responsible for specific duties concerning consultation and awarding subsidies in connection with alpine farming. The different forest inspectorates and forest warden stations execute a

control function regarding current legal provisions of alpine farming.

An analysis of administrative structures shows that the management of large predators is logically positioned at the Agency for Hunting and Fishing, as it is part of the protection of wild animals. The question of which department is responsible for the protection of livestock against large predators is not sufficiently clear at present. This responsibility should not be part of either the Hunting Agency or of environmental agencies/associations, because both are already charged with protecting wild animals so conflicts of interest could emerge. Another reason is that hunting, farming and the environment are all different areas of expertise and therefore hard to combine appropriately. Therefore protection of livestock should be designated to the Agencies of Agriculture or Mountain Management, as their expertise is agriculture, alpine farming and livestock. Furthermore, this would probably strengthen the acceptance of farmers, who have often had historical tensions with the hunting and environment agencies.

3.3.2. Advisory centre

There is a need for an advisory centre to inform affected players and those interested in the return of large predators. Such a centre could be implemented within the scope of the Agriculture or Mountain Management administration or it could be outsourced and established as an external structure. To ensure the independence of such an advisory centre, it should not be directly involved in the execution and control of current regulations concerning alpine farming. In the present situation, the main objective of this advisory centre should be providing know-how to affected players thereby following a practically oriented and participative approach.

4. Discussion

The currently widespread alpine farming system of free grazing of small livestock requires a rather low workload. It is therefore very attractive for alpine farmers and small livestock owners. However, experience from Switzerland (AGRIDEA, 2016a; Mettler et al., 2014; Werder and Bamert, 2015) shows that this system of alpine farming probably cannot be maintained in case of increasing pressure from large predators, as it is not conducive to adequate protection of livestock.

We found a certain level of scepticism among alpine farmers and small livestock owners to change from free grazing to a prescribed pasturing system, as suggested by the current study. The free movement of animals on alpine pastures is considered by small livestock owners to be indispensable for successful alpine farming and the advantages of an adapted alpine farming system are not obvious to them at present. Besides, the amount of financial and personnel investment that accompany change processes in alpine farming systems is unclear and difficult to assess by the affected players. There is a clear need for advice, as the level of investment will surely influence willingness and motivation to implement change. Additionally, as predation pressure is still rather low, with only sporadic attacks, there is currently no acute need for action. These different aspects create an overall insecurity and result in an observant attitude of the affected players rather than taking an active role. Now is the ideal time to start step-by-step preparations for increased danger to small livestock on alpine pastures in the future, but the opportunity is not being used.

In the current situation, establishment of an advisory centre to assist affected players should be a first priority. On the one hand, this would provide farmers and livestock owners with the opportunity to inform themselves about adapted alpine farming systems and flock protection measures including potential costs as well as to obtain the necessary support during change processes in alpine farming systems. On the other hand, it is important that such an advisory centre is already in existence when attacks on livestock become more common and the need for urgent consultation arises. As such an advisory centre would have potential to influence the behaviour of affected players, a participative approach and high degree of social competence are crucial attributes for consultants besides technical competence in farming systems and flock protection. The advisory centre should help people to rethink their individual situation and support their change processes. This can include, for example, developing a technical solution to protect their flock or, according to the situation, discussing alternative strategies to address the challenge of large predators e.g. temporary or permanent avoidance of encounters with large predators, change

of the individual farm structure and farming system, termination of the farm.

To compensate additional costs due to the increasing presence of large predators, provision of subsidies should be considered. Financial support of alpine farmers would be most important, as they are the players most directly affected by the upcoming change processes. Subsidies could be paid for adaptations in alpine farming systems and flock protection measures. In Switzerland for example, alpine sheep farming systems are classified in three different categories – free grazing, rotational grazing (prescribed grazing) and continuous shepherding (controlled grazing) – and receive subsidies accordingly, corresponding to sustainability in terms of natural resources and protectability of grazing animals (BLW, 2016). Further subsidies could be granted for the implementation and continuation of various flock protection measures. These financial incentives reduce insecurity and foster willingness to initiate change processes.

Acknowledgements

This article contains parts of the study "Small livestock alpine farming in western South Tyrol – players, management and flock protection". The authors thank Lena Schober, Agency for Hunting and Fishing, for her assistance with translation.

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