

# ***Mountain agriculture at the crossroads, biodiversity, culture, and modernization, conflicting and interacting interests.***

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**Abstract:** Mountain agriculture in Sweden contains elements of hunting, fishing and gathering wild plants and agricultural based economy based on the domestication of animals and cultivation of the soil. Like other traditional systems based on pasture, the Swedish mountain systems is based on the use of inherited traditional knowledge. Mountain pastures have also over centuries created a very rare and rich habitat in the form of upland hay meadows. Today, both traditional knowledge and the rich biodiversity in the mountains are endangered by the implementation of modern practices that lead to a number of conflicts that go beyond the tragedy of the commons. One important source of conflict emanates from the changing role of the countryside that creates expectations on farmers to deliver recreation, magnificent landscapes, new job opportunities, operate hotels, produce, cheese, maintain a cultural heritage and contribute to the conservation of native breeds; new support systems and regulations create incentives to intensify the exploitation of summer farms by using the pastures for modern meat production – leading to landscape changes and upset farmers. In addition, the state's changing attitudes towards the mountain world has cause a shut of existing (state owned) leased mountain flats (fjällägenheter) by cutting down basic infrastructure. The remaining flats are located primarily in the northern parts of Jämtland. They contribute to the maintenance of a very unique flora and insect fauna. By comparing two cases, summer farms and mountain flats, this paper highlights the realities of mountain agriculture in Jämtland (Sweden), discussing conflicts, interlocking interests, competitive activities, potentials and conflicts.

**Keywords:** Biodiversity, mountain agriculture, rural tourism, commons.

## **Introduction**

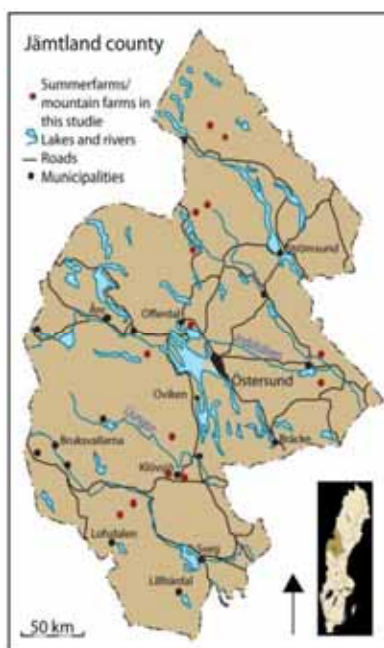
Mountain agriculture in Sweden contains elements of hunting, fishing and gathering wild plants and agricultural economy based on the domestication of animals and cultivation of the soil. Like other traditional systems, the Swedish mountain systems is based on the use of inherited traditional knowledge. Mountain pastures have also over centuries created a very rare and rich habitat in the form of upland hay meadows. Today, both traditional knowledge and the rich biodiversity in the mountains are endangered by the implementation of modern practices that lead to a number of conflicts that go beyond the tragedy of the commons. One important source of conflict emanates from the changing role of the countryside that creates expectations on farmers to deliver recreation, magnificent landscapes, new job opportunities, operate hotels, produce, cheese, maintain a cultural heritage and contribute to the conservation of native breeds; new support systems and regulations create incentives to intensify the exploitation of summer farms by using the pastures for modern meat production – leading to landscape changes and upset farmers. In addition, the state's changing attitudes towards the mountain world has cause a shut of existing (state owned) leased mountain flats (fjällägenheter) by cutting down basic infrastructure. The remaining

flats are located in the northern parts of Jämtland. They contribute to the maintenance of a unique flora and insect fauna.

The purpose of this article is to highlight current conflicts and controversies emanating from changing use of commons and changing economic activities in mountain rural areas and their actual and potential impact on biodiversity. By comparing and problematizing the experiences in two localities, namely Klövsjö and Sjoutnäset in Jämtland, this paper will try to answer some of the following questions: How does diversification influence the reality of farmers? Which are the main conflicts in mountain agriculture today? How do new practices, old and new economic activities, interlocking interests, competitive activities influence biodiversity and the cultural values that traditional mountain agriculture has been a carrier of?

## Methods and sources

This article is based on a case study conducted in Jämtland between 2010 and 2013 that focused on the causes and effects of the modernization of the farm dairy sector in Jämtland, its potential for fostering sustained growth in less developed areas and its ability to generate work opportunities, not the least for women. We have used multiple sources, such as in depth interviews with farm dairy owners and key stakeholders and primary and secondary written sources. The study has been mainly of a qualitative nature, but several methods were used. The study covers in-depth interviews with 24 farm dairy owners, of which 14 also operate a summer farm and two operate a mountain flat (see definitions below). The interviews were complemented with a questionnaire directed to the customers in farm dairies and summer farms.



A *summer farm* (Fäbod), is the name of the Swedish transhumance system. The purpose of a summer farm has traditionally been to produce storable dairy products during the summer. The farm itself is often composed by a small house, a barn for the animals, a cellar for storing dairy products and a fenced homestead. The land around is composed by meadows and forests that are used for grazing, these are commons. The summer farm might belong to a village, but it most often belongs to a farm that is closer to a village. Owners of summer farms also have fishing and hunting rights.

A *mountain flat* is a house rented by the state to families at a very low rent in remote and isolated areas. These houses were leased with the purpose of having nature guards. The lease holders obtain hunting and fishing rights as well as the right for grazing in common land. In previous periods, the leases were inherited within a family and in rare occasions, new lease holders would be accepted as tenants. Keeping animals, especially goats and cows, has been quite important to generate a monetary income for the lease holders. Production of dairy products based on goat and cow herding constitute the main, or at least an important source of income for lease holders.

The effects of mountain agriculture on the environment were studied through the compilation of present data on plant and animal inventories from various sources through county boards, Artportalen (<http://www.artportalen.se/>), Swedish bird survey and Swedish butterfly surveillance.

## Contextual issues

The county of Jämtland is an inland mountain county located in the North-West of Sweden with a long frontier line towards Norway. Half of the county is covered with forest and because of the hilly terrain, the transhumance system that was developed several centuries ago, has managed to

survive the modernization of agriculture that led to the abolishment of transhumance elsewhere. Jämtland is the least populated and the most sparsely populated county.

The economic structure of the county is highly dependent on its physical patterns and since half of the population lives in small villages scattered all round the county and long distances to most large urban areas, it has been difficult to build profitable industries. The county has therefore been mainly dependent on the forest industry and agriculture. Many farms traditionally had goats and alpine cows. It is also due to the geographic features that a transhumance system, consisting on summer farms, mountain flats and reindeer husbandry, has been developed. These three components of transhumance reproduce enormous natural and cultural values. Grazing contributes to maintain unique species such as the Black Gymnadenia (*Gymnadenia nigra*) and the buildings in summer farms constitute vivid remnants of old culture, therefore authorities many times give summer farms protection under the law of cultural conservation (Tunón et al 2013).

The commons of Jämtland are used for grazing and mowing. The wild life is rich with a large amount of wild animals, some of which are predators, for example bears, wolves, lynx, wolverine and golden eagle (Länsstyrelsen 2014). The herds are mixed with both goats and Swedish alpine cows. According to the informants, goats are essential for the survival of the herd in an eventual predator attack, since the alpha male protects the herd. Cows on the other hand have a higher yield and have therefore a high economic value for the farms. Since goats and alpine cows have been key features in the articulation of the Scandinavian transhumance system, the animals themselves are also carriers of traditional cultural values.

The modernization of agriculture and people's desire to live in cities with modern amenities led to a critical population situation and mass migration to urban areas. Therefore investments in the modernization of goat farms were undertaken already in the late 1970's in order to make agriculture more profitable. Through investments in education, infrastructure and promotion of innovations, goat farms managed to renew themselves and become important sources of income and work opportunities even in the most remote areas. These investments led to a diversification of farm activities, that now include tourism (farm-inns, restaurants, cafés and farm stores), which also increased the public interest for farm dairies in general and summer farms in particular (Rytkönen et. al 2013). Currently many of the functioning summer farms and farm dairies constitute the main tourist attraction in their respective municipalities. The insertion of new business elements has contributed to changing activities and practices in some farms, which threatens to put an end to the traditional grazing practices and thereby also the benefits described above.

## **Theoretical considerations**

### *Institutions and commons*

Property rights has over time been considered some of the most important institutions behind the development of modern society. Institutions are defined as all formal and informal traditions, mechanisms and social rules and orders that condition the behaviour of individuals and of society. According to North (1991), institutions can be seen as history comprised into our actions and play a fundamental role behind development and success of economies and societies because they facilitate the coordination and performance of market relations. Institutions influence the way in which we behave and are therefore crucial for economic growth, efficiency and long term development, but also for all aspects of societal development. (North 1991) Some institutions are formal, and are comprised by formal laws and rules in combination with the state's ability to enforce them.

Olson (1965) argued that the free and unregulated use of common pool resources, such as public grazing areas, can lead to overexploitation because people have no incentives to forego self-interest in favour of others. To avoid overuse he advocated privatization e.g. the use of property rights, as a way to create incentives for the preservation of important natural resources. Ostrom (1990) contradicted the previous, showing that history shows many examples where over-exploitation was not necessarily the given output. She argued that self-regulation and self-management could be a powerful tool to avoid over-exploitation. Self-management contributes to a regulatory framework that fills the institutional gap carried by common pool resources and creates incentives for stakeholders to follow the rules established administration of a set of rules. Some key elements for success were the existence of trust and cooperation.

The traditional practices of mountain agriculture and the Swedish transhumance system are based on the co-existence and use of formal and informal institutions, of modern institutions and traditional practices. Farmers and villages have formal ownership of their summer farms and mountain flats have formal contracts that establishes the long term tenure of the flats, but their economic activities are based on the use of common pool resources, such as grazing public forests and meadows, fishing and hunting. Grazing and mowing is regulated according to traditional practices, while rules and implementation concerning hunting, infrastructure and agricultural support are enacted by elected representatives that live their lives hundreds of kilometers away. For more than a century the transhumance system functioned side by side with the institutions of modern agriculture, but recent changes in practice, use of land and new activities have created a number of outcomes that threaten the cultural and natural values in the Jämtlandic commons.

#### *Mountain agriculture and biodiversity*

Biological diversity is driven by competition between species. The theory of competitive exclusion means that competition leads to species-poor habitats with a few strong species. The intermediate disturbance hypothesis predicts that the competitive process can be slowed down by disorders that inhibit the strong species. In the absence of strong competition favored weaker species. Examples of distortion in favor of weak species and increase biodiversity is mowing, grazing and trampling by cattle. Featured leads to habitat becomes nutrient poor, which also provides beneficial effects. Many species are best described as meta-populations consisting of a number of smaller sub-populations are considered at risk local extinction. In such cases, premises recolonization of individuals from nearby subpopulations, but a widespread extinction reduces the possibility of this. Plant communities are systems where changes in customary regimes and climate changes occur on long time scales. But temperature increases can lead to rapid changes in biodiversity in upland meadows and pastures. Both from a socio-economically and culturally and from an environmental point of view, we lack important knowledge about current social and natural processes impact on the mountain environment.

The historical mountain agricultural system in Jämtland was a spatial organization of settlements in a permanent infield - outland system including vast areas of fodder-producing habitats. Fields were placed near the main settlements. During the snow free period domestic animals were sent for grazing in the forests and pastures around the summer farms. The most important land use type was the meadows producing fodder for winter survival. In Jämtland hay meadows were often situated around the summer farms. Traditional mowing of natural and semi-natural grasslands along rivers and in humid or wet low alpine sites has created an extremely species rich ecosystem. In Annex 1 in the Habitat directive the habitat type 6520 Mountain hay meadows are described as; "Species-rich mesophile hay meadows of the montane and sub-alpine levels". During the agricultural revolution hay meadows lost some of their importance due the increased productivity of the infields with the addition of fertilizers. This also resulted in a lowered grazing pressure in forests and pastures around the summer farms.

The species rich meadows and pastures are inhabited by light demanding, low stature, competition weak species like Mountain Everlasting (*Antenaria dioica*), Marsh Grass of Parnassus (*Parnassia palustris*), Bluebell bellflower (*Campanula rotundifolia*), several species of Eyebright (*Euphrasia*), Black Gymnadenia (*Gymnadenia nigra*), White Mountain Orchid (*Pseudorchis albida*) and Field Gentian (*Gentianella campestris*). These are examples of plant species still found in the few fragments of mountain hay meadows, but standing on the edge of local extinction due to the decrease of mowing and grazing.

### *Organizing concepts*

In this article we will focus on conflicts of interest that arise as a result of the institutional gap surrounding the use of commons in Jämtland that have a substantial or large potential impact on biodiversity and conservation. We will also highlight the contradictions and conflicts that come into light when modern society, meets and imposes its norms on traditional agriculture.

## **Results**

The following section is based on interviews with farmers and other key stakeholders. It highlights some general structural changes undergone by dairy farms in general and summer farms in particular over the last 40 years and the impact or potential of changes on biodiversity. It also illustrates some of the main dilemmas of the sector today.

### *Changing realities*

”when the milk farmer cannot borrow a screen filter and the distance to next farmer is 150 kilometers, then you become a loser”(Rytkönen, 2014:43)

The quote above is from a leading farmer in the county and illustrates the extent of structure rationalization in agriculture. In 1978 there were around 2400 dairy farms, of which 50 farms had goats (Jordbruksstatistisk årsbok 1979). By then the County Board Administration (CBA), concerned with the financial situation of small holders and the lack of work opportunities, especially for women, initiated a plan to modernize the goat cheese trade and help improving income possibilities for rural families. This plan became a long term investment in which the CBA in cooperation with other stakeholders, managed to develop an infrastructure for the support of artisan food production, such as goat cheese, and created substantial positive spin off effects (Rytkönen et al 2013).

In spite of these efforts, agriculture and especially husbandry has decreased dramatically over time. In 2012 there were only 155 dairy (Jordbruksstatistisk årsbok 2013) farms left and around 20 goat farms<sup>90</sup>. Mowing and grazing on commons is still essential for most active summer farms, but since there are less active summer farms mowing and grazing has decreased, while farm diversification, rural tourism activities, farm stores, farm cafés, farm-inns, seems to be the only force that counter acts the impact of rationalization. Today summer farms take an active part in the diversification of agriculture, introducing new elements and activities into their own environment. During the last 40 years, summer farms have become an active part of commercial agriculture, while mountain flats are still managed in the same way as before. Mountain flats, in fact, constitute the last shards of subsistence agriculture in Sweden.

### *Institutional gaps and their impact on biodiversity and conservation*

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<sup>90</sup> The number is the estimation made by the project. National authorities systematically leave out the goat trade in official statistics. There is no exact account for farm goats in the country, not the number of goats, size of herds, et cetera.

In our sample, at least two summer farms conduct bear, moose and ptarmigan hunting with tourists, at least two conduct fishing with tourists, one has goat kids safaris in the forest, one has a few animals in the homestead but only as embellishments to attract families with children and sells only waffles (mostly made of purchased milk) with coffee. But most summer farms run coffee-shops in the summer farm. The latter seems to be their most important source of income. It allows them to sell their products without intermediaries, while they also earn money on other products, such as coffee, ice-cream, cookies, bread and souvenirs. Some of the summer farms run more sophisticated operations, while others just serve coffee cheese and bread. Only one of the summer farms that run a coffee-shop did not serve their own produce. But this farm was an exception, in spite of the fact that the CBA had built a wilderness museum just outside their homestead, a good road to the summer farm and hygiene facilities for tourists, they did almost nothing to meet the demand for local produce that virtually fell on their doorstep. Two of the summer farms offer curdling and summer farm courses (on the practices of a summer farm). One of the farms has around 400 goats and they run a large village dairy and a coffee-shop and store in the village. It is unlikely that these farmers have sufficient pasture or space for all their animals on the summer farm.

Diversification is a possibility for the farmers, but also a dilemma. Every hour spent on doing other than traditional tasks, is an hour spent on a non traditional activity that tends to push summer farming away from the preservation of cultural heritage. When profitability is increasingly based on new activities, new and/or innovative products, farmers come a step closer to abandoning traditional grazing practices, which in turn risks reducing the ecosystem services provided by meadow and forest grazing in the commons. In fact, during the last years, a process of specialization has started to take place, the larger summer farms are more and more inclined to buy their milk from others, since they do not have time to run the tourist operations and taking care of the goats at the same time. As a consequence, large goat farms, specialized on goat milk production have started to appear. But the scale of operation required to make a goat milk farm profitable is far from possible on a forest grazing system, it requires the use of modern feeding practices.

Some of the farmers employ people on a permanent base all year around. The summer farm activities contribute to raise interest for the farms produce and raise incentives to pay a little more than for average cheese. In addition, some of the farms hold courses on curdling and about the traditional practices on summerfarms.

In mountain flats the situation is somewhat different. One of the flats focuses entirely on cheese production. The couple that runs this flat have done it for 45 years. In 2011 they had around 20 goats and they sold all their products through the two closest stores. Since both are past their retirement age, they were at that point cutting down the business. They claimed that only the farms that are located near the main road got public service and since the state cut off the remnants of the old cable system, therefore their phone, TV and internet was shut down. Initially there were 28 people in the village, today, they are the only ones left. Before retirement age, the male in the family worked part time as a forest ranger. On the farm there are two residential buildings and a barn. All buildings are of a simple character and one of the buildings has rooms that are rented to people that already know the place. The fee for a place to sleep is quite low. In previous decades more people used to come by, just to experience the beautiful scenery, but they claim that since fuel prices started to rise, the visitors became more rare. Now, nobody hardly ever comes by.

The other mountain flat is run by an older, retired couple and the male's unmarried younger brother. They also, from time to time, have a young trainee from Östersund. They have 50 sheep, 10 goats, and 10 cows. Their main source of income is meat, but they also sell cheese and whey butter. They also lease 2000 hectares of forest. Although this flat is further away from main road than the former, they live next to a sami village, which provides them with access to satellite phone and satellite TV. Although the standard of living is much better in this flat than in the for-

mer, they still get a very low price for the meat (18 crowns/kg). Since the price is too low, they cannot afford a slaughterhouse, which according to them would provide them a proper income. The farm has 5 hectares for grazing and the sheep must be kept fenced and closely monitored, due to the imminent risk of bear attacks. The meadows around this summer farm are protected, due to their richness in plant species. But the farmers express their frustration against this. In their eyes, fertilization would yield more grazing, which would enable them to increase the production of lamb and consequently increase their standard of living and open up for investing in a slaughterhouse. In the eyes of the farmers they are exposed to a catch 22.

### *Tradition versus modernity*

The adoption of diversification, modern economic activities and new practices have obviously some important benefits. Most, but not all summer farm operators, are able to support themselves and in some cases employ people on a temporary or permanent basis. However, calculating the total financial benefit is difficult. National authorities are not interested in monitoring goats and goat farms. It is also difficult to estimate the economic value of summer farms as tourist attractions, because tourists not only consume on the farms, they also stop by at small flea markets, they buy fuel, stop at other places on the way, they pay for lodging and some also buy their trip from a tourist operator. But there are some essential social values created.

In our consumer survey, 20 % of the respondents associated purchasing the products with a contribution to a living country side, 13% with preserving a cultural heritage, 7% with a positive contribution to the environment and 32% with quality. All other consumers related the activities and products to their personal heritage and/or family history. Almost all consumers valued the contribution of the productive activities to the local communities, and the consumers that had their roots in the area also had a sense of pride over the new economic activities. The majority of consumers were between 36-55 years. According to the CBA, most consumers during the 1970's and 1980's were quite old and purchased cheese from summer farms because it was part of their tradition. The rejuvenation of consumers was achieved by learning new recipes of mainly French cheese, more known and appreciated by younger consumers. A downside is of course that traditional products and recipes have been left aside for foreign products (Bonow and Rytönen 2013a).

Almost all producers had a (conscious or unconscious) brand strategy based on the transmission of cultural values. This was expressed through the values embedded in their story telling, for example their love for the animals, the place, the history of the farm, nature, tradition, freedom and rural development (Bonow and Rytönen 2013b).

While most summer farms have invested in modernizing their products, the mountain flats still focus on more traditional recipes. Both of the flats sell traditional goat cheese and whey butter, in neutral plastic packages without any signs or logos. One sells cheese through a store and almost all the customers are known by the producers and are as old as the producers, while the other flat operators sell cheese as a side activity to complement the sales of meat, but privately. The respondents claim that the traditional dairy practices will die with them. The lack of public service, decreasing infrastructure and lack of social interaction due to their isolated location is not appealing for younger generations and their income level is too low to raise a family with modern standards.

### **Wild and tame**

As mentioned above, Jämtland has a large number of predators and some parts of the county have a very high density of predators. One example is the mountain flat in Sjoutnäset, where the flat is located in the middle of the territory of 20 bears. Predators share the space with the tame

animals, which causes financial losses for farmers and stress for the animals. Several of the informants have experienced bears that come all the way into the homestead, which creates personal stress for the farmers and for the animal. But most of the encounters between wild (bears, wolves and lynx) occur in the forests. Several informants claim that many summer farms have been closed down due to the suffering that predators bring. These statements are confirmed by a study conducted by Tunón et al (2013) who claim that farmers have to spend long hours looking for the animals when they have been scared by predators and that they sometimes have difficulties to sleep due to this problem. The animals not only risk to get killed, they also suffer the loss of kids when they are pregnant and fertility disorders with long calving intervals, which often results in emergency slaughter. The milk is also affected, since a stressed animal produces milk of inferior quality.

According to the law, farmers that are affected by attacks from predators will be compensated by the state. One of the informants claim that in one occasion, a reindeer owner had found, brought evidence of goat fur in bear droppings and testified in their favour, certifying that the compensation sought by this farmer was justified. But they were denied compensation. Another farmer claims that getting compensation is not that difficult, but that it is important to get evidence, for example carcass from the wolf or the bear. Farmers in general feel that authorities are suspicious and all express strong opinions against predator policies. A few informants have their summer farm/mountain flat located close to a sami village. These are less affected by attacks of predators, since sami people monitor their reindeer herd and disturb approaching predators when they are discovered.

Local authorities

*Bästa herr eller fru kontrollant,  
jag är en medelålders gammal tant,  
rätta mina fel och brister  
så jag inte bidraget mister*

*Dear mr och mrs inspector  
I am a middle age, old aunt  
correct my mistakes  
so I do not lose the grant*

The relation between the farmers and authorities are of a double nature and covers a large amount of topics. The topic highlighted by the poem above was written by one of the informants and sent to the CBA in pure frustration against the difficulties of getting the financial support that they had a right to. Since then this particular informant stopped applying for support. This informant is not alone and when it is possible to avoid applying for support, people prefer to skip it, they feel that the bureaucracy makes the application process tedious and complicated.

Conservation of nature and cultural heritage is another source of discord with regional authorities. One of the informant claims that the discourse about the conservation of nature and cultural heritage as a priority for the entire nation sounds good, but in practice priority is always given to resorts, ski villages, wind farms and other infrastructure investments in the community. On paper, the national and the regional goal is that the historical and biological values on grazing forests and meadows should be preserved and strengthened. Grazing the commons generates the conservation of an attractive landscape that is appreciated not the least by tourists. It helps reproducing a cultural heritage. It produces ecosystem services creating a habitat for a large number of plants and insects. The grazing rights on commons carry the expectation that these services will be provided by the farmers as a compensation for a free access to pastures. But according to one informant, cows need tranquillity when grazing, which is impossible to achieve amidst all tourists. This constitutes a problem for summer farms located near tourist facilities. One of the informants concludes that summer farm life is not suited for today's society, he sometimes feels that his lifestyle does not fit in the public debate.

*Milk or meat*



Traditionally, summer farms keep native breeds that are used for the production of dairy products. But it is clear that not all summer farms earn enough only producing dairy products. The location of the summer farm is also decisive for the possibility of attracting tourists. Summer farming is also a hard work that requires that the operator settles there away from home during the summer months. Therefore, some farmers have started to take advantage of the grazing subsidies, by keeping beef cattle instead. Beef cattle require much less work than dairy cattle and allow the farmer to sleep at home. Since subsidies only support grazing, regardless of the race or purpose kept, the subsidy creates incentives for a shift in activities. Some informants are quite upset about this development. They claim that the conservation of the cultural heritage and biological advantages of summer farms is a matter of preserving the whole lifestyle with indigenous breeds, grazing, curdling, and taking care of the buildings on the summer farm. They fear that important values will be lost by the introduction of beef cattle. They also claim that it is cruel against the animals. The traditional breeds have developed a tacit knowledge on how to avoid predators, which the beef cattle, new to the environment, have not. Studies on sheep in Norway confirm their claim (Hansen et al 2001).

### *To fertilize or not*

Following a management plan for a grazeland can some times be a dilemma. This can be exemplified by one of the mountain flats. The family has always handled the farmland in their own traditional way. Today they receive subsidies for pasture, cultivated land/herbaceous ground and an extra 1000 skr per hectare if they practice scything. The subsidy is conditioned to that they comply with the management plan developed by authorities, including not scything before flowering and not using fertilizers. But the family has a hard time accepting this, they argue that the flowers will disappear and the soil will become pauperized if they don't fertilize the ground. But because of the high nature value of this specific location, the CBA monitors the farmers practices very close.

The family feels that it is complicated to deal with authorities, especially when EU support is involved (support from the rural development program). There are always new rules to follow, for example how many trees that they can have in their pastures. In addition, they were forced to attend to a four day course on scything. They feel this is really stupid since they have used it all their life.

### **Conclusions**

The purpose of this article has been to highlight the changing practices in mountain farming in Jämtland and their potential impact on biodiversity and the preservation of cultural heritage. The adoption of new and modern economic activities are a necessity to generate the needed income for the survival of farmers. They imply, however, that incentives are created to abandon mowing and grazing and leaving behind ancient practices, products and ways of living.

From an institutional point of view, the regional authorities seem to have management plans and practices that lack full legitimacy amongst the farmers. On the one hand, authorities claim that the conservation of summer farms is important for the preservation of nature, of the landscape and of the cultural heritage that they are carriers of. On the other hand, investments in new tourist facilities are always given preference, even though an increased tourism pressure might affect the animals well being.

There are also important institutional gaps that counteract the conservation of culture and biodiversity. The design of grazing subsidies is a text book example of this. While grazing subsidies aim at preserving grazing in meadows and forests for cultural and biodiversity reasons, it is possible to introduce beef cattle breeds that don't provide the ecosystem service and that change the cultural practices that the subsidy aims to preserve. In addition, the practice of having beef cattle grazing on commons seems quite cruel, since these breeds lack the traditional knowledge that the native dairy breeds have.

Some important contradictions in current institutional setting can be found. The dismantling of infrastructure in the most remote areas and that clearly affects the future possibility of farming, and therefore also grazing and mowing in places that are recognized to have a high natural value is quite difficult to understand. Moreover, policies and management plans are developed without stakeholder participation, therefore farmers seem to have difficulties accepting the management plans.

The changes in economic activities are the inevitable effect of modern society and are here to stay, but without a participatory management plan and process, in which stakeholders in general and farmers in particular are involved, not only to follow rules and regulations, but also to contribute with their experiences, concerns and knowledge, the decrease in number of summer farms

will most likely continue. The long term effect of such a scenario is the permanent loss of valuable meadows, ecosystems, species and cultural values.

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