

The future of submeasure “Pastoralism” of Measure 214 “Agro-ecological payments” in the Rural Development Programme of Bulgaria: advantages, disadvantages and challenges*

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Abstract. According to the modern concepts of conservation biology, the efforts for conservation of habitats must be focused not only on their strict protection, but also on their sustainable use and management. Some of the most vulnerable semi-natural habitats, such as grasslands, have ecological features maintained mostly by grazing. A more than 12% loss of biodiversity for the period 1975–1998 in Europe, and especially in the grasslands, was the reason for introduction of the submeasure “Pastoralism” as an important tool for the preservation and improvement of the conservation status of grassland habitats. The application of this submeasure, especially in Bulgaria, during about the last 10 years has resulted in the restoration of grazing in some national and natural parks. Unfortunately, due to inadequate assessment of the grazing potential and lack of specialized plans for grazing, in many cases this measure has achieved mostly negative effect.

Kew words: pastoralism, protected area, conservation grazing, impact, livestock, natural habitats

Introduction

In spite of its comparatively small territory (~111.000 km²), Bulgaria has very diverse natural conditions: relief, different climatic zones, vegetation, flora and fauna (Fet & Popov 2007). Specifically, the diversity of Bulgarian vegetation and plant communities formed as a result of the various environmental factors, such as climate, topography, soils, and land use (Bondev 2002).

Throughout the millennia, grasslands on the territory of Bulgaria and also on the Balkans have played

a very important role in defining the livelihood of the native people and the use of landscapes, by shaping the form of pastoralism (animal husbandry). It is one of the most important vital systems that provides to the human population products like meat, hides, milk and dairy products, and wool (Stefanov 1948; Vakarelski 1977).

The main types of animal husbandry practiced in the region were the stationary and the mobile one (transhumance). Both types have played a significant role for the native people's lifestyle. The nomadic livestock breeding has been practiced by Vlachs

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(Aromanians), Yoürüks and subsequently appearing on the Balkans Karakachans (Pimpireva 1995; Stojnov 2008). Everywhere in the Balkans, but especially in the plains of present-day Bulgaria, the stationary type is most widely distributed. It includes various manners for grazing of herds, with additional activities for their winter feeding, protection and realization of the production. The nomadic way was more typical for some mountain villages. There, the movement of the herds was seasonal, a spring migration from mountain pasture to lowland ones, and return at the end of the vegetation season. This required herders to provide additional food for the animals in winter. This nomadic way called transhumance has been distributed practically in all mountain regions of Europe and was of great importance both for the local communities and for biodiversity (Bunce & al. 2004).

According to the modern concepts of conservation biology, the conservation efforts, especially for grasslands, must be focused not only on their strict protection, but also on their active management and sustainable use. Strict protection is a viable approach for the conservation of representative samples of natural grasslands. In Bulgaria, it takes place in the reserves, maintained reserves and some protected areas, and has limited territorial scope: only about 5 % of the entire territory of the country.

The conservation practices in Europe were transformed and now they are based not only on the strict protection. The loss of over 12 % of biodiversity for the period 1975–1998 in Europe, and especially in the grasslands, was the reason for introduction of the submeasure “Pastoralism” as an important tool for the preservation and improvement of the conservation status of grassland habitats. There are direct and important relationships between the pastoral use of grasslands and biodiversity, especially for the species related to and/or dependent on these habitats (Huyghe & al. 2014). The dominant landscape in large areas also depends on pastoralism. The advantages and disadvantages of pastoral practices have been well studied, including at a global level (Spedding 1971; Milchunas & Lauenroth 1993; Crofts & Jefferson 1999). When the amount of grazing animals is consistent with the capacity of pastures, then grazing is useful because it eliminates the grass layer more gradually than mowing. This gives invertebrates a chance to escape to other areas of the grassland. Moderate trampling could be also helpful: heavy animals like cattle trample the

fallen foliage and rough vegetation remains. Therefore, they improve the nutrient decomposition, transfer, etc. Thus spaces with sparse or no vegetation are opened in trampled plots. Grazing also supports the seeding regeneration of various herbaceous plants, as well as the proliferation of some invertebrates. Grazing animals fertilize the soil and contribute to the feeding of invertebrates and small vertebrates. The advantages of grazing activities are the reason for application of conservation grazing in many territories, where the wild herbivores are missing or in insufficient numbers (Bullock & Armstrong 2000; Rook & Tallowin 2003).

The positive role of extensive grazing or transhumance for the conservation of some organisms dependent on large herbivorous animals was also investigated and widely popularized. Examples include biodiversity in general (Pykälä 2000; Bunce & al. 2004), or some species like vultures (Olea & Mateo-Tomas 2009; Mateo-Tomas & Olea 2010), storks (Tryjanovski & al. 2005), etc. Positive effects of extensive grazing on avian species richness were recorded for Mt Ponor, Bulgaria (Nikolov 2009). The population of some steppe rodents like the European Ground Squirrel (*Spermophilus citellus*) also has positive correlation with grazing of livestock (Koshev 2008). But Koshev has also emphasized that overgrazing is one of the threats to the species.

The role of overgrazing very often is underestimated, when grazing is applied for different conservation practices. This negative role is also known from many different places in the world like USA, Mediterranean region, etc. (Osborn 1996; Crofts & Jefferson 1999; Cerda & Lavee 1999; Pratt 2002; Mysterud 2006). Overgrazing deteriorates the ecological structure of the pastures, especially those with natural or semi-natural origin. Particularly during the summer, it also leads to the excessive trampling of the grass cover. This is the main reason for soil erosion, reduction of the species with forage value, and an overall reduction of the floristic richness. It is accompanied by the penetration of thorny, poisonous and bitter plants that are avoided by the livestock. Excessive soil pollution from domestic animals' manure leads to the soil's saturation with nitrogen, which facilitates the penetration of many ruderal and nitrophilous species. This process is facilitated by excessive trampling and creation of spots with low coverage of the perennial herbaceous species. The ruderals firstly penetrate within these spots.

The negative impact of overgrazing was investigated also in some neighboring to Bulgaria parts of Europe like the Carpathian Mountains in Romania (Nedelea & Comanescu 2009; Başnou & al. 2009) and Ukraine (Kricsfalussy 2013), and also the Greek Mountains (Bergmeier 1997; Koukoura & al. 1998; Papanastasis & al. 2002; Kosmas & al. 2015). Impacts of transhumance grazing have also included the degradation of forest and shrub vegetation in the mountains, soil erosion, even desertification in the Mediterranean areas (Cerdeira & Lavee 1999; Ibáñez & al. 2007; Azarnivanda & al. 2011; Kairis & al. 2015).

The spatial pattern of grazing creates habitat heterogeneity in the landscape and influences species richness in different ways. Studies have shown that livestock grazing could increase (Rambo & Faeth 1999; Humphrey & Patterson 2000; Pykälä 2004) or decrease (Mcintyre & Lavorel 1994; Landsberg & al. 2003) plant diversity depending on habitat types, altitude, etc. The highest plant diversity at intermediate level of grazing (Mwendera & al. 1997; Taddese & al. 2002; Bustamante Becerra 2006; Aryal 2009) and no effect (Metzger & al. 2005) have been also reported. But how do we find where the balance lies?

Unfortunately, such information almost completely lacks for Bulgaria. In fact, availability of specialized scientific information and adequate administrative procedures are the most important prerequisites for grazing aimed at conservation and management of grassland habitats. The grasslands in Bulgaria have been investigated in many different aspects, but scientific publications, especially for the correlation “grazing animals – plant species richness or habitat diversity”, and practical guidance for specific types is practically missing.

Specifically, meadows and pastures were analyzed for their forage value and the main threats to them (Ganchev & al. 1964; Meshinev & al. 2005). The most complete inventory of the forage resources in Bulgaria is provided in the book of Stefanov (1948). The author supplied a survey of their quality and also the correlation with their grazing regimes in the past and their contemporary status. Other works are mostly aimed at the forage value of grasslands (Chesmedzhiev 1980), but some also provide conclusions about the reasons for their degradation, including overgrazing (Yancheva & al. 2002).

Only a more recent phytocoenological work of Vasilev & al. (2011) has studied the correlation between

plant species richness and abandoned and used pastures. The work of Pedashenko & al. (2015) has studied the changes in landscape heterogeneity in the Central Balkan National Park, which have followed the changes in land use (grazing intensity) on the basis of aerial photos for the period 1947–2012.

The aim of this study is to propose some critical appointment for applying conservation grazing in some Bulgarian national and natural parks, based on our contemporary but still unpublished practical researches of the grazing activities.

Material and methods

This study is based on primary conclusions for the impact from application of the submeasure “Pastoralism” in three protected areas in Bulgaria: Pirin (Dimitrov & al. 2014) and Central Balkan (Nikolov & Gogushev 2014) National Parks and Vrachanski Balkan Natural Park (Tzonev & Dimitrov 2014). The field studies were made in 2012–2014, but the above-mentioned authors summarized the grazing impact in the period 2007–2014, when the application of conservation grazing has started, especially in the Pirin and Central Balkan National Parks.

The study in the Vrachanski Balkan Natural Park is based on longer-term grazing than the other two locations. Three experimental areas have been chosen to represent the main grassland habitats in the treeless zone of the Park. In every experimental area two experimental plots, with a size between 2 and 1 ha, have been grazed with different intensity by horses. The phytocoenological research was based on the standard methodology (Braun-Blanquet 1964). Data for species richness, total projection cover and population size of every species were recorded in the field. Selected areas were isolated with electric fences. The neighboring areas were used as control plots, because free grazing of horses and sheep was practiced there.

The methodology was similar in the Central Balkan National Park. Phytocoenological relevés were used for determination of vegetation units and their affiliation to EUNIS habitats (Davies & al. 2004). The changes in habitat distribution were analyzed on the basis of aerial photographs in the years 2006 and 2012. The reasons for these changes were summarized from the field researches. The impact forces are calculated and compared with one another using Saaty Index (Saaty 1980).

Investigation in the Pirin National Park was done only in areas covered by the typical alpine habitats: 6170 and 6150. The chosen samples constitute 6.4 % of the entire area of pastures and meadows in the protected area. The phytocoenological research was based on the standard methodology (Braun-Blanquet 1964). Data for species richness, total projection cover and population size of every species were recorded in the field. For every investigated sample area, the main threats like erosion, trampling and overgrazing were also determined.

Results and discussion

On the basis of published information, the grassland types are very diverse in Bulgaria (Ganchev & al. (eds.) 1964; Meshinev & al. 2005) and their relationships with grazing intensity could be very different. According to Tzonev & Gushev (2013), the grasslands in Bulgaria are very diverse and of different origin. However, they could be divided into the following four main types according to their origin and dependence on maintenance:

- Natural (primary) grasslands. The primary grasslands in Bulgaria are formed under the influence of the biogeographical zone of steppes, located mostly on the northern shores of the Black Sea and reaching to Dobrudzha and parts of the Danube Plain, as well as some karst areas in West Bulgaria. The Bulgarian phytocoenologists and phytogeographers (Yordanov 1936; Stoyanov 1941; Bondev 1991, 2002) have not yet decided how and where there are primary grasslands, especially in the lowland and mountain regions. It is because across the millennia the continuing deforestation of the country has expanded many times some areas covered in the past probably by woodlands. However, indisputably most of the alpine and subalpine grasslands have primary origin.

- Semi-natural (secondary) grasslands. They have formed secondarily, because the places of destroyed forests have been maintained deliberately by elimination of the young trees and shrubs through uprooting, burning, and further influence on their floristic composition and structure by grazing or mowing. Their most characteristic feature is that for centuries they have been maintained only by human activities (see Stojanov 1964). They are widespread everywhere in the country, mostly in the altitudinal belt up to 1000 m.

- Grasslands in the stage of formation. Although grasslands are agricultural lands according to national legislation, certainly their importance for the conservation and maintenance of valuable biodiversity is much greater than that of farmlands. However, during the first decade after the political and economic changes in 1989 and following the changes in land ownership, many arable lands in Bulgaria were abandoned and began to turn into grasslands.

- Intensive grasslands. They were created on farmlands by the growing of different crops (ryegrass, saintfoin, alfalfa, red clover, etc.) or grass mixtures. They are more common in the countries of Western and Central Europe, which have long-developed intensive agricultures. The grassing can be short-termed (annual crops and grass mixtures) and long-termed (perennial grass seeds or crops). The composition of grass mixtures is determined by the needs of livestock breeding. Mixtures of legumes and grasses are preferred and practiced for sowing mainly on the arable lands and newly created meadows and pastures. Compared with pure crops, their advantages are higher productivity and sustainability.

The above-mentioned classification indicates that not all grasslands in Bulgaria have positive relationship with grazing of wild or domestic animals. The primary steppes and alpine and subalpine grasslands (first type) have low productivity and capacity for grazing. Most of them were overgrazed and the results include prevalence of poisonous, inedible and nitrophilous ruderal plant species (Velchev 2002; Tzonev & al. 2006). The degradation and secondary prevalence of *Nardus stricta* because of overgrazing in the mountain grasslands is also a widespread phenomenon across all Bulgarian mountains (Stefanov 1948; Stojanov 1964; Bondev 1991). The second type is most dependent on traditional farming practices in the plains and low mountain areas of the country. The third one has higher productivity than the previous two types, but very variable species composition, depending on the succession stage. It is important, according to the land designation, that most of these grasslands are arable lands. Because of the European Union policy in farming (see Stoate & al. 2009), in many regions, including Bulgaria, they have been ploughed up and transformed into agricultural lands (Dobrev & al. 2014). The last type is completely artificial and its management is only for higher and faster production.

After this introductory overview, it is clear that conservation grazing should be applied carefully and to a limited number of grassland habitats. Only extensive grazing is suitable for habitat types dependent on grazing. According to the Bulgarian Ordinance № 35 of 08.30.2001 for organic farming and organic production of animal products and foods of animal origin, “extensive farming” is farming, which does not apply any industrial technologies for the feeding and breeding of animals; large areas are used by a small number of animals that feed on the pastures (or with feed produced from these areas).

The traditional practices for management and use of grasslands are not only grazing but also mowing. But burning and uprooting of trees and shrubs are also very important for the formation and maintenance of grassland habitats (especially of the second type) in such form so as to be suitable for pastoralism. The modern practices of extensive farming try to imitate and replace the natural effect of grazing by practically extinct or rare herds of large herbivores (Vallentine 1990).

The traditional and very important role of pastures and meadows for the life of Bulgarian people are the reasons for many legislation attempts at regulation of grassland maintenance. The poor quality of most alpine and subalpine pastures after several centuries of overgrazing initiated the passing of the Act for Alpine and Forest Pastures in 1941. This Act provided for strict regulation of grazing in the mountains. All activities were to be supported by the research work in the new experimental stations created by the Act.

The modern grassing practices are regulated under the Ownership and Use of the Agricultural Lands Act, National Programme for Rural Development 2014–2020 and especially Measure 214 “Agro-environmental payments” from this Programme. The new programme period foresees payment for minimum 10 LSU (livestock units). The support is provided in the form of annual payments per hectare for the permanent grassy areas – EUR/ha. For the traditional practices: transhumance (pastoralism), the annual payment is € 179/ha, and for the traditional practices: transhumance (pastoralism) using at least two working dogs – € 182/ha.

As a result from application of the “Pastoralism” submeasure in Bulgaria in recent years, the grazing activities were restored in part of the national and natural parks. According to their designation acts, in the

national parks established under the Protected Areas Act it is not forbidden to use the grasslands there for grazing. But grazing has to be regulated according to certain conditions and an approved administrative procedure: development project (plan for grazing). In the “View at our common future, or long-term vision for the Central Balkan National Park during the period 2010–2050” the following was written: “The preservation of the diversity of alpine shrub and grassland habitats is guaranteed. These habitats have formed under human influence and those with conservation significance are maintained by the traditional seasonal livestock breeding. The seasonal alpine livestock breeding helps maintain the natural grasslands in a favorable state as an indispensable resource for the conservation of local endangered breeds of domestic animals”.

Due to inadequate assessment of the grazing potential and lack of well-grounded plans for grazing, a negative effect has been achieved in many cases. Presumably, this could be attributed to the published literature (Stefanov 1948; Stojanov 1964), which so far shows a different level of deterioration of the quality of mountain pastures in Bulgaria due to overgrazing. According to Stojanov (1964), the communities of *Nardus stricta* are secondary, even synanthropic vegetation. Termination of strong anthropogenic influence in the high mountain areas has led to the restoration of shrub vegetation and reduction of the pasture areas. After 2007, the grazing activities were restored in some national parks like the Central Balkan and Pirin. But a quick and poorly controlled increase in the number of sheep, cattle and horses in these areas has turned contrary to the main purpose: conservation and restoration of wildlife. So was that grazing conservation grazing, or overgrazing?

These problems provoked the implementation of some target studies into the grazing impact in the Pirin and Central Balkan National Parks and also in the Vrachanski Balkan Natural Park. The studies and observations indicated some serious problems with grazing in the Central Balkan National Park (Nikolov & Gogushev 2014) and Pirin National Park (Dimitrov & al. 2014), and negative impacts are very probable in the Vrachanski Balkan Natural Park (Tzonev & Dimitrov 2014). The main conclusions from these three protected areas support the major negative effects from active grazing, as compared to the doubtful positive effect.

In the Central Balkan National Park (Nikolov & Gogushev 2014), the impact in the selected sample plots for grazing in five high-mountain heathland and grassland habitats was investigated. This National Park is an area of long-term application of the Pastoralism submeasure (as from 2007). Changes in the area and some ecological peculiarities were found for the period 2006–2012. According to data from the Management Plan, the area for active grazing was 18 000 ha or 25 % of the entire area of the Park (71 760 ha). The pastures during that period were used by almost 20 000 sheep, 5000 cattle and 1000 horses. The investigation of Nikolov & Gogushev (2014) was focused on the most affected communities dominated by *Juniperus communis* subsp. *alpina* (syn. *J. sibirica*), *Vaccinium uliginosum*, *V. vitis-idaea*, *Bruckenthalia spiculifolia*, *Agrostis rupestris*, *Nardus stricta*, *Agrostis capillaris*, *Festuca rubra*, *Juncus trifidus*, *Festuca paniculata*, etc. The communities dominated by these species are also target of the NATURA 2000 site that overlaps with the National Park. The main trend for most of these communities was a visible decrease of their areas. The only positive trend was found for *Juniperus sibirica* and *Carex curvula* communities, but due to expansion of the secondary eroded areas in the alpine and subalpine belt because of overgrazing.

Research in the Pirin National Park (Dimitrov & al. 2014) was focused mostly on two alpine and subalpine habitats: 6150 siliceous alpine and boreal grasslands and 6170 Alpine and subalpine calcareous grasslands. The pasture areas were 9300.8 ha out of 40 330 ha (the entire territory of the Park). The grazing animals were nearly 18000 heads of sheep, 3000 of cattle and only 45 horses. The negative impact of grazing is still not as strong as in the Central Balkan National Park. However, a comparatively low availability of grazing areas has been established and 50 % of the investigated areas were reported as overgrazed. Also, high risk for some sensitive habitats like glacial lakes has been recorded. An increase of stands with nitrophilous species like *Rumex alpinus*, *Chenopodium bonus-henricus* and *Urtica dioica* has already started in some stronger overgrazed territories. The population structure and pollination of the complex of threatened and endemic plant species was also evaluated as potentially damaged.

Investigation in the Vrachanski Balkan Nature Park (Tzonev & Dimitrov 2014) was carried out in

four experimental areas. The areas were occupied by NATURA 2000 target habitats for overlapping SCI BG0000166 Vrachanski Balkan (6210, 6230, 4060 and 6520). They were present respectively in communities dominated by: 1. *Sesleria latifolia*, *Brachypodium pinnatum* and *Agrostis capillaris*; 2. and 3. *Nardus stricta* and *Vaccinium myrtillus*; 4. *Agrostis capillaris*, *Festuca rubra*, and *Dactylis glomerata*. The experimental areas were used for grazing of horses, but in different numbers and, respectively, with a different level of grazing impact. Only within several months a significant impact was established in the experimental areas. This impact was reflected in the reduction of the projection cover by 10 % to 30 % and a decrease in the population of the forage species of *Poaceae* and *Fabaceae*, such as *Festuca rubra*, *Agrostis capillaris*, *Lerchenfeldia flexuosa*, *Anthoxanthum odoratum*, and *Genista depressa*. Changes were not indicated only in the abundance of *Sesleria latifolia*, which because of its low forage value is used mainly for food in winter and during extreme droughts. Also, emergence of some ruderal species was registered, such as *Cirsium ligulare* and *Plantago lanceolata*, which are typical for overgrazed and trodden areas.

The cited research came out with conclusions for a generally positive role of grazing. But it also emphasized the high level of risk for biodiversity from poorly or improperly controlled processes. The main conclusions of the research are:

- Decrease of the projection cover and areas of the grassland communities due to soil erosion or transformation into pastures dominated by ruderals, nitrophilous species and *Nardus stricta*.
- Significant decrease in quantity and participation in the natural grasslands of valuable forage species (*Lerchenfeldia flexuosa*, *Festuca* spp., *Poa* spp.) and increase of the quantity of many species without, or with low feeding value, like *Nardus stricta*, *Verbascum longifolium*, *Rumex alpinus*, *Chenopodium bonus-henricus*.
- Progressive expansion of the communities of *Juniperus sibirica*, without any submeasures like its burning out in the past, or mechanical cleaning. The study of Radukova (2012) shows that although the process of expansion of Siberian Juniper has slowed down during active grazing, in general, these communities continue to invade new pasture areas. Mechanical cleaning also showed low efficiency.

– Increased soil erosion and reduction of blueberry (*Vaccinium* spp.) communities, which are important for the prevention of erosion. A significant decrease of these communities and unintentional favoring of the secondary invasion of juniper into their former places was also noted down by Stefanov (1948) as a direct consequence of the historical practices of nomadic livestock breeding in the Bulgarian mountains.

The above-mentioned processes show clear symptoms of overgrazing practically in all areas suitable for grazing. But there are also other indications of real loss of biodiversity. There is a decrease in the populations of some plant species of conservation significance. Most of them inhabit some communities with limited areas and specific ecological peculiarities such as alpine grasslands, mires, and tall forbs. Especially in the Central Balkan National Park, a significant reduction (70 %) of the population of some *Alchemilla* species like *A. achtarovii* was recorded (Gavrilova 2012) (Figs 1 and 2). The impact is so strong that the populations of some species limited to sensitive habitats are threatened by complete extinction. The limited water resources in the Central Balkan are one of the reasons for concentration of livestock there and all negative effects on the vegetation that follow from that: overgrazing, trampling, and water pollution. A heavy negative influence of transhumance grazing on the alpine



Fig. 1. Communities dominated by *Alchemilla* sp. in the Central Balkan National Park in natural conditions (Photo by A. Gavrilova).



Fig. 2. Overgrazing in the riverine communities dominated by *Alchemilla* species in the Central Balkan National Park (Photo by A. Gavrilova).

lakes was reported also from the Alps in Italy (Tiberi & al. 2014). Vassilev & al. (2011) have reported that the abandoned former pastures in Mt Ponor preserved better the populations of species with conservation significance than those with used pastures. Therefore, the current implementation of the submeasure “Pastoralism” has not led to the expected positive results and, on the contrary, to loss of biodiversity, especially in the plant diversity.

Grazing can be applied for conservation benefits, if the great problems are solved. And they are mainly:

- Unregulated grazing and free movement of the grazing animals (especially cattle and horses) everywhere in the park territories, even in the reserves, where grazing is forbidden.

- Lack of sufficient watering sources and concentration of livestock around small lakes, mires, rivulets – all of which are highly sensitive habitats. Degradation of these habitats is due not directly to the great number of grazing animals but to their concentration and continuous stay in such places.

- Overgrazing and soil eutrophication and pollution as a result from the concentration of livestock in some suitable places and/or lack of rotation of grazing areas. This problem is similar to the one mentioned for the water sources, but it also applies to places with valuable grassland species with easy access, etc.

- Unsuitable species or breeds. The local breeds such as Karakachan Horse, Karakachan Sheep, Kalofer Goat have been selected in the course of many centuries for life in the mountains. They have adapted to the harsh conditions there. All these local breeds are now endangered (Danchev 1994). The heavy animals introduced from the plains in the national parks (especially cattle) now cannot use fully the grazing areas. But they are concentrated in suitable places for them and also create some prerequisites for overgrazing and soil erosion.

- Lack of sufficient and improperly set pastoral areas. Actually, only small parts of the territories designated for grazing are suitable. Large parts of them are covered by Juniper shrubs or stones, screes and eroded areas. Another fact is that there are many steep slopes which are often not available for the breeds not adapted to the mountains. This also causes concentration and overgrazing and trampling in certain areas. In fact, although the number of animals was consistent with the size of pasture plots, it actually exceeded their carrying capacity.

Conclusions

The purpose of this summary was not to reject in total the necessity of conservation grazing. We need a more realistic assessment of the effects of nomadic (transhumance) livestock breeding for maintenance of natural vegetation in the mountains. The effects were rather negative than positive, especially for the flora and vegetation. According to Stefanov (1948), the Karakachans have used the mountain pastures to their “complete depletion” in spite of the limited number of livestock grazed there: less than 0.5 LSU/ha. This way of usage has transformed the comparatively stable high-mountain ecosystems into seminatural and unstable ones, maintained by burning and active grazing (Stojanov 1964; Bondev 1991). Stopping of the active anthropogenic influence (especially during the last 20 years) has led to the opposite succession: restoration of scrub (Siberian Juniper and Mountain Pine) and the following forest vegetation, especially of coniferous forests.

Therefore, an overall analysis of the earlier studies and observations has shown that management of the grassland habitats through implementation of conservation grazing should not be based only on the very limited existing knowledge and experiences, but also on far-sighted research focused on the problem. Grazing could be applied particularly for many animal species dependent on mosaic landscapes, secondary grasslands and domestic animals, because of the very limited number of wild herbivores even in the protected areas. Still, in the national parks, according to their category and target, in order to restore and preserve wildlife in the primary conditions, it would be more beneficial to graze herds of wild ungulates – deer, chamois, European bison, as before the nomadic pastoralism. Conservation grazing could be also applied but very carefully and after precise research into the animal influence, capacity, and predictive measures. Conservation of local breeds adapted to these territories should be a priority goal for these activities.

The required practical steps for the future include:

- Identification and mapping out of the plant communities, their species composition and the ecological structure of habitats, subject to management. It is very important for determination of the pasture capacity, length of time for grazing, time for communities and population self-restoration, etc.

– Assessment of the conservation status of the habitats and identification of the necessities and opportunities for improving their conservation status. It would be best if this is done in some integral management plans for NATURA 2000 sites and protected areas.

– Precise resource assessment of the potential grazing impact, grazing capacity and level of the zoogenic pressures of domestic animals in all territories potentially suitable for conservation grazing.

– Determination of the optimal intensity of grazing, grazing areas and the periods of grazing scheme. The final products must be combined maps of pasture types and all necessary pasture peculiarities, schemes and times for grazing, water supplies, and measures to avoid threats for populations of vulnerable plant and animal species.

If the presently applied measure (especially in the national parks) continues unchanged, we will lose more biodiversity than we win. State institutions must rethink their policy for the implementation of sub-measure “Pastoralism”. At the foothills and plains (up to about 1000 m alt.), the grazing of livestock has millennial traditions. Currently, with the economic decline of small towns and villages it is disappearing there. Pastures yet unploughed (because of great subsidies in agriculture) are covering very quickly with secondary scrubland. However, grazing-dependent animal and even plant species in seminatural grassland in the lowlands are much more in number than in the mountains. Mechanisms for financial support should be found and applied also in these areas and then the positive effect on the populations of insects, rodents and birds of prey would be greater than in the mountain areas.

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