"THE CLEANER THE MEADOW, THE HEALTHIER THE GRASS THAT GROWS THERE, AND THE HEALTHIER THE LAND, TOO"

EXTENSIVE GRASSLAND MANAGEMENT IN ŐRSÉG

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The authors investigate forms of grassland management in the westernmost part of Hungary, in the cultural landscape of the Őrség region. On the basis of semi-structured interviews with knowledgeable elderly people in the region, they were able to reconstruct former land use from an ecological perspective and its role in developing and maintaining high biodiversity in grasslands, which are also valuable from the cultural and conservationist perspectives.

Keywords: *extensive grassland management, Őrség region, Hungary, chaff*

Avtorji so raziskovali ekstenzivno upravljanje travišč na skrajnem zahodnem delu Madžarske, na obrobnem, vendar priljubljenem območju, v kulturni krajini regije Őrség. S pomočjo ankete in polstrukturiranih intervjujev s starejšimi sogovorniki, lokalnimi eksperti so želeli z ekološkega vidika podrobno rekonstruirati nekdanjo rabo zemljišč in njeno vlogo pri razvoju in ohranjanju visoke biotske raznovrstnosti na travíščih, ki so dragocene tudi s kulturno-konzervatorskega vidika.

Ključne besede: *ekstenzivno upravljanje travinja, regija Őrség, Madžarska, prepad*

INTRODUCTION

A significant part of Europe is a patchwork of cultural landscapes, created and maintained by human communities, often over the course of several centuries, in order to obtain natural resources such as edible and medicinal plants (Agnoletti and Rotherham 2015: 3156). Communities that are directly dependent on natural resources endeavor to use the landscape in ways that optimize the quality and quantity of the resources that are important to them (e.g., against the impacts of the weather), continuously monitoring the effects of their activities and the condition of and changes to landscapes and natural resources (Moller et al. 2004: 2). If land use has an adverse impact on the functioning of the ecosystem, they change their practices. The experience of adaptive resource use and of lessons learned from errors (Berkes et al. 2000: 1252; Drew 2005: 1287) are incorporated into community knowledge (social learning). This kind of traditional ecological knowledge (Berkes 2008: 9) supports decisions on landscape utilization (Varga and Molnár 2014: 185).

The process outlined above resulted in a constantly evolving, extensive land-use system adapted to the given landscape that, once established, then maintained the natural, cultural, and aesthetic value of the cultural landscape (Strijker 2005: 100; Demeter and Kelemen 2012: 2; Plieninger and Bieling 2012: 3–4; Widgren 2012: 105).

By the second half of the twentieth century, these land-use systems had disappeared or had been drastically reduced across Europe (MacDonald et al. 2000: 64; Poschlod et al. 2005: 94; Niedrist et al. 2009: 195). As a result of changes in lifestyle, any land-use system primarily based on human labor ceased to exist (e.g., the abandonment of hayfields) or reverted to more intensive agricultural practices or other economic sectors (e.g., ski tourism; Netting 1981: 54–55; Meilleur 1986: 4; MacDonald et al. 2000). The nature of cultural landscapes and landscape structures thus changed (Flohre et al. 2011: 1772), and the strongly related local identity weakened (cf. Antrop 2004; Plieninger and Hartel 2014: 291).

Socioeconomic changes resulted in the abandonment of extensive animal husbandry, hay production, and the use of grasslands in Europe's mountainous and hilly regions. These grasslands, which were established on formerly forested lands and which, although secondary (anthropogenic), were outstandingly species-rich, are part of the patchwork structure of the cultural landscapes (Poschlod and Wallis de Vries 2002: 361; Väre et al. 2003: 133; Veen et al. 2009; Knowles 2011: 1; Wilson et al. 2012: 797; Hejcman et al. 2013). Because these grasslands have been drastically transformed due to more intensive use or abandonment (losing a significant proportion of their species or undergoing spontaneous afforestation; Öllerer 2013: 38), they are excellent indicators of economic and social changes. Grasslands have also been a focus of Hungarian ethnographic and botanical research, although the emphasis has been on agricultural instruments and on some prioritized practices (Szabó 1957; Fél and Hofer 1961; Ikvai 1962; more recently: Deme 2013; Babai and Molnár 2014, Babai et al. 2014; Halász 2018; in general: Paládi-Kovács 1979) or on the ecological consequences of management of grasslands (primarily the number of times they are mowed; e.g., Török et al. 2007). These studies—with the exception of Babai and Molnár (2014) and Babai et al. (2014)—do not strive to provide a detailed description of extensive grassland management, focusing instead on practices with ecological relevance.

In the western corner of the Carpathian Basin, the Őrség region—a historical-cultural landscape characterized by species-rich grasslands established and maintained on the site of former forests—is also important in terms of culture and nature conservation (Gyöngyössy 2016: 370). A detailed description of extensive grassland management provides a good basis to develop proper nature conservation management plans imitating the traditional land-use system (cf. Dahlström et al. 2013).

This article examines in detail the traditional and now almost entirely vanished extensive grassland management of the cultural landscape in the Őrség region on the Slovenian–Hungarian border, which can serve as a relevant starting point for developing a management plan for species-rich hayfields, considering social, economic, and nature-conservation points of view.

STUDY AREA AND METHODOLOGY

PHYSICAL AND GEOGRAPHICAL FEATURES OF THE AREA

Őrség is located in the western part of the Carpathian Basin, in the Hungarian–Slovenian border region. It has typically eroded hilly land (with elevations between 190 and 380 m; Balázs et al. 2012: 7; Zentai et al. 2016: 88). In terms of climate, it is the coldest region of Hungary, with the highest rainfall. The average annual temperature is 9.1 to 9.4 °C (Zentai et al. 2016: 68). The average annual precipitation is around 800 mm (Zentai et al. 2016: 62). The bedrock is sandy and clayey, cut through by gravel layers spread by the rivers; these layers are exposed in some places due to erosion of the arable soil (Zentai et al. 2016: 53). The soils are primarily pseudogley and brown forest soil with clay illuviation on acidic bedrock (Berki et al. 1995).The vegetation mainly comprises mixed oak and beech forests with pine (typical species: beech, sessile oak, hornbeam, and Scots pine) and alluvial forests along the watercourses (typical species: white willow and alder; Bartha 2016: 292–307). The landscape was shaped by small-scale (extensive) farming, resulting in a diverse patchwork cultural landscape consisting of patches of forest, grasslands (meadows and pastures), orchards, and arable land (Balázs et al. 2012: 19–20). The forested area continuously increased, from 32% to 70% in the last two hundred years (Balázs et al. 2012: 19; Bartha 2016: 291). Today, a significant proportion of the woody vegetation is secondary (Balázs et al. 2012: 19), with some plantations of Scots pine and Norway spruce (Bartha 2016: 330–331).

In the cultural landscape of Őrség, grasslands have outstanding nature conservation value due to biodiversity in terms of vascular plants and butterflies (Szépligeti and Tóth 2016; Ábrahám 2012) as well as cultural value (the cultural landscape as a cultural value). Grassland cover was between 10 and 20% in the last two hundred years: at the end of the eighteenth century 10%, in the middle of the nineteenth century 16%, in the 1960s 17%, and in the 2010s 10%; see Figure 1a (Balázs et al. 2012: 22; Bartha 2016: 291). The most important types of grasslands are: 1) wet meadows at the bottom of valleys (*Molinion caeruleae* and wetlands; Figure 1b); 2) mesophilous meadows occupying the higher areas of stream valleys and hillsides (*Alopecuro–Arrhenatheretum*); and 3) sporadic mountain meadows on drier hillsides (*Anthyllido–Festucetum rubrae*; Bartha 2016: 312–319). In regularly grazed areas, the last of these were taken over by grasslands dominated by matgrass (*Nardis stricta*), which have now disappeared (Bartha 2016: 318). Valuable grassland species in the Molinion grasslands and wetlands include yellow daylily (*Hemerocallis lilioasphodelus*), marsh gentian (*Gentiana pneumonanthe*), and Siberian iris (*Iris sibirica*; Figure 1c–e; Szépligeti and Tóth 2016: 150–152). The butterfly fauna associated with the grasslands is also diverse (see Ábrahám 2012; Kőrösi et al. 2014). Most of the abandoned grasslands have become overgrown with shrubs or are afforested (Bartha 2016: 312), although there are also many problems with alien invasive species, such as tall goldenrod (*Solidago gigantea*) and hybrid

Figure 1a. Typical cultural landscape with arable fields in the foreground and hayfields in the valley. Photo: Dániel Babai.

Japanese knotweed (*Fallopia x bohemica*; Figure 1f–g), which significantly transform native plant communities (Balogh 1996; Szépligeti and Tóth 2016: 151; Szépligeti et al. 2018: 93).

In 1978, the Őrség Landscape Protection Area was established to protect the natural values of the area, after which Őrség National Park was founded in 2002.

SOCIAL FEATURES OF THE AREA

The historical Őrség area embraced eighteen settlements (three of the villages now belong to Slovenia) with a fragmented settlement pattern (Csapó 2008: 316). The structure of the landscape and the peripheral socioeconomic situation of the region made development and investment more difficult, and consequently few jobs were available, which caused the out-migration of younger generations. Out-migration accelerated from the 1950s onward, and population decline has occurred since the 1970s (Ispán et al. 2018: 474–475). Despite the marginal character of the landscape and its longstanding political and geographical isolation (Ispán et al. 2018: 474), immigration primarily by urban intellectuals since the 1970s has been common because of the natural and cultural values of the cultural landscape (Beluszky 2005: 151–154).

Figure 1b. Species-rich wet meadow with second-growth grass in the valley. Photo: Dániel Babai.

Figure 1c. Yellow daylily (*Hemerocallis lilioasphodelus*). Photo: Mátyás Szépligeti.

Figure 1d. Marsh gentian (*Gentiana pneumonanthe*). Photo: Dániel Babai.

Figure 1e. Siberian iris (*Iris sibirica*). Photo Dániel Babai.

Figure 1f. Tall goldenrod (*Solidago gigantea*). Photo: Dániel Babai.

Figure 1g. Hybrid Japanese knotweed (*Fallopia x bohemica.* Photo: Ábel Molnár.

Nowadays the population of the area investigated is around 3,366 (2017), with 86.3% Hungarians, 7.7% Slovenians, 2.8% Germans, and 1.5% Roma (Internet 1). Approximately 5% of the population works in agriculture, primarily in livestock farming (the proportion was around 80% in the 1960s), and 93% of the livestock has disappeared (Kovács-Mesterházy 2016: 653).

METHODS

The findings described in this article are based on semi-structured and structured interviews (cf. Newing et al. 2011) aimed at a detailed exploration of traditional grassland management in Őrség, which was applied until around the 1950s (Balázs et al. 2012: 36). We use the term *traditional grassland management* to refer to the extensive land-use system, in which grasslands were predominantly managed by human labor and animal power (e.g., manual mowing, manual hay harvesting, and organic manuring). This form of farming typically prevailed until the 1950s (Balázs et al. 2012: 36). Among the settlements belonging to the Őrség microregion, interviews were carried out in Őriszentpéter, Magyarszombatfa, Kercaszomor, Szalafő, and Őrimagyarósd. A total of thirty-four elderly people, former farmers, were interviewed (sixteen women and eighteen men). Their average age was seventy-eight years. The most important questions during the interviews concerned the grassland habitats and their species composition, the local names of plants and habitats (landscape partitioning), the number and dates of mowing and manuring, the spring cleaning of meadows, grazing after the first mowing, oversowing, burning, draining, and so on. All the interviews were recorded using a digital voice recorder and were transcribed word for word.

The interviews were analyzed and coded based on grassland management practices and on hayfield types. The data are interpreted in line with the consensus of the "omniscient informant" and are presented using the most expressive quotes.

RESULTS

MANAGED HABITATS AS ADDITIONAL HAY RESERVES

Grasslands and meadows are the key elements for extensive animal husbandry in the Őrség region. These supplied the significant demand for winter fodder in farming based on livestock. For this reason, "where it wasn't possible to plough, it was all meadow, all grassland . . . there was a big need for hay, and so it didn't matter if it was a slope or any marshy meadow, it was all mowed."[1] The importance of hay is illustrated by the diversity of mowed habitats (Table 1).

[1] Interviewee A (woman, born 1940, Magyarszombatfa).

Table 1: Grassland-related local habitats and their characterization in Őrség.

Habitat name	Characteristics
rét	A meadow, an unplowable habitat in the landscape used as grassland: *In those days, every little bit was mowed, nothing was left out.*[2]
kaszáló	A synonym for *rét* 'meadow', seldom used: *Everything was hayfield* [kaszáló], *because back then everything was mowed, nothing was left out.*[3]
gyep	A new expression, a synonym for *rét* 'meadow': *Well, what they now call 'grassland'* [gyep] *is what they used to call 'meadow'* [rét]. *They didn't say 'grassland'* [gyep] *in the old days.*[4]
düllő	Mowed grassland around houses: *Between the houses and around the houses, that was the düllő. In many places we mowed around the houses, so that was the düllő.*[5]
parlag, parrag	Abandoned arable fields: *Not cultivated, a here-or-there cut, owned by no one, as they say, so that's why it went to waste. It was neglected. Overgrown with grass and weeds. Not cultivated, so it went to waste. Something like a meadow.*[6]
útszél	Unconventional (roadside) grassland: *Mowed or grazed. Cows liked to graze there because the grass growing there tasted good.*[7]
sánc	Unconventional (ditch) grassland: *The ditch at the side of the road, that's the* sánc. *A channel for water. We mowed the ditch.*[8]
düllet	Unconventional grassland, a dividing ridge several meters wide between ploughed fields used for turning: *A bit of green was left between two ploughed fields. So you could turn with a horse or cow. It was mowed . . . to store for winter.*[9]
mögye, megye, mezsgye	Unconventional grassland between two ploughed parcels of land or plots (an area of garden at a distance from the house that supplemented the vegetable garden; e.g., for growing potatoes), a narrow border zone that was usually cut with a sickle, and sometimes mowed.
gyümölcsös	An orchard, unconventional grassland where root crops were often grown, but which was predominantly used as grassland: *They mowed it, but they planted things in it too, it was dug and cultivated among the trees.*[10]

2 Interviewee B (man, born 1928, Kercaszomor).

3 Interviewee A (woman, born 1940, Magyarszombatfa).

4 Interviewee A (woman, born 1940, Magyarszombatfa).

5 Interviewee C (woman, born 1924, Magyarszombatfa).

6 Interviewee C (woman, born 1924, Magyarszombatfa).

7 Interviewee C (woman, born 1924, Magyarszombatfa).

8 Interviewee C (woman, born 1924, Magyarszombatfa).

9 Interviewee C (woman, born 1924, Magyarszombatfa).

10 Interviewee C (woman, born 1924, Magyarszombatfa).

3.2. TYPES OF GRASSLANDS

In terms of traditional grassland management, two principal types of grasslands were distinguished: 1) (wet) meadows or marshes (wet meadows dominated by purple moor-grass, *Molinia coerulea*, or mesophilous grasslands dominated by false oat-grass, *Arrhenatherum elatius*), known as *lap*; as well as 2) the meadows of the drier hillsides or slopes, known as *part*, including manured grasslands around houses and sporadically maintained red fescue–dominated grasslands. In regularly grazed areas, the last of these were replaced by matgrass (*Nardus stricta*, Hung. *sörte*), considered economically worthless: *There were meadows covered with matgrass. . . . It was such a dry and hard grass, it was so hard to mow that grass.*[11]

The quality of the hay varied in the different types of grasslands. The hay of the wetlands was basically sedge-dominated, of inferior quality, and the matgrass also did not provide good hay. The best hay grew on the (more often manured) hillsides and hilltops (*düllő*) around the houses: *The sedge-dominated meadows along the Szala River were no good, neither were the matgrass meadows on the slopes; the best were the* düllő *where great burnet* (Sanguisorba officinalis, *Hung.* vérfű) *and bird's-foot trefoil* (Lotus corniculatus, *Hung.* sárkerék) *grew.*[12] The species composition of the grasslands was important from the point of view of both the quality of the hay produced and the nutritional preferences of the farm animals: *The horses loved the wetland* [sedge-dominated] *hay, but the cattle ate it only if there was nothing else growing.*[13]

The yards around the houses were intensively used; these were degraded meadows that were mown up to four or five times a year (fertilized by dung water leached from the stables): *When it grew to between 5 and 10 centimeters tall, we mowed it.*[14] The biomass they produced was mostly given to the pigs. Other habitats that were mowed regularly, or when there was a shortage of hay, included roadside ditches (*Every ditch slope, everything was mowed.*[15]), fallow land, forest roads, forest edges (*The forest edges were always mowed.*[16]), clearings, and vineyards.

THE MOST IMPORTANT ELEMENTS OF GRASSLAND MANAGEMENT IN ŐRSÉG

Local farmers in the Őrség region used a number of grassland management techniques to ensure long-term hay production and quality in order to provide the hay needed for the cows during the winter (one cow requires two to three tons of hay per year): *However many legs*

[11] Interviewee A (woman, born 1940, Magyarszombatfa).

[12] Interviewee D (man, born 1935, Nagyrákos).

[13] Interviewee E (man, born 1938, Apátistvánfalva).

[14] Interviewee F (woman, born 1937, Apátistvánfalva).

[15] Interviewee A (woman, born 1940, Magyarszombatfa).

[16] Interviewee A (woman, born 1940, Magyarszombatfa).

an animal has, that's the number of cartloads of hay it needs.[17] Grassland management took into consideration both the quality and quantity of the hay: *The cleaner the meadow is kept, the better. The better it is mowed, the less overgrown the grass gets. The cleaner the meadow, the healthier the grass that grows there, and the healthier the land, too.*[18]

Work on the grasslands began in the early spring, after the snow melted, with the spring cleaning of the meadows and the scattering of the chaff. This was followed by mowing, second-crop mowing, and grazing, and then manuring in the fall.

Spring Work

Local farmers cleaned the grasslands in early spring (March and April), before the grass started to grow. The aim of cleaning was to facilitate hand mowing by levelling anthills and molehills (using a rake or harrow), and by raking up and burning branches and dead leaves that had fallen on the grass over the winter: *There were many molehills that needed to be raked over and leveled. Or, if there were trees in the grassland, then in spring the dead branches and leaves had to be raked up, collected, and burned.*[19] This was done to *make the meadow nice and smooth.*[20] Sprouting woody plants were likewise cut out in the early spring: *If something . . . , a bush, grew up, we cut that down too.*[21] Sediment carried by floods to wet meadows in the valley was also cleared. Furthermore, harrows could tear out clumps of moss as well: *It tore up the moss, and in this way the meadow was given an airing.*[22] The spread of moss posed a problem in grassland management (it reduced yields): *The biggest problem in Őrség is the moss: the moss causes a lot of trouble in the meadows.*[23] Moss-covered areas were also treated with ash (*If there's moss in the meadow, they would sprinkle it with ash. That killed it off.*[24]) or manure (*It needs manuring, then the moss is killed off immediately.*[25]).

The Use of Chaff

One of the important grassland management tasks was planting with chaff. The chaff was a mixture of dry plant residue, viable seeds, and dust that gathered on the floor of the barn: *That was the chaff from the hay, there were seeds in it, and leaves, and we took that to the meadow, too.*[26] The chaff was spread in order to: 1) increase hay yield on nutrient

[17] Interviewees G (women, born 1932 and 1934, Őriszentpéter).

[18] Interviewee H (woman, born 1928, Őriszentpéter).

[19] Interviewee I (woman, born 1928, Őriszentpéter).

[20] Interviewee I (woman, born 1928, Őriszentpéter).

[21] Interviewee J (woman, born 1941, Őrfalu).

[22] Interviewee L (woman, born 1938, Kerkáskápolna).

[23] Interviewee M (man, born 1939, Velemér).

[24] Interviewee N (woman, born 1940, Őriszentpéter).

[25] Interviewee O (man and woman (couple), born 1935 and 1937, Őrimagyarósd).

[26] Interviewee A (woman, born 1940).

poor grasslands (*Where the meadow was thin. Because, by and large, that chaff contained grass seeds*[27]); 2) strengthen the basic matrix of the grass (*seeds germinate better, and the meadow grows thicker*[28]); and 3) overseed abandoned arable land (*If someone had left the land uncultivated, it was ploughed once . . . , chaff was scattered over it.*[29]). Each year, a different area was treated: *Well, by and large, one got it one year, then it was taken to another the next year.*[30] Natural and anthropogenic disturbances affecting the grasslands were also treated with chaff (even sites of molehills or anthills): *Wherever there was a hump, they spread it there, and the seeds germinated.*[31] Oversowing was carried out in the early spring: *It was simply scattered, you know, and as the snow melted it ended up on the ground.*[32]

Mowing

In hayfields, the most important work was mowing—that is, harvesting the hay. The amount of hay mainly depended on the precipitation: *The more it rained, the better the grass grew. The morning dew was also important. In the morning, the dew makes the grass grow.*[33] Certain indicator species may have indicated the amount of the yield even a month before mowing. If, prior to the first mowing, *sárgavirág* (literally 'yellow flower', a species of buttercup, *Ranunculus* spp.) proliferated in April and May, then little hay could be expected: *There won't be much hay now because there are so many* sárgavirág *in the meadow.*[34] The cuckoo-flower (*Cardamine pratensis*, Hung. *fehérvirág*, literally 'white flower') indicated a sufficient quantity of hay. Mowing was not only about harvesting hay, it was also indispensable for grassland maintenance: it prevented the afforestation of the grasslands. It also affected the quality of the hay (by influencing the species diversity). The number and timing of mowings were equally important in this respect. The number of mowings was determined according to the types of grassland. Wet meadows in the valleys (Hung. *lap*) were typically mowed twice (on rare occasions three times), whereas meadows on hillsides (Hung. *part*) were mowed once: *Out there, we mowed the less productive places, on the hillsides, just once. . . . But the meadow was mowed twice without fail.*[35] In average years, the third-crop hay [fattyúsari] was grazed after the second mowing [sarikaszálás].

The timing of the mowing depended on several factors: 1) the condition of the vegetation, 2) family tradition, 3) the farmer's individual decision (*The order for such things*

[27] Interviewee P (woman, born 1935, Őriszentpéter).

[28] Interviewee H (woman, born 1928, Őriszentpéter).

[29] Interviewee H (woman, born 1928, Őriszentpéter).

[30] Interviewee A (woman, born 1940).

[31] Interviewee M (man, born 1939, Velemér).

[32] Interviewee L (woman, born 1938, Kerkáskápolna).

[33] Interviewee R (woman, born 1941, Őriszentpéter).

[34] Interviewee A (woman, born 1940).

[35] Interviewee B (man, born 1928).

varied from household to household[36]); and 4) the annual order of tasks on the farm (the first mowing had to be finished before the grain harvest). The most common indicator of the appropriate condition of the vegetation was the growth of the grasses: *It had to do with how tall it had grown. So, twenty-five to thirty centimeters, forty centimeters, was grass that was good for mowing. And the leaves had begun to dry.*[37] The flowering of the grasses (*when they were in flower, then it was best*[38]) and other plant species was also a deciding factor; for example, cherry: *When the cherry was ripe, they began to mow*[39] or rattle (*Rhinanthus* sp.): *When it has done flowering, then* [the grass] *was already seeded and yellow.*[40] Mowing was often adapted to the seeding of the dominant grasses: *As the grass seed ripened. Because if the meadow is cut without the seed having ripened, then the hay and the grass won't grow thick the next year. So, the meadow isn't mowed until the grass seed has ripened.*[41] This timing ensured yields in the long term: *As the seeds drop, so the meadow will be more abundant next year.*[42] In terms of timing, the vegetative and generative reproduction patterns of the various plant species were taken into account: *Very tiny plants, herbs, they multiplied down below, not just from the seed, but also from the root.*[43]

Based on the above, the timing of the first mowing was late May or early June: *The first mowing took place after May 20th, until about mid-June.*[44] The timing of mowing depended not only on the condition of the vegetation, but also on the work schedule on family farms, and on the order of agricultural work: *We just had to make sure that the first mowing had been done by harvest.*[45] It was likewise important to leave sufficient time after mowing for the second-crop hay to grow: *everyone was in a hurry to make sure it was possible to mow a second time.*[46]

The quality of the hay produced on the different types of grasslands also determined the priorities: *The richer meadows at the end of May, before the grasses started sagging, the rest after June 10th, if they weren't counting on second-crop hay, then the first mowing was put off right until harvest.*[47] Thus mowing began in the wet meadows (Hung. lap), followed by the drier grasslands on the hillsides (Hung. *part*): *The wet meadows were mowed first because*

[36] Interviewee L (woman, born 1938, Kerkáskápolna).

[37] Interviewee R (woman, born 1941, Őriszentpéter).

[38] Interviewee B (man, born 1928).

[39] Interviewee H (woman, born 1928, Őriszentpéter).

[40] Interviewee M (man, born 1939, Velemér).

[41] Interviewee H (woman, born 1928, Őriszentpéter).

[42] Interviewee H (woman, born 1928, Őriszentpéter).

[43] Interviewee N (woman, born 1940, Őriszentpéter).

[44] Interviewee P (woman, born 1935, Őriszentpéter).

[45] Interviewee B (man, born 1928).

[46] Interviewee J (woman, born 1941, Őrfalu).

[47] Interviewee T (woman, born 1943, Nagyrákos).

they could be mowed several times …[48] The meadows on the hilltops and higher slopes were mowed last: *In hilly places, they started the latest. Because … the slopes couldn't be mowed more than once.*[49]

The mowing schedule is interesting from a nature conservation point of view: only the amount of hay that could be loaded onto one (horse-drawn) cart was mowed at one time: *They didn't mow much in one go. . . . Back then, they always mowed only as much as would fit on a cart.*[50]

Second-crop mowing and grazing

After the first mowing, the wet meadows (in the valley bottoms) were mowed for a second time (second-crop mowing) at the end of the summer or the beginning of fall (from August 20th to the end of September): *We started* [the second-crop mowing] *in mid-August. In fact, it could be frosty as early as mid-September . . . . But it was good because scything was better then.*[51] The second-crop hay *was worth more than the first crop. We thought more of it because it was better for the cows. It grew shorter, whereas the first crop had more stalks in it.*[52] The work schedule on the family farms was also decisive in terms of second-crop mowing and, along with the condition of the vegetation, determined the timing of the workflow: *It had to be over by September because it was followed by potato digging*[53] and before long *then of course there was the ploughing and sowing in October.*[54]

The timing of the second-crop mowing was also suggested by indicator species, primarily bird's-foot trefoil (*Lotus corniculatus*, Hung. *sárkerep*): *Do you know* sárkerep*? We usually keep an eye out for when it flowers . . . , and then . . .*[55] The amount of second-crop hay was also determined by the weather: *The second crop* [sari] *depends on what kind of year it was. If it was soaked or not . . .*[56] If the weather was favorable, the grass grew sufficiently following second-crop mowing for a third crop [fattyúsari] to be worth grazing or even mowing: *It could happen, when the weather allowed, that the grass grew even after mowing the second crop, and then we would drive the cows there.*[57] During second-crop grazing, the boundaries of the grassland plots were ignored and the cows could graze freely around the meadows:

[48] Interviewee P (woman, born 1935, Őriszentpéter).

[49] Interviewee A (woman, born 1940).

[50] Interviewee A (woman, born 1940).

[51] Interviewee M (man, born 1939, Velemér).

[52] Interviewee A (woman, born 1940).

[53] Interviewee L (woman, born 1938, Kerkáskápolna).

[54] Interviewee H (woman, born 1928, Őriszentpéter).

[55] Interviewee L (woman, born 1938, Kerkáskápolna).

[56] Interviewee P (woman, born 1935, Őriszentpéter).

[57] Interviewee O (man and woman (couple), born 1935 and 1937 Őrimagyarósd).

No one took any notice who they belonged to: the cows were free to go anywhere.[58] On sodden grasslands, the third crop [fattyúsari] was not grazed, bearing in mind the damage caused by trampling: *So they wouldn't trample the meadow because that would have made holes in it.*[59] In such cases, the third-crop hay was also cut and fed to the animals green (because the weather in October and November generally made drying it impossible). Second-crop grazing also provided manuring: *It did well because the cows manured it every day, and also because they grazed on it.*[60]

Additional practices

The aim of manuring was to increase the hay yield and improve areas with poor productivity. Typically, manure could be applied to grasslands only if manure remained after arable fields had been treated: *It was rare, it was taken there only if there was some left over, perhaps at the bottom of the manure pile . . . , then they scattered it over the thin meadow.*[61] The use of dung water was the most important option for improving yields of the meadows (*they called it liquid gold*[62]), especially the yield of farmyards. When there was sufficient manure or dung water to apply to grasslands, a different area was treated each year (primarily the grasslands around the houses): *It was used sparingly, one year for this spot, another year for another. It was applied where the hay was worse.*[63]

Grasslands were manured in the late fall and early winter, when *it was scattered lightly and remained there until spring, covered with snow and beaten by rain, then in the spring they raked up what remained.*[64] In this way, dry manure could not get into the hay *because if an animal feels the taste of it in the hay, it won't eat it.*[65] Dung water was occasionally mixed with rye chaff before it was applied to the grasslands: *That rye chaff was wetted with dung water . . . then we took it to the meadow and spread it.*[66] Dung water was also applied to matgrass-dominated grasslands that were of no economic value: *They'd take it there, where there was really bad grass, matgrass. . . . Mainly in the fall.*[67]

The fertility of the grasslands was also improved by scattering ash (this was not a widespread practice: ash was mainly scattered in kitchen gardens) *and on meadows to make them*

[58] Interviewee L (woman, born 1938, Kerkáskápolna).

[59] Interviewee N (woman, born 1940, Őriszentpéter).

[60] Interviewee A (woman, born 1940).

[61] Interviewee P (woman, born 1935, Őriszentpéter).

[62] Interviewee O (man and woman (couple), born 1935 and 1937 Őrimagyarósd).

[63] Interviewee H (woman, born 1928, Őriszentpéter).

[64] Interviewee I (woman, born 1928, Őriszentpéter).

[65] Interviewee L (woman, born 1938, Kerkáskápolna).

[66] Interviewee U (woman, born 1934, Csöde).

[67] Interviewee N (woman, born 1940, Őriszentpéter).

grow better[68] Ash was scattered throughout the winter—as much as was produced—onto the grass, especially on the banks (*düllő*) near the houses.

Productivity was also improved with lime (which only a small percentage of farmers could afford: *Wealthier farmers ordered lime mud, also for the meadow*[69]).

There was rarely any mention of the spring burning of grasslands, which, according to the interviewees, determined the species composition of the meadows: *Grasses grew there that the cows didn't like to eat . . . , they were left there until fall, then they were burned,*[70] so that *the burning was useful because other grasses grew there.*[71] Burning also contributed to the re-cultivation of grasslands that had been abandoned for a short time: *If there's no one looking after it, it turns wild. It couldn't be mowed because it was such old grass, you couldn't even cut through it with a scythe, so they set fire to it and burned it down.*[72] However, because of the need for large quantities of hay, there were scarcely any abandoned meadows: *Everyone mowed them because every blade of grass was needed.*[73] People also avoided abandoning grasslands because of the unfavorable changes it brought about (e.g., changes in species diversity and the emergence of woody plants): *If someone doesn't mow one year, he won't need to mow the next year. The quality of the grass changes, it'll be full of dry stalks. . . . Clover, bird's-foot trefoil, everything will disappear. Then the meadow will be worth nothing.*[74]

Drastic changes to traditional, extensive grassland management began in the 1960s and 1970s, when the establishment of cooperative farms brought such "achievements" of intensification as artificial fertilizers and mechanization.

DISCUSSION OF THE FINDINGS

TRADITIONAL GRASSLAND MANAGEMENT IN ŐRSÉG

Grassland management in Őrség, as in other regions in the Carpathian Basin, supplied the significant fodder demand for livestock on small farms producing good-quality hay (cf. Babai et al. 2014: 136). One of the important goals of management practice was to eliminate fluctuations in yield caused by the weather or anthropogenic and natural disturbances (cf. Herzog 1997: 145–148; Babai et al. 2014: 133), and the biodiversity of these grasslands is a kind of "byproduct" (Smith and Wishnie 2000; Wadley and Colfer 2004).

[68] Interviewee P (woman, born 1935, Őriszentpéter).

[69] Interviewee R (woman, born 1941, Őriszentpéter).

[70] Interviewee R (woman, born 1941, Őriszentpéter).

[71] Interviewee S (woman, born 1938, Viszák).

[72] Interviewee I (woman, born 1928, Őriszentpéter).

[73] Interviewee I (woman, born 1928, Őriszentpéter).

[74] Interviewee M (man, born 1939, Velemér).

Sophisticated grassland management was often a requirement due to overpopulation and/or land fragmentation of hayfield parcels in a given region in the nineteenth and twentieth centuries; for example, in Gyimes (cf. Babai et al. 2014: 37) and Őrség (Gyöngyössy 2016: 370). Decline in livestock, however caused abandonment and simplification of grassland management, resulting in changes to the landscape: *As they became fewer in number, then they were abandoned and became afforested as a result because, once there weren't so many forests, there weren't such young forests at all.*[75]

GRASSLAND MANAGEMENT PRACTICES

Grassland management in Őrség was similar to the present-day management in the Gyimes region and to the former system in the hilly and mountainous regions of Europe; compare the Swiss Alps (Netting 1981; von Glasenapp and Thornton 2011), the French Alps (Meilleur 1986), the Ciuc Basin (Deme 2013), and Gyimes (Babai et al. 2014).

One common aspect of grassland management is the spring cleaning of the grasslands, including leveling of molehills and anthills, collecting fallen leaves and branches, and so on (cf. Nagy 1900: 135; Szabó 1957: 12; Ikvai 1962: 33; Paládi-Kovács 1979: 139; Deme 2013: 10) in Gyimes (Babai and Molnár 2014; Babai et al. 2014: 90). This activity was required due to the appearance and spread of the long scythe (Paládi-Kovács 1979: 41). The use of chaff that was full of viable seeds improved grass yields and the density of the grass texture while contributing to the regeneration of abandoned arable land and land affected by anthropogenic or natural disturbances (cf. Gyimes, discussed in Babai et al. 2014: 92). The use of chaff is referred to in data from Upper Hungary and Transdanubia in the literature (Herkely 1941: 56; Paládi-Kovács 1979: 137), in interview data from Kiskunság and Hortobágy (oral information from Zsolt Molnár), and from living practice in Gyimes (Babai and Molnár 2014; Babai et al. 2014: 92). It was previously widespread in western Europe as well (e.g., Cousins and Eriksson 2001: 460; Poschlod and Wallis de Vries 2002: 372; Poschlod et al. 1998), including the French Alps (Meilleur 1986: 282). Professional agricultural writers objected to the practice due to the spreading of weed seeds (e.g., the seeds of poisonous plants), and thus it had been abandoned in many places by the nineteenth century (e.g., Dorner 1912: 383). Nowadays, it has experienced a resurgence as a result of nature conservation considerations because it can successfully restore a significant proportion of grassland species to degraded grasslands (Valkó et al., cited in Babai et al. 2014: 92–94).

The most important process in grassland management is mowing. Mowing was not only important in terms of harvesting the hay, it was also an integral part of grassland management: 1) it has a significant impact on grassland species diversity, thus affecting the quality of the hay; and 2) it prevents the reforestation of cleared meadows (Paládi-Kovács 1979: 138; Babai et al. 2014: 105).

[75] Interviewee A (woman, born 1940).

The number and timing of mowing is important from an agricultural point of view. As in Őrség, it was common to mow hayfields twice a year in vast areas of the Carpathian Basin, whereas non-manured grasslands were mowed once (Paládi-Kovács 1979: 148; Babai et al. 2014: 36; Szépligeti et al. 2018). Factors determining the number and timing of mowings included the length of the vegetation period, the location of the grasslands, the quality and quantity of hay, the work schedule on family farms (the start of harvest), and so on (Paládi-Kovács 1979: 148; Babai et al. 2014: 105). In recent decades, annual mowing (in early summer) has become the trend. Due to the decline in livestock, less hay is needed, and so farmers have optimized yields and energy investment (Konkoly-Gyuró et al. 2012). These economic considerations are accompanied by significant ecological consequences, primarily regarding the species composition of the grasslands (Szépligeti et al. 2018: 95).

Knowledge of indicator species and the (key) species that affect the quality of the hay is important when determining when the vegetation is ready for mowing (cf. Babai et al. 2014: 110; Paládi-Kovács 1979: 68; Vajkai 1941: 237–238). The time of mowing is typically indicated by the flowering of the dominant grass species (Tálasi 1936: 172; Szabó 1957: 30; Fél and Hofer 1961: 77; Ikvai 1962: 34; Andrásfalvy 1965: 32; Paládi-Kovács 1979: 152). Considering the above, the time of the first mowing in Őrség was traditionally late May or early June (cf. Szépligeti et al. 2018; Kőrösi et al. 2014). This early date was a consequence of the climate, vegetation, and lack of spring grazing. In Őrség, second-crop mowing typically began after Saint Stephen's Day, as it did almost everywhere in the Carpathian Basin (cf. Paládi-Kovács 1979: 153).

The selective thinning of poisonous or unwanted species was less prominent in Őrség, and only woody plants (shrubs) that sprouted in mown meadows were cut down. The practice of shaping the species composition of grasslands was widespread in the high mountainous areas of Europe: the French Alps (Meilleur 1986: 270), the Austrian Alps (Winter et al. 2011: 1711), the Ciuc Basin (Deme 2013), and the Eastern Carpathians (Babai et al. 2014: 97–102).

TRADITIONAL GRASSLAND MANAGEMENT AND NATURE CONSERVATION

Extensive grassland management is a "nature-friendly" form of farming on typically small plots, which produces and maintains an outstanding diversity of species and habitats (e.g., vascular plants and diurnal butterflies; Flohre et al. 2011: 1773). Practices of the extensive grassland management in Őrség are rather suitable for maintaining biodiversity, although some of the steps involved are considered environmentally harmful (e.g., spreading lime or ash). However, the entire land-use system is capable of maintaining biodiversity at a landscape scale (Schmitt and Rákosy 2007; Middleton 2012; Babai and Molnár 2014).

The timing and frequency of mowing, as a form of regular biomass removal, are equally important for maintaining and shaping species richness (Köhler et al. 2005; Ruprecht et

al. 2009; Szépligeti et al. 2018: 95). Grassland vegetation has adapted to regular double mowing (May–June / August–September; Szépligeti et al. 2018: 95). The diversity of plant species is greatest in twice-mown grasslands, and this practice is also an effective way of suppressing invasive species threatening native vegetation (e.g., giant goldenrod; Szépligeti et al. 2018: 94). Double mowing also favors populations of the scarce large blue butterfly (*Maculinea teleius*; Kőrösi et al. 2009: 261). However, in the case of butterflies that are important in terms of nature conservation (e.g., the alcon large blue, *Phengaris alcon*), a single (late fall) mowing (which was not typical in traditional farming) is the most appropriate (Kőrösi et al. 2014).

From a nature conservation point of view, traditional grassland management benefits from small farm–based land utilization, a patchwork landscape structure, and a diversified mowing system driven by individual decisions (Dahlström et al. 2013: 202; Kun et al. 2019). All of this can provide appropriate living conditions for rich wildlife. Because land-use systems have proved suitable for maintaining biodiversity in the past, they can provide important guidelines for the development of active conservation policies, management plans, and support systems today (Berkes et al. 2000; Dahlström et al. 2013: 201).

CONCLUSION

Embedded in the landscape and society as a complex land-use system, the formerly dominant traditional approach to farming supplied necessary winter fodder and provided an exceptional richness of species in the meadows. Locally adapted, extensive grassland management practices significantly changed the species composition of the habitats of the cultural landscapes (e.g., seminatural grasslands), but maintained the established diversity (Dahlström et al. 2013). This complex system disintegrated as a result of historical, social, and acculturation processes, although its resilience, adaptability, and efficiency remain desirable goals. Our task is to identify the economic (agricultural) and social frameworks that continue to function in the twenty-first century and can ensure a form of farming that is both agriculturally and environmentally effective in the long term.

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"ČISTEJŠI JE TRAVNIK, BOLJ ZDRAVA JE TRAVA, KI RASTE TAM, IN BOLJ ZDRAVA JE TUDI ZEMLJA" EKSTENZIVNO UPRAVLJANJE TRAVIŠČ V ŐRSÉGU

Polnaravna travišča antropogenega izvora z visoko naravno vrednostjo so pomembni elementi evropske kulturne krajine. Ekstenzivno upravljanje teh habitatov je bilo osrednjega pomena za skupnosti, ki so bile neposredno odvisne od naravnih virov in ki so se ukvarjale z ekstenzivno živinorejo. Posledice upravljanja teh habitatov so kulturne, naravne in estetske vrednote kot kompleks človeške družbe, pokrajine in povezovalnega sistema rabe zemljišč.

Raziskovali smo ekstenzivno upravljanje travišč na skrajnem zahodnem delu Madžarske, na obrobnem, vendar priljubljenem območju, v kulturni krajini območja Őrség. S pomočjo ankete in polstrukturiranih intervjujev s starejšimi sogovorniki smo želeli iz ekološkega vidika podrobno rekonstruirati nekdanjo rabo zemljišč.

Upravljanje travišč je obsegalo ne le košnjo, temveč tudi skrb za številne različne habitate (npr. jarke ali kmetijska dvorišča). Pravilna izbira števila in časa košnje in npr. gnojenje so bili najpomembnejši elementi lokalnega sistema upravljanja s travišči.

Delo lokalnih kmetov pri upravljanju travišč je v Őrségu delo trajnostne rabe; potrebno je za razvoj in vzdrževanje visoke biotske raznovrstnosti. Sistemi rabe zemljišč, ki so prilagojeni lokalnemu okolju, so dobro razviti in vzdržni, poleg tega pa so dragoceni tudi s kulturnega in naravovarstvenega vidika.

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