Для прогнозирования реального развития туризма на территориях ГНПП в Казахстане необходимо провести целый комплекс научно-исследовательских, проектных, землеустроительных и оценочных работ с целью определения туристско-рекреационных ресурсов, устойчивости экосистем к антропогенным нагрузкам, допустимых нагрузок на территории ООПТ. И только после выполнения всего этого комплекса работ можно планировать развитие туризма в ГНПП без ущерба охраняемым экосистемам.

Существует много острых вопросов в деле развития туризма в ООПТ Казахстана, и все в рамках одной статьи рассмотреть сложно, но главную проблему назвать необходимо. Основная проблема нестыковки интересов государственных органов управления ООПТ и планирования развития туризма, на наш взгляд, состоит в кадровом вопросе. В указанных госструктурах на всех уровнях работают специалисты с различным образованием и меньше всего с туристским. Самым слабым местом в кадровом вопросе являются низкие должностные оклады в КЛОХ, что и определяет слабую профессиональную туристскую подготовку персонала в ГНПП. В результате молодые специалисты с туристским образованием просто не видят перспективы в этой работе на местах в ГНПП в сельской местности, и штат комплектуется из состава местного населения, независимо от образования.

В вопросе совершенствования стратегии развития туризма в целом и в ООПТ в частности можно руководствоваться опытом Всемирной туристской организации (ЮНВТО). Работая во всех странах мира и аккумулируя их многолетний опыт развития туризма, ЮНВТО вторым по важности направлением своей деятельности считает туристское образование и профессиональную подготовку, а именно создание базовых структур для организации образования и профессиональной подготовки в сфере туризма, включая курсы по «обучению обучающих», краткосрочные и заочные курсы, а также расширяющейся сети центров образования и профессиональной подготовки специалистов в сфере туризма и гостеприимства.

Правильная государственная политика и финансовая поддержка в формировании качественной системы многоуровенного образования в сфере туризма и гостеприимства способна в ближайшие годы решить вопросы развития туризма в Казахстане, и в частности в ООПТ. Профессионалы сферы туризма и гостеприимства будут грамотно разрабатывать жизненные концепции развития туризма и успешно воплощать их в реальность на местном, региональном и республиканском уровнях.

TRADITIONAL PASTURING BY HUNGARIAN HERDERS

ТРАДИЦИОННЫЙ ВЫПАС СКОТА ВЕНГЕРСКИМИ ПАСТУХАМИ

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Abstract. We studied traditional steppe herders' knowledge in Hungary. Ninety-two herders living in the Hortobágy saline steppe, Hungary, Central Europe were interviewed, and participatory observation was used to understand traditional ecological knowledge, herding and habitat improvement techniques. Herders had a deep knowledge on the intra- and interannual variations of forage quality and quantity. They performed well-planned herding practices. Herders improved different habitats of their pastures differently by traditional and less frequently by modern methods. We conclude that traditional knowledge of herders could be effectively used in conservation and pasture management of saline steppes.

Introduction. Nomadic, transhumant and sedentary traditional herders all perceive pasture heterogeneity, and adapt to it by driving their herds to different places at different times [2, 4]. The ecological knowledge underlying nomadic and transhumant movements is fairly well documented. In contrast, much less is known of the grazing strategies of sedentary herders. If we could under-

stand traditional herders' ecological perceptions and how they make their herding decisions based on their ecological knowledge, we may better understand resource management in pastured areas [cf. 3, 11]. Identifying the factors that affect grazing patterns may also help recognise the rationale behind heterogeneous resource use, and may provide a deeper insight into the role of the long-term factors shaping current landscapes.

In this paper, the traditional ecological knowledge and herding practices of sedentary herders of the Hortobágy steppe is introduced. We conclude with a discussion on the management implications of the findings, and emphasise the need to integrate traditional ecological knowledge into the process of evidence-based conservation management.

Study area and methods. The landscape. The Hortobágy steppe (ca. 100 000 hectars) lies in Central Europe, in the Carpathian Basin. The area occurs within the Eurasian forest-steppe belt that spreads from Mongolia to Hungary. In the Pleistocene, the area was a floodplain that gradually dried out, and became more and more saline [12]. The entire region is relatively homogeneous climatically, with an average yearly precipitation of ca. 500 mm and a mean annual temperature of ca. 10 °C. However, the subcontinental climate fluctuates heavily from year-to-year and, as a consequence, water cover on and yearly biomass of the steppe are highly variable. The main soil type on the steppe is the highly saline meadow solonetz developed over loess. The groundwater is salty, rich in soda (Na2HCO3), and the groundwater table is located at shallow depths (usually 0.5-2.5 m). The dominant vegetation is characterized by a mosaic of dry and wet habitats. The vegetation pattern of the steppe is fairly stable: salt steppes have dominated the area since the late Pleistocene [12], but river channelization in the second half of the 19th century decreased regular floods, and drainage works during the 20th century dried out many marshy depressions [8, 9].

The herders. All interviewed herders deeply roots in the herding society, as most of their known ancestors were herders. All herders interviewed were Hungarians, speaking Hungarian and all were born in the region. Most pursue a more or less traditional way of pasturing (mostly cattle and sheep pasturing). Herders spend ca. 200 days per year on the steppe, which has been sharply decreasing in the last decades (usually two herders share the job working in a 24-hours change-over). Herders learnt their herding skills mostly from their own families since their early childhood, and visited school only for 4-6(-10) years. In school, they learnt some modern techniques of agriculture, but traditional herding (which was regarded as out-dated) or the botany of the steppes were not taught to them in school. Though they posses books on animal husbandry, these do not contain local folk names of plants and habitats, and they only describe sown grasses and Nitrogen-fixing species and cultivars, as well as the management of artificially created and maintained meadows. We asked several times how often herders had read chapters on pastures and plants in these books, but we could not find a single case. They argue that they learnt nothing in school or from books on herding and pasture vegetation except artificial insemination. Their ecological knowledge reflects this "ignorance" of modern agricultural and scientific knowledge.

Data collection. Hundred-and-fifty-six herders were visited, and 92 of them were interviewed. The 27 most knowledgeable ones were interviewed at least four times (age 55-75 years, min. 32, max. 86). Interviews were recorded by a dictaphone. Original quotations of herders and vernacular names are written in italic. Ethical guidelines suggested by the International Society of Ethnobiology were followed. During the 86 field days, free and semi-structured interviews and free listings were applied. Field visits and participatory observation were made as often as possible (45 days). During herding, thorough observations and photo documentation and walking interviews were made in order to get a deeper understanding of the herders' knowledge and practices.

In total, we collected 5,149 records of plant species, 1,543 records of habitats, 1,772 records of habitat requirements and dynamics of plant species, 1,183 records of pasturing activities, and 945 records of pasture management.

Results and discussions.Herder's ecological knowledge. Herders evaluated habitats in their pastures based on productivity, salinity, wetness, soil colour, relative elevation, geomorphology, patchiness, land-use, density, and litter cover. Three main groups were distinguished: *partos* (most

important and stable pastures on higher parts), *szíkes* (saline areas that are highly variable in space and time), and *lapos* (wetlands with intra- and interannually highly fluctuating water levels). Mosaics at different scales were also named.

Herders listed ca. 90 plant taxa as important for grazing. An additional ca. 90 taxa had lower importance or were regarded as pasture weeds.

According to herders, almost all plants have a patchy distribution, though most species occur on each pasture. Herders were well aware that most species show intra- and interannual variability in abundance. As herders like to forecast pasture conditions, some fluctuating species became indicators. One of them is *Erophila verna*(L.) Chevall., which grows in large quantities on saline patches in dry springs. Its abundance is used to forecast summer pasture conditions: *if it flowers* (in large quantities), *we will have a bad year.*

Traditional pasturing. The Hortobágy is divided up into pastures (without fences!) among herds. As individual pastures are relatively small, movements are spatially highly restricted. This resulted in a well structured grazing system adapted to the spatially and temporally heterogeneous forage availability. Herders are proud of their herding skills. Herders are interested in calm grazing, as fattening and milk production depend on intake efficiency. Herders organise the daily grazing route as an ordered sequence of offered grazing patches. The year-round cycle of grazing is determined by several factors (Table 1). The number of animals in a pasture is more or less constant from year to year. As biomass production shows a high interannual fluctuation, overgrazing is usual in dry years, whereas excess grass is mown in wet years and stored for dry years. In dry years, marshes function as reserve pastures.

Not surprisingly, species and habitat knowledge of Hortobágy herders seemed to be based dominantly on utilitarian criteria. As Roba and Oba [10] emphasized, herders' understanding of their pastures combines environmental and livestock productivity indicators. Hortobágy herders used relative calmness and contentment of their animals as an indicator of pasture quality [cf. 5]. As Bollig and Schulte [1] put it: "Pastoralists are not interested in grasses as such, but only in the relation between grasses and herds".

When we asked herders what they can do to maintain/improve pasture quality, most herders answered: *you cannot do anything; animals improve it; grass always regenerates*. However, these sentences were followed by a detailed description of grazing techniques and pasture management. The most important improvement method of all is grazing itself. Manuring was only applied in the past and to the best soils around sheds, by spreading or by having the animals rest for the night farther and farther away from the shed in late summer and autumn. Only some of the weeds are removed from the pastures deliberately. Herders evaluated intensive pasture improvements by the socialist cooperatives from different aspects: meadows of *sweet* sown grasses and irrigated meadows produced high quality hay and aftermath pastures and high quantity but low quality fodder, respectively, while fertilised pastures had increased forage availability. Since intensive improvement was never economical and was also banned by the National Park, it was abandoned.

Herders had deep understanding of ecological relationships and processes, too. They regarded weather as the most important determinant of temporal change in plant growth and consequently pasture quality: *the weather decides; we cannot do anything*. The same was documented for Mongolian herders (*the grass will grow as much as it rains* [4, 6]). Like herders in Mongolia, Hortobágy herders rarely mentioned overgrazing as a major cause of changes in pasture conditions. African herders are more aware that overgrazing may also cause bad pasture conditions [10]. In the Hortobágy, decreasing stocking densities, accumulation of litter and consequently the spread of less palatable species (*Elymusrepens, Phragmites*) were regarded as the main factors in pasture degradation.

The key point in the Hortobágy grazing system is the highly developed reciprocal learning between animals and herders. Hortobágy herders take advantage of the abilities and preferences of their livestock. On the other hand, animals learn the 'logic' of the grazing method herders apply. They conform to it to minimise possible conflicts with the herder and his driving dogs. Dwyer and

Istomin [2] also found that reciprocal learning is the basis of herding in Nenets and Komi reindeer herders. However, Hortobágy herders herd at a much finer spatial and temporal scale.

Implications for Nature Conservation. The deep ecological knowledge on which traditional pasturing is based in Europe is neglected [but see e.g. 5, 11]. Although the Hortobágy steppe has been pastured for millennia, and a great portion of it was declared a National Park in 1973 where the main management type is pasturing, there are still problems in its management. To broaden the evidence base for pasture management of the Hortobágy steppe and in general the saline steppes of Europe, we suggest focusing future research on 1) the ecological effects of different traditional grazing techniques, especially rotations in different habitats; 2) the possibilities and consequences of traditional manuring; 3) the traditional use of fire to remove accumulated plant litter; 4) the alternatives of coping with the abundant biomass of meadows in spring; 5) the decision making strategies of herders and conservationists and the non-ecological factors that affect their decisions. To sum up, a more complex socio-ecological understanding is needed of the internal and external factors affecting adaptation of the Hortobágy herders to their environment and society.

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REFERENCES

1 Bollig, M., and Schulte A. 1999. Environmental change and pastoral perceptions: degradation and indigenous knowledge in two African pastoral communities. Human Ecology 27:493-514.

2 Dwyer, M. J., and Istomin K. V. 2008. Theories of nomadic movement: a new theoretical approach for understanding the movement decisions of Nenets and Komi reindeer herders. Human Ecology 36:521–533.

3 Fernández-Giménez, M. E. 1993. The role of ecological perception in indigenous resource management: a case study from the Mongolian forest-steppe. Nomadic Peoples 33:31-46.

4 Fernández-Giménez, M. E. 2000.The role of Mongolian nomadic pastoralists' ecological knowledge in rangeland management. Ecological Applications 10:1318-1326.

5 Fernández-Giménez, M. E., and Estaque F. F. 2012. Pyrenean pastoralists' ecological knowledge: documentation and application to natural resource management and adaptation. Human Ecology 40:287-300.

6 Kakinuma, K., Ozaki, T., Takatsuki, S.andChuluun J. 2008. How pastoralists in Mongolia perceive vegetation changes caused by grazing. Nomadic Peoples 12:67-73.

7 Molnár, Zs. 2012.Traditional ecological knowledge of herders on the flora and vegetation of the Hortobágy. Debrecen, Hungary: HortobágyTermészetvédelmiKözalapítvány.

8 Molnár, Zs.,Biró, M., Bartha, S. and Fekete, G. (2012): Past trends, present state and future prospects of Hungarian forest-steppes. – In: Werger, M. J. A. &Staalduinen M. A. van (eds.), Eurasian Steppes. Ecological Problems and Livelihoods in a Changing World. pp. 209–252. Springer, Dordrecht, Heidelberg, New York, London.

9 Molnár, Zs., and Borhidi A. 2003. Continental alkali vegetation in Hungary: syntaxonomy, landscape history, vegetation dynamics, and conservation. Phytocoenologia 21:235-245.

10 Roba, H. G., and Oba G. 2009.Efficacy of integrating herder knowledge and ecological methods for monitoring rangeland degradation in Northern Kenya. Human Ecology 37:589-612.

11 Roturier, S. and Roué M. 2009. Of forest, snow and lichen: Sámi reindeer herders' knowledge of winter pastures in northern Sweden. Forest Ecology and Management 258:960-967.

12 Sümegi, P., Molnár, A. and Szilágyi G. 2000.Salinization in the Hortobágy.TermészetVilága 131:213-216. (in Hungarian)

Figure 1. Herding the endemic Hungarian grey cattle by trained herding dogs (photo: ÁbelMolnár)

*Figure 2.*Traditional herding of merino and cigája sheep on a saline steppe in Hungary in a drought year (photo: ÁbelMolnár)

Table 1.

Seasonal changes in pasture use in the Hortobágy steppe according to herders.
Original quotations are in italics

Periods	Recent and past methods of pasturing, pasture types used
December – February (winter)	late autumn, winter and early spring grazing had been limited and practiced only in shortage periods; *in November nights are cold, the pasture is muddy, later the grass becomes frozen, but they can find something to eat even under the snow* (now winter grazing is banned); *in February, if the grass is as big as an oat grain, the sheep does not starve, we went out to the steppe*
March – April (early and mid spring)	usually sheep goes to the pasture in mid or late March, the cattle in mid or late April; *first we had to get them used to each other; we forced them to eat not just walk; first the areas higher* (on the gradient) *were grazed*, areas that were manured regularly, *Hordeum was eaten up totally; meadows and marshes were not yet grazed, saline areas were also often wet; as time passed we grazed further and further from the shed, as grass decreased around it*
May – June (late spring – early summer)	*rain in May made grass strong, animals fattened; the weather was good, and there were no mosquitos and horse flies; we went to places where the place 'caught' the animals; in dew we kept them inside, as they would only trample grass; herders always walked in front or among the animals to prevent running, to force them to eat; as water withdrew from meadows and marsh edges, Alopecurus and Trifolium grew, we started to graze those places; hay meadows were protected from grazing*
July – August (mid and late summer)	*summers were droughty, grass was dry, and was grazed to the earth, animals ate the dry grass, they grazed till midnight, and licked the earth; marshes gave the chance of life, but even marshes were cleaned up; rotation was abandoned, we went where there was some grass left; however, four days after a summer rain grass started to grow, the steppe became green, meadows also; in a wet summer, the situation was not much better, the grass was weak and animals did not drink on it* *from mid summer onwards, we were allowed to go from the steppes to stubbles of wheat, and barley, where Polygonumaviculare, Setaria grows; if sheep grazed on stubbles, it gave more milk; meanwhile steppes started to regenerate; we grazed the steppes in the morning, and went to the stubbles in the afternoon, but since the revolution* (1989) *stubbles are not given to us; now, however, that Ambosia has to be irradicated, again we get more stubbles to graze Ambrosia off*
September – October (November) (autumn)	*rains in August produced the good autumn grass, we went back to the area around the sheds, but stubbles were also grazed (corn and sugar beet), later frozen alfalfa fields and dense barley fields; cattle went home in early November, but in the past they were kept on the pastures till the first snow; sheep stayed longer in November, also grazing cattle pastures, and aftermath on hay meadows; as grass became weak in November we gave extra fodder for the animals (hay or straw), to prevent diarrhoea; cattle were always hungry, were running away, nights were too long for them, they did not want to stay on the resting place*