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Nature-Friendly Methods in Agriculture in Hungary

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Abstract: Nature-friendly agriculture has contributed to the existence of an extraordinarily rich wildlife within the Carpathian Basin for centuries. Extensive grazing of livestock maintained grassland, while small-scale crop farming provided an adequately diverse range of habitats for many species. By today, trying to keep up with growing food demands, intensive agricultural practices have become dominant. These regard land simply as a resource for food production. Machines and mechanization revolutionized agriculture. Agro technology develops at an overwhelming speed: machines are getting faster, bigger and more and more automated. Keeping up with the speed of these changes is an almost impossible challenge for wildlife.

Key words: Agriculture · Nature-Friendly · Wildlife · Biodiversity · Sustainable Agricultural

INTRODUCTION

History, Paradigms, Conservationists: In Hungary, during the preparation of Natura 2000 conservation plans in nature conservation planning processes, there was an example of "social consultation", the involvement of local people, and ensuring participation in the planning process [1].

The understanding and at the same time the perception of the concept of participation is fundamentally influenced by how the professional socialization of nature conservation workers developed. Based on their academic and work experiences, what do the relevant members consider to be valid knowledge, who do they consider to be legitimate actors in the field of nature conservation, and along which dimensions do they think when faced with the challenges of nature conservation [2-4]. Foreign experiences show that the majority of nature conservation workers arrive in the field armed with natural science knowledge, but few receive a social science (or even philosophy of science) perspective within the framework of institutional education [4, 5].

In recent decades, changes in the scientific knowledge system shaping nature conservation have had fundamental and profound consequences for nature conservation planning and management [6,7]. This change had a significant impact on our perception of ecological systems and the role of humans in them.

In the scientific field of ecology, the dominant equilibrium paradigm was replaced (or perhaps it is more correct to say transformed, modified) by the non-equilibrium paradigm starting in the 80s. Standovar *et al.* [6], explain in detail the consequences of this paradigm shift in nature conservation management in their book (pp. 391-394).

In many cases, the findings and suggestions derived from the equilibrium paradigm were contradicted by the results of field observations and nature conservation interventions (or non-interventions). As Bartha [8] emphasizes, the "role of landscape-scale vegetation dynamic constraints", i.e. the effects coming from outside the association (e.g. the distance to the propagule source) proved decisive in the studies regarding the dynamics of the associations that were previously considered a closed system. In addition, in many cases, the protected and closed areas did not return to the target state considered "equilibrium" in the absence of human activity, but their condition continued to deteriorate despite strict protection [8]. From the 1980s, the equilibrium paradigm was replaced (partially integrated) by the non-equilibrium paradigm, which emphasized the examination and understanding of processes instead of states [9]. According to the non-

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equilibrium paradigm, ecological systems are considered to be open systems far from equilibrium, where local processes are not independent of the processes and changes taking place in the neighborhood of the object, and disturbances are part of the system [10, 11]. According to this approach, the system may unexpectedly enter a new state as a result of disturbances, and any "equilibrium state is only a temporary product of observation, not an inherent property of the system" [12].

In accordance with the world view of the non-equilibrium paradigm, the processes taking place in nature are often non-linear, non-deterministic, the following changes cannot be predicted with complete certainty - in other words, ecological systems show the properties of complex adaptive systems [9,13].

The concept of the social-ecological system (SES) was created in a novel approach to the relationship between man and nature, which treats society and the ecological system as a common, multi-level and complex system [14, 15].

This change of attitude also took place and is taking place in domestic nature conservation: in the 1990s, domestic nature conservation biology emphasized the raison d'être of active nature conservation management planned and implemented by professionals, and the importance of the protection of living communities and landscapes in addition to species-level nature conservation [16]. However, the integration of people into the goals and activities of nature conservation has become an increasingly stated and expressed goal. Some Hungarian nature conservation specialists now firmly believe that nature conservation protects the interests of humans, who are an inseparable part of the living world, through the protection of plant and animal communities, since the rarefaction of sensitive species and living communities protected by nature conservation is usually caused by effects that in the case of their continued existence (especially their strengthening), they also strongly destroy the living conditions of human society [17].

Sustainable Management: In Europe, wildlife connected to agricultural land-scopes decline at the most alarming rate: in the case of bird species, this decline was almost 60 % during the past 40 years. Previously common species-such as the partridge- are now on the brink of extinction, while small game populations, as well as those of important pollinators, including the honeybee, and have severely decreased.

The causes of biodiversity loss are complex. We can be quite sure, however, that the use of artificial fertilizers and other agro-chemicals, the loss of crop diversity coupled with growing field size and a rise in mechanization are definitely important factors.

Along with increased production came the increased proportion of waste, too. In Europe, one third of all produced foodstuffs ends up in the bin. More efficient and more balanced distribution of food is important, but so is the way of production.

The first step towards sustainable agriculture is the recognition of agricultural land not only as space for food production but also as habitats. These two are in fact inseparable, as biodiversity and the renewal of natural resources are the very foundation of sustainable agricultural production.

As opposed to common belief, the loss of production efficiency is not inherent of nature – friendly farming. Micro habitats such as lines of trees and bushes, hedgerows, bulks, homesteads and wetlands provide a multitude of species with habitat to forage, hide, reproduce and move about in. An adequate proportion (about 10-14 %) of long-term fallows ensures the regeneration of wildlife.

Agricultural practices such as set asides and habitat created for pollinators increase the resilience of farms in the face of environmental challenges and are beneficial for their productivity. This, however, necessitates cooperation among consumers, nature conservation and agricultural stakeholders. These groups are not antagonists as it is our common wish to live in a healthy, existentially fulfilling environment that can be preserved for future generations, too.

Nature Conservation-Oriented Timing of Mowing: Almost two-thirds of our homeland is cultivated and 15% of this portion is grassland (a total of 800,000 hectares). Grasslands are valuable habitats and 60% of their total area belongs to the Nature 2000 network. In these habitats, the protection of wildlife and biodiversity is almost exclusively dependent on grassland management practices. The skyrocketing development of agricultural technologies and novel methods increase efficiency, but they drastically decrease the chances of survival for many populations.

If the rich ecosystems of cultivated grasslands are to be maintained, those technologies that are not only economically viable must be chosen, but also let wildlife survive. The harmonization of the two aspects is of key importance for the sustain ability of priority species.

From the aspect of nature conservation, grazing is the optimal grassland management. Mowing in fact is a drastic intervention for these ecosystems. Mowing causes dramatic changes in the habitats, literally within seconds. Most bird species make their nests and rear chicks between the beginning of April and the end of June. Populations that nest in mowed grasslands are in extreme danger. This, the timing of mowing is critically important for them. Should the farmer decided o postpone mowing after this sensitive period, significant losses may be avoided. Based on the occurrence, habitat requirements and life histories of grassland-dwelling birds, nature conservation professionals prepared recommendations and regulations for methods and timing of grassland management activities in valuable habitats. Land users must report the timing of mowing to the local national park directorate at least 5 days in advance. Writing this report is simple and quick. Also, it is worth getting in contact with the local ranger before sending the report, as the ranger can communicate the locality and actual state of natural assets and this on optimally selected date can then be reported.

Earlier, haymaking by manual scything was a gradual process that could take weeks. This process created grassland patches in varied states that provided shelter and foraging habitat for a wide range of animals and plants. The following regulation targets the creation of a similar situation: Unmoved patches of grassland must be left in varying locations in a certain proportion. These patches or shelter belts provide opportunities for more sensitive species of plants and animals to subsist in them.

Mowing must proceed from the centre towards field edges; these animals can find refuge in field margins or within the shelter belts. Confining animals into isolated inlets must be avoided.

Unmoved shelter belts must be at least 6 meters wide and possibly adjacent to field margins or bushes uncultivated grassland outside the field. Shelter belts should not be further than 80-100 meters from each other.

Managing Nature 2000 grasslands may be compensated by specific payments, but requirements must be met even if the farmer does not apply for such support. The protection of natural riches in grasslands depends upon the attitudes and knowledge of farmers and, eventually, also in the hands of those who work the land. This, this is our common responsibility for the sake of future generations.

Plastic is everywhere - and agriculture is not an exception. Bale strings are often used by nest-making birds and commonly cause death by anchoring the unfortunate animals to the nest forever. Whole bale wrapping is an adventitious technology which improves fodder quality, but is extremely harmful in terms of grassland wildlife. This technology irreversibly and almost completely removes not only insects, but also small vertebrates from the mowed area and nature conservation authorities do not recommend this. The grassland is a renewable resource that may well and promptly be destroyed by over exploitation and artificially wound up yields that eventually present a financial loss for the farmer. It cannot be emphasized enough that the mode and intensity of grassland management should be adapted to site characteristics, without exploiting the area.

RECOMMENDATIONS

Fortunately, with a little attention to detail, and by complying with the simple rules of nature conservation, direct losses are easily minimized. This contributes to the long-term survival of animal populations from hares to great bustards.

CONCLUSION

Compared to grazing, mowing with modern technologies is a merciless way of using grasslands. If grazing is not an option, applying informed and best practice grassland management can still support wildlife. Close cooperation among farmers and nature conservation bodies and being mutually open-minded ensures the conservation of biodiversity. Everyone can contribute to the preservation of our rich grassland biodiversity. Act in favour so the great bustard and wildlife in general, so that this iconic bird of the plain does not become a postcard memory.

It's high time to realize that the irreversible loss of diverse natural habitats is much too large a sacrifice. In order to safeguard the natural assets of grasslands, we must find humane forms of land use that are adapted to each specific location. Nature conservation regulations serve exactly this purpose.

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