ZAMĚŘENO NA PŘÍRODU

MILITARY LIFE FOR NATURE

AFTER LIFE PLAN
MILITARY LIFE FOR NATURE

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Contents

Introduction 3
Project sites 4
Initial state, project activities and their results 9
SWOT analysis 17
After LIFE plans 18
Main follow-up activities in the field of public awareness and outreach 25

Introduction

Military areas are comparable in importance to the most valuable Czech protected areas; mainly due to the occurrence of nowadays rare non-forest habitats, such as dry grasslands, heathlands, wetlands or even sand dunes. These habitats have been preserved here due to the absence of urbanization and industrial agriculture, as well as due to the army activities. The activities of soldiers in the field unintentionally simulated natural processes for many decades – the so-called disturbances, which otherwise disappeared from the cultural landscape. Disturbances generally disrupt the established state of the ecosystem, prevent the gradual overgrowth of the landscape and thus ensure the constant restoration of non-forest habitats. Infantry, heavy vehicles, and exploding ammunition shaped the landscape just like herds of large ungulates, natural landslides, windthrows, and fires once did.

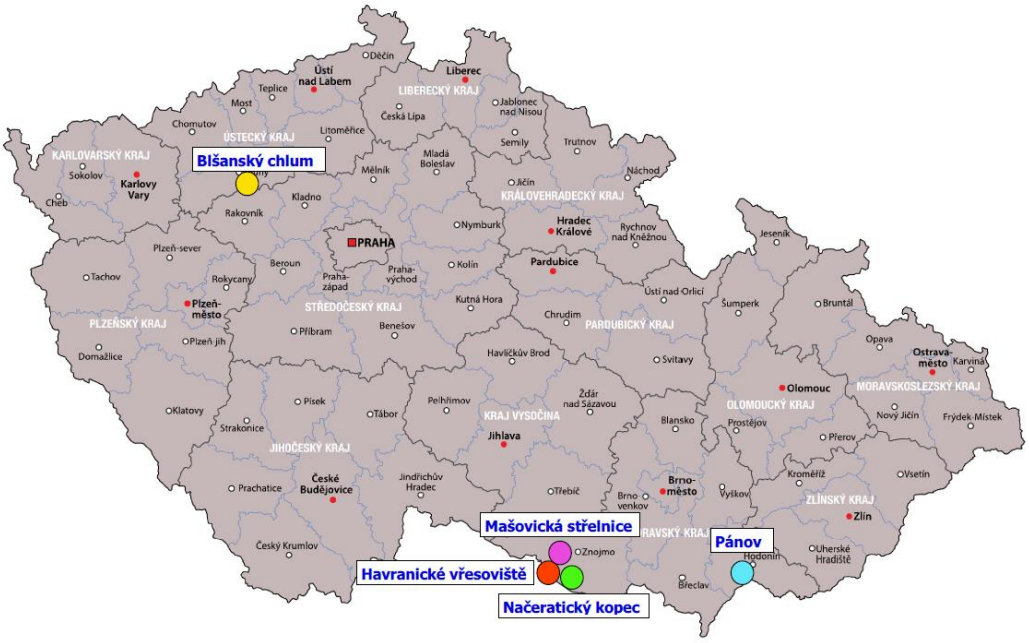
The aim of the Military LIFE for Nature project was to provide management of five biologically extremely valuable sites in the Czech Republic, which were formed in the past by military training: Načeratický kopec near Znojmo, Pánov near Hodonín, Blšanský chlum, and Mašovická střelnice together with Havranické vřesoviště. For this purpose, four management methods were selected, which are being introduced in the Czech nature conservation: heavy and military equipment activity, motocross, free grazing of sheep and goats and grazing of „wild“ horses. The advantage of these approaches is, on the one hand, that they make it possible to create much-needed heterogeneity in the environment. On the other hand, they can also be effective in large areas, such as military areas, often at relatively low financial costs, especially with the involvement of local communities. The project also sought to raise public awareness of the natural significance of abandoned military areas and the involvement of local people in the management of these sites.

The Military LIFE for Nature project was launched in September 2016 with a five-and-a-half-year implementation period. Its main researcher was the professional conservation organization Beleco. The company Wetland, which specializes in environmental protection projects, has taken on the role of project partner in carrying out extensive remediation interventions in Pánov. Other partners in the project were the organization Česká krajina, which provided grazing of wild horses in Mašovice and Havraníky, and the Ministry of the Environment of the Czech Republic.

This document proposes ways of follow-up care of the project sites and summarizes the possibilities of follow-up awareness-raising activities and outreach to the public. The After LIFE Plan is based on the results achieved within the project, which are briefly described in Chapter 3. The SWOT analysis identifies key points that have been taken into account in the aftercare and outreach proposals. These proposals are then the subject of chapters five and six.

Project sites

The project covered five sites, four of which (Pánov, Načeratický kopec, Mašovická střelnice and Havranické vřesoviště) are located in the South Moravian Region and one in the Ústí nad Labem Region (Blšanský chlum)



Two of the sites (Mašovická střelnice and Havranické vřesoviště) are part of the Podyjí National Park, the remaining three sites are protected as natural monuments. Basic information on the project sites is summarised in Table 1.

TAB 1. Basic information about the project sites

Project site	Area	SAC	Way of protection	Region	Municipality
Pánov	87 ha	Hodonínská doubrava	Natural monument	Jihomoravský	Hodonín
Načeratický kopec	131 ha	Načeratický kopec	Natural monument	Jihomoravský	Znojmo
Mašovická střelnice	78 ha	Mašovická střelnice	National park buffer zone	Jihomoravský	Mašovice
Havranické vřesoviště	25 ha	Podyjí	National park	Jihomoravský	Havraníky
Blšanský chlum	18 ha	Blšanský chlum	Natural monument	Ústecký	Blšany u Loun, Chlumčany

Pánov

It is a triangle-shaped area wedged between the forest stands of Hodonínská doubrava. It is located at an altitude of approximately 200 m above sea level. From a geological point of view, it is a slightly undulating dune formed by Pleistocene windblown sands, while only some depressions reveal underlying clays and marls. Shallow lakes naturally form in these depressions, which, in combination with the sand dunes, give the whole area a unique character.

The presence of open, previously grazed sand areas has a long-term continuity. The most biologically valuable is the occurrence of populations of species associated with the free substrate or very sparse xerothermic grasslands. Rare, species-rich Pannonian sand steppes are spread especially in the southern half of the site. In disturbed places with a suitable base, there are no less important habitats of open grasslands of continental dunes with grey hair-grass and bent-grass. Not only many rare plant species, but also many endangered invertebrate species are associated with these habitats. For some of them, the last remnants of windblown sands in the Hodonín region are their last place of occurrence in the Czech Republic.

The land is owned by the Hodonín municipality. The site is located in close proximity to the outskirts of Hodonín (Pánov). The site is not used for any commercial activities. A motocross track has been set up on a small part of the training ground on an area of 2 ha. Several smaller facilities operated by local sports and hobby clubs and associations are adjacent to the site: archery, paintball, shooting range.

Remains of military buildings at Pánov (Foto: Karel Šimeček)

Načeratický kopec

The abandoned training ground is located about two kilometres southeast of Znojmo on a dominant elevated plateau bordered on the northern side by Šibeník hill (276 m a.s.l.) and on the southern edge by the top of Načeratický hill (290 m a.s.l.). It is an "island mountain", which is a remnant of tertiary weathering of granite massif. The area of the site is 131 ha.

The area is mostly covered with a mosaic of dry grassland with shrubs. In many places, especially in the parts most affected by military equipment in the past, shallow ranker soils have been created with an exposed rock base. A unique vegetation of acidophilic dry grasslands grows in these parts, which in some places change into narrow-leaved steppe grasslands with *Stipa*. As with many other steppe sites, however, there is a gradual mesophilization of the stands and the spread of competitively strong grasses: false oat-grass (*Arrhenatherum elatius*) and wood small-reed (*Calamagrostis epigejos*). Large parts of the site are overgrown with black locust.

The land is owned by the Znojmo municipality. The site is used for grazing goats and sheep by a small farmer.

Dry herb-rich grasslands are attractive for visitors (Foto: Beleco)

Mašovická střelnice

The former training ground of Mašovická střelnice, with an area of 78 ha, is located on the southern edge of the village of Mašovice, east of the town of Znojmo. The interesting part of the site, covering 28.5 ha, is located in the southern and eastern part of Mašovická střelnice SAC, about 1 km south of Mašovice. The geological basis of most of the area is loess; only in the eastern forested tip is the base crystalline, in the form of biotite granite of the Dyje Massif. The training ground is located at an altitude of about 400 m a.s.l. The area is dominated by thermophilous broadleaved dry grasslands with scattered shrubs and self-seeding trees, with a significant occurrence of orchids in places. In the eastern part there is a slightly different, acidophilic type of dry grasslands, also with a significant occurrence of orchids.
The land is owned by the state, the management jurisdiction is held by the Podyjí National Park Administration. Some parts of the former shooting range are used for small agricultural activities, mainly for harvesting grass by local farmers. The remaining part, including the areas included in the project, has not been used in any way.

Havranické vřesoviště

The project site is part of a large complex of heaths, dry grasslands, and post-agrarian fallow land stretching between Znojmo and the village of Hnanice, on the eastern edge of Podyjí NP. The area of interest, covering 35 ha, is about 1 km west of the village of Havraníky, near Staré vinice elevation point (339 m a. s. l.), in zone C of the National Park – i.e., intensive management zone. It has the form of a slight southern to southwestern slope. The altitude ranges from 290 to 340 m a.s.l. The geological subsoil is formed of acid granites of the Dyje massif. In some places, the substrate is enriched with calcium due to a cover of loess. Climatically, it is a warm, rain-poor area. The site is covered by a mosaic of several types of vegetation, with large representation of dry heaths and dry grasslands. There is no similar type of heathland vegetation anywhere else in our country; although there are larger heathland sites, none of them is located in the Pannonian region. In addition to these unique habitats, part of the area is also covered with mesophilic mowed meadows and tree stands, with a predominance of pine and false acacia. Non-forest greenery is mainly represented by scattered pines, oaks, plum trees, cherry trees, and field maples. In some places, habitats are degraded by invasion of wood small-reed and overgrown stands of rose and blackthorn.

About half of the project site is owned by the state and management is under the responsibility of Podyjí National Park. The remaining half is owned by the village of Havraníky. The site is frequently visited by tourists; there is one of the most important hiking and cycling trails on the northern border of the project site and part of the site is crossed by a marked trail for horse riders. Parts of the sites with forest stands (black locust, pine) are continually being transferred to more valuable conservation types of vegetation (e.g. oak forests, or conversion to non-forest habitats). Municipal plots with the occurrence of woody plants serve as an occasional source of firewood. In several places there are monitoring areas (fenced) established for long-term study of vegetation and butterflies (light trap).

Blšanský chlum

The former training ground is located southeast of Louny near the village of Blšany u Loun. The site is in the form of a short ridge consisting of neovolcanic inselbergs of Blšanský chlum (293 m a.s.l.) and the southward-situated Malý chlum (283 m a.s.l.) and the adjacent slopes. The area of the site is 18 ha. The southern slopes of both volcanic hills and the summit of Blšanský chlum are covered with sparse rocky steppe vegetation, which towards the foot is followed by a wide strip of stratified self-seeding woody plants, sometimes replaced by degraded dry grasslands in the undergrowth of abandoned cherry orchards.

The project site is not used for any commercial activities. The land in the area of the site is owned by state organizations, local governments (the municipalities of Blšany u Loun and Chlumčany) and private owners. A photovoltaic power plant has been built in the immediate vicinity and the construction of family houses is in preparation.

Blšanský chlum is popular thanks to its views of the České středohoří na České středohoří (Foto: Beleco)

Initial state, project activities and their results

The aim of the project is to test and demonstrate various types of management that will ensure the long-term management of former training grounds and shooting ranges in an economic way. An important part of the project are extensive remediation interventions aimed at suppressing the negative consequences of vegetation succession taking place in individual areas since the termination of military activities.

Pánov

The former Pánov training area is located on the edge of a large body of Bzenecko-Hodonín windblown sands. In contrast to the xeric sands of Bzenecko, the height of sand dunes on the site is significantly lower and the sands alternate with shallow waterlogged clayey depressions. Historically, the area was forest-free and probably maintained by grazing and, at the latest from the mid-19th century, also by military training, which was intensive after World War II and based on movement of heavy machinery.

The site is one of the most important sand areas in the Czech Republic with the occurrence of a number of endangered species with a large proportion of psammobiont specialists. After the end of military training in the early 1990s, there was a gradual and ever-accelerating overgrowth of the site with self-seeding woody plants, especially aspen (Populus tremula) and silver birch (Betula pendula), and a rapid development of invasive trees – false acacia (Robinia pseudoacacia), tree of heaven (Ailanthus altissima), black cherry (Prunus serotina). Steppe grasslands on the sand were gradually degraded by the invasion of wood small-reed (Calamagrostis epigejos) and non-native goldenrods (Solidago sp. div.). Around 2015, open habitats occurred on approximately half of the area, with only about 20% of the total area being quality target vegetation of sand grassland, with the former steppe lakes completely having disappeared.

As part of the LIFE project, continuous stands of self-seeding woody plants were removed on 24 ha, including the stumps. In these areas, and on another 10 ha of continuous stands of wood small-reed, the upper layer of soil was removed. Military equipment driving was used on most of the training area.

From the very beginning, the Military LIFE for Nature project in Pánov aimed at restoring already overgrown and degraded sand habitats. Its main benefit was the reopening of these habitats, the restoration of their oligotrophic character, and thus enabling the restoration of their psammophilous communities. The priority for the hitherto preserved, botanically valuable sand steppe habitats was to keep them in a stable condition so that they could serve as a source of seeds and animals of the protected species inhabiting the newly restored areas. Therefore, disturbance management has not been applied to these habitats to a significant extent, although it will certainly be desirable for their conservation in the future.

In the first years, the target species of sand grasslands began to spread successfully to the restored habitats, where trees were cut down, stumps removed, and the topsoil was removed; for example, the critically endangered campion species Silene viscosa or grey hair-grass. Intensive disturbance intervention (topsoil removal) has also led to a recovery of the critically endangered Polycnemum arvense after more than 40 years, in a promising population of several dozen individuals.

During the project, the occurrence or support of some important animal species was also restored at Pánov. Nightjar has returned here as a nesting species. Currently, two to three pairs probably nest in the area. Regular monitoring of moths has shown a significant increase in the spurge hawk-moth population. At the beginning of the project, only individuals were captured within the monitoring; between 2020 and 2021, there was a significant increase in the population.

The removal of woody plants led to the restoration of shallow steppe lakes (probably by eliminating the transpiration of water by woody plants). In particular, the lake (wetland) in the central part of the former training ground is becoming a very important habitat for wetland organisms. Two years after its emergence, important species have appeared here (reproduction of several species of amphibians, the emergence of a species-rich community of wetland Orthoptera, the resumption of the occurrence of critically endangered common bladderwort, and others).

The final state of Pánov. (Foto: Beleco)

The re-emergence of pools and wetlands also meant development for amphibians, including the tree frog (Hyla arborea). (Foto: Beleco)

Načeratický kopec

This former military training area, covering approximately 130 ha, is located on the south-eastern edge of Znojmo on a flat knoll formed by granitoids on the edge of the Bohemian Massif. Historically, it was a typical section of the cultural landscape of southern Znojmo, with a mosaic of steppe pastures, fields, and orchards. After World War II, a training area was established here, designed mainly for the training of tank and IFV drivers, thanks to which the area was maintained in an almost forest-free state and continuously provided optimal conditions for a wide range of steppe plant and animal species.

The site character began to change fundamentally in the 1990s, when operation of the training area ceased. As a result of massive reduction in the intensity of disturbance, which was limited to occasional motorbike riding, the area began to overgrow with shrubs and competitively strong grasses. In some places, black locust (Robinia pseudoacacia) stands expanded, supplemented locally by tree of heaven (Ailanthus altissimae). Along with the declining area of open steppe communities, conditions for the most valuable steppe biota from the conservation point of view have deteriorated radically.

The interventions implemented within the Military LIFE for Nature project therefore focused primarily on increasing the amount of open habitats. Continuous shrubs were removed on 37 ha and false acacia stands on another 12 ha. As additional restoration interventions, heavy vehicle movements were carried out on approximately 5 ha previously overgrown with shrubs, and mechanical suppression of wood small-reed (Calamagrostis epigejos) on another 5 ha.

In 2016, the Regional Office of the South Moravian Region allowed the construction of a motocross track in the central part of the site. During the construction of the track, one compact wood small-reed stand was removed, with the help of heavy machinery, and then motorcycle riding started here. The measure was monitored in the following years, especially in terms of vitality of the wood small-reed stand at the original site and monitoring of new occurrences that could potentially arise at the site in connection with the movement of soil substrate (and the potential scattered wood small-reed populations with it) around the site.

Goat and sheep grazing is a key management technique that will play a crucial role in the future of the site. This is carried out on Načeratický kopec in the traditional form, where the herd is led by a herdsman and herding dogs, moving freely throughout the site. Compared to conventional fenced grazing, it is thus possible to sensitively adapt the intensity of grazing to local needs and thus achieve a better effect on subjects of protection.

Sheep and goat grazing have proven to be crucial to keeping the steppes in good condition. Thanks to large-scale grazing, the open areas of Načeratický kopec have gradually acquired the character of long-standing traditional pastures with edible forms of hawthorns and structurally diverse grass and herbaceous stands, where ungrazed areas alternate with intensively grazed places and bare soil. Restoration of overgrown steppe grasslands and their subsequent grazing have significantly supported the population of many conservation-important species, such as greater pasque flower (Pulsatilla grandis).

Intensive heavy machinery movement has proven to be particularly effective in suppressing shrub regrowth. Areas after cleared shrubs, which have been repeatedly disturbed by tanks, are successfully developing towards disturbed steppe grasslands with a typical occurrence of the hollyhock species Alcea pallida. Here, too, conservation-important species are already found, such as night-scented stock (Hesperis tristis).

As far as motocross is concerned, fauna monitoring has shown that a number of rare steppe species spread directly to individual terrain features, such as feather grasses, night-scented stock Hesperis tristis), bur forget-me-not (Lappula squarrosa), or broom-leaf toadflax (Linaria genistifolia). In addition, track edges and recently abandoned tracks are an important habitat for oligotrophic disturbed soil species, such as cudweeds, critically endangered knotted clover (Trifolium striatum) and, most importantly, one of the most important species here – critically endangered giant needleleaf (Polycnemum majus). It was found in 2020 on another micro- site in the north-western part of the area together with knotted clover (Trifolium striatum).
During the project, endangered species of butterflies were supported – Baltic grayling (Chelis maculosa) and chaste pellicle (Watsonarctia casta). In the first half of the project, only individuals were captured in the first half of the project (only in the climatically favourable year 2018 the abundance of chaste pellicle was exceptionally high); between 2020 and 2021, there was a significant increase in population, especially of Baltic grayling. This is a critically endangered species in the Czech Republic and Načeratický kopec is one of its few sites of occurrence. Both types are indicators of changes that occur at the site as part of the project. Similar population changes can be expected for other invertebrate species with similar habitat requirements.

The resulting landscape character of Načeratický kopec – grazed steppes with unevenly distributed woody plants forming a heterogeneous habitat mosaic on a scale from exposed soil to mature stands. A motocross track is visible in the rear part on the right. (Foto: Beleco)

Mašovická střelnice a Havranické vřesoviště

At the time of the beginning of the Military LIFE for Nature project, Mašovická střelnice was degraded by many years of spontaneous development of herbaceous communities due to the absence of blanket management. Apart from a few small areas, where Podyjí NPA carried out local interventions at considerable cost (such as mowing, occasional sheep grazing, or clearance of self-seeding woody plants), most of the site was overgrown with a few dominant grass species and shrubs (especially roses and blackthorns). Part of the area was regularly mowed for hay by local tenants. The area of the existing pasture showed low flowering and a tendency to further overgrow with woody plants.
Havranické vřesoviště was in a similar initial state; the difference was in a significantly larger overgrowth of shrubs, especially roses, and to a large extent also geographically non-native false acacia (*Robinia pseudoacacia*).

Two grazing areas were created within the project: Mašovice (25 ha + 3.5 ha of seasonal pasture with an important occurrence of orchids) and Havraníky (35 ha). Eleven Exmoor ponies were purchased in the UK. Permanent grazing of this undemanding breed has been underway since May 2018. The grazing is aimed at protecting heathland, dry grassland including areas with orchids and greater pasque flower. In addition to non-woodland habitats, over 12 ha of woodland is grazed on both sites together. More than 2 ha of black locust have been eradicated using the herbicide drilling method, and expansive woody plants are being removed from the pastures from 2020.

The grazing of wild ponies in both sites met the project's objectives. Plant biomass, including old grass, was removed, thus creating the conditions for the restoration of herb richness. Formerly dominant grasses in most parts of the sites have receded due to permanent grazing. The original homogeneous, partly species-depleted stands have been replaced by flowering meadows, where the seasonal aspects and structural heterogeneity of non-forest vegetation are beginning to show. There has been removal of competition from herbaceous communities for the spread of nectar-bearing herbs and rare herb taxa, as well as invertebrates associated with them, including butterflies and other groups of pollinators.
Chronologically, the development of non-forest vegetation was as follows. In the first two vegetation seasons, i.e. 2018–2019, there was the aforementioned loss of grass biomass, disappearance of old grass, and formation of the first areas of short-stemmed grasslands. Grazing created the necessary habitat mosaic, which in the following years spread to the entire area of wild pony pastures within Podyjí NP. From the third vegetation season (2020), there was an overall restoration of species-rich herbaceous grasslands with a high proportion of rarer taxa, whether it is field cow-wheat (*Melampyrum arvense*), or spiked speedwell (*Veronica spicata*). The project target species also include the endangered and legally protected greater pasque flower (*Pulsatilla grandis*, VU), which has one of the most numerous populations in the Czech Republic at Havranické vřesoviště. Thanks to the fact that year-round grazing has created sunlit short-stemmed grasslands without old grass in these places, the much needed habitat has been created to ensure the long-term suitable conditions for maintaining a prosperous population of the greater pasque flower.
Another of the target species of the project, the green-winged orchid (*Anacamptis morio*, CR), reacted similarly positively to the introduction of grazing. Since the second year of grazing, the richly flowering and fruiting vegetation at Mašovická střelnice has indicated a positive development; however, it is still early to assess the overall impact of grazing on this species, as the habitat with these orchids, as part of the gradual expansion of grazed sectors, has been grazed for the first time only since the winter of 2019/2020.

Exmoor ponies grazing in Podyji Nationa Park. (Foto: M. Jirků)

The third vegetation season (2020) saw a renewal of species-rich flowering grasslands with a high proportion of rarer taxa. The picture shows a flowering rocky steppe on a Havraníky pasture. At this point, a significant proportion of field cow-wheat (Melampyrum arvense), spiked speedwell (Veronica spicata), and knapweed in the background are evident in the stand.. (Foto: M. Jirků)

Blšanský chlum

The former training area is located on the eastern edge of Louny and consists of two geomorphologically and geologically different parts – a narrow ridge formed by neovolcanic outcrops and an adjacent plateau built of Cretaceous siltstone. The dominant type of vegetation is various types of dry grasslands with a number of typical plant species. However, the area is valuable mainly for the occurrence of rare and endangered invertebrate species associated with open steppe grasslands. The current site's area of interest is about 30 ha.

The military training area at Blšanský chlum was active from the 1950s to the early 1990s. From a biological point of view, the most important activity was the use of heavy tracked vehicles (tanks and IFV), thanks to which the training area was kept in a completely forest-free state and there was a dense network of tracks. At that time, the area provided optimal conditions for many rare invertebrate species associated with early successive habitats.

After training ended, the area began to overgrow with self-seeding woody plants, including a number of invasive species bladder-senna (Colutea arborescens), common laburnum (Laburnum anagyroides), Tatarian honeysuckle (Lonicera tatarica), false acacia (Robinia pseudoacacia), meadowsweets (Spiraea spp.); at least some of them were probably intentionally planted in the area. Due to the absence of management, succession processes have gradually led to a dramatic reduction in the amount of open steppe vegetation and, as a result, to a deterioration in conditions for the most important species from a conservation perspective.

The interventions implemented within the Military LIFE for Nature project therefore focused primarily on the restoration of steppe communities. Continuous stands of shrubs and false acacias were removed on 7 ha of priority areas. The key maintenance, on which the future management of the site will be based, is sheep grazing, which currently takes place on 13 ha.

The introduction of grazing significantly helped the restoration of steppe grasslands. Where the open character of the habitats was still maintained at the beginning of the project, after five years of grazing, the grasslands acquire the character of long-standing traditional pastures with structurally diverse grass and herbaceous stands, where ungrazed areas alternate with intensively grazed areas. This creates low flowery steppes with thyme and the milk-vetch species Astragalus austriacus, especially around the main peak of Blšanský chlum. On the slopes, where the shrubs were removed, large areas with bare soil were created. Here, the pasture has created heavily disturbed sunlit steppe habitats, where thermophilous, currently rare weeds of traditional agriculture, such as summer pheasant's-eye (Adonis aestivalis) or Roman wormwood (Artemisia pontica) thrive. Brown nonea (Nonea pulla), which is typical of pastures, also grows here.

During the project, the subject of protection – Jersey tiger – and the critically endangered species of butterfly – chaste pellicle – were supported. At the beginning and during the first half of the project, the Jersey tiger occurred in a numerically weak population on the verge of observability. It was not captured between 2017 and 2019 during the capture of butterflies and moths carried out every year at stationary points. Due to habitat changes, the number of populations increased and in 2020 and 2021 it was also recorded as part of monitoring (nine and three individuals, respectively). The results indicate stabilization of the species at the site. A significant increase in the number of populations also occurred in the chaste pellicle, which is probably the most important butterfly species on the site. At the beginning of the project, only individuals were captured within the monitoring (the number was higher only in the climatically favourable year 2018); between 2020 and 2021, there was a significant increase in the population.

Both species are indicators of changes that occur at the site as part of the project. Similar population changes can be expected for other invertebrate species with similar habitat requirements.

A mixed flock of sheep and goats maintains a mosaic of short-grazed grass, bare areas, ungrazed areas, and solitary trees. (Foto: Beleco)

Intensively disturbed semi-vegetated steppe grasslands were eventually created on these slopes under the influence of grazing. (Foto: Beleco)

SWOT analysis

Strenghts

- Thanks to the interventions carried out within the project, the desired changes have been initiated.
- Model areas have been created which have the potential to be an example for other places.
- Good relationships with local stakeholders (landowners, nature conservation authorities, local residents, NGOs, etc.) have been established. Local stakeholders have been involved in conservation management.
- Leisure time activities can be used for conservation management (motocross at Pánov and Načeratický kopec).
- Possibility of connecting the necessary conservation management with small scale farming (sheep and goat grazing).
- Good cooperation on local level (regions, municipalities, land users).
- Natura 2000 protects against undesirable plans (development projects, etc.).
- Revitalisation of sites and increased interest of public.

Weaknesses

- Difficult eradication of invasive plants (black locust, tree of heaven), which requires consistent repeated interventions.
- Relatively strong influence of weather on vegetation in different years - it is difficult to plan in advance the optimum extent of interventions needed (herd size, etc.).
- Some species are already extinct.

Opportunities

- Cooperation with companies and philanthropists (voluntary work, joint follow-up projects).
- Involvement of schools (volunteer actions, awareness rising).
- New hiking trails in locations where there are none (Načeratický kopec, Pánov).
- Agro-tourism.
- Restoration Law (new EU legislation on nature restoration).

Threads

- Unregulated building in the immediate vicinity of the project sites.
- Theft and damage to necessary infrastructure (components of grazing enclosures, facilities for other activities, etc.)
- Eutrophication due to nitrogen in the atmosphere.
- Conflicts with hunters.

After LIFE plans

Pánov

Basic approach:

- Maintaining the open character of the site will be ensured by the movement of various types of vehicles implemented outside the growing season.
- It would be desirable to supplement the vehicle movement by livestock grazing during the growing season. The introduction of grazing will be the focus of the follow-up project.

Specifying conditions:

Vehicle movement:

- In 2021, an agreement was concluded between the town of Hodonín (as the owner of land in Pánov Nature Monument) and the Regional Office of the South Moravian Region (as the administrator of the protected area) to set the regime of motocross activities at the site. Riding is possible on specified days of the week in the period from 15 August to 15 March and are coordinated by the appointed motocross coordinator.
- Motocross takes place on two permanent tracks located in the southern and central part of the area and freely in the field on various parts of the Nature Monument (enduro rides).
- Modifications to the tracks are only possible with the consent of the nature conservation authority. At the beginning of each motocross season, the nature conservation authority, in cooperation with professional contractor and the motocross coordinator, will determine the priority areas for free riding, with emphasis on successively advanced areas and places with invasive plants (wood small-reed, goldenrods, etc.).
- Apart from motocross activities, military vehicle movement and other types of movement (one-off coordinated events, etc.) are welcome in the area. These activities take place outside the motocross regime and are regulated individually by the Regional Office of the South Moravian Region and the town of Hodonín.
- In the winter, it is desirable to direct the movement (especially of military equipment) to the littoral vegetation of the local pools.

Other activities:

- It is necessary to control the regrowth of self-seeding and invasive trees removed during the project, and in the case of their re-emergence, they should be eliminated by spraying a suitable herbicide.

The introduction of grazing under the following conditions would also be desirable in the future:

- The animals will be present at the site all year round.
- The actual grazing will take place when the vehicle movement is not carried out (from mid-March to August or September).
- In the remaining period, the animals will be placed in a permanent enclosure with an area of up to 5 ha, built on a suitable place on the former training ground.
- Mobile grazing will take place – a certain part of the training ground (5–10 ha) will be temporarily fenced with mobile fences. After grazing, the fence will be moved to another place. The reason for this grazing method is not to block the whole area and to allow access to public and vehicles.

- The grazing herd will be composed of several species of animals. The basis will be cattle and horses in total up to 10 animals. In the future, it would be appropriate to supplement the herd with sheep and possibly a donkey. The reason for the multi-species composition of the herd is the different way of grazing and different food preferences for individual species. Placid breeds/individuals will be selected for the herd that will be easy to handle and will not endanger the environment.

The motocross track at Pánov is also used to train the Czech national team at the Dakar Rally r. (Foto: Beleco)

Military equipment movement has contributed, among other things, to the emergence and development of ephemeral water bodies. (Foto: Beleco)

Načeratický kopec

Basic approach:

- Maintaining the open character of the site will be ensured by grazing by a mixed flock of sheep and goats. The will continue to be free grazing, overseen by shepherds and dogs, running according to current conditions from early spring to late autumn.
- Motocross will take place in the central part of the site.
- If there is continued interest in events for the public with military equipment, it will be appropriate to direct these activities to places where it is desirable to suppress wood small-reed and regrowth after shrub clearing (in contrast, it is not desirable in places after acacia removal).
- It is necessary to combine both basic approaches in such a way that their influence complements each other synergistically and, at the same time, so that one method does not lead to the termination of the other.

Recommendation:

Grazing:

- The economic sustainability of grazing will be supported by the inclusion of most of the Načeratický kopec site in the LPIS land use system and a suitable subsidy title will be drawn there.
- The grazing load should be set in a way that ensures optimal vegetation pressure. Climatic conditions of the site are very variable year-on-year, with frequent episodes of severe to extreme drought. For this reason, it is necessary to react flexibly to current conditions. A rough guide is the number of grazing animals per year under normal weather conditions (without significant drought and, conversely, outside the above-average humid years) of at least 500 individuals.
- During the LIFE project, the false acacia stands were removed on about 12 ha. Regrowth on the acacia stumps is suppressed by repeated grazing, combined with the trimming of ungrazed regrowth. This management is repeated at least three times during each growing season. This management measure must be repeated until the acacia stumps die.
- It would be appropriate to supplement the grazing with other types of grazers, especially horses. The inclusion of horses would more effectively regulate areas with false oat-grass and other expansive grass species.
- It is desirable to intensively graze places with greater pasque flower every year in the autumn.
- If the intensity of grazing fails to ensure sufficient grazing pressure on the vegetation due to the low number of animals, it would be appropriate to direct the grazing to the parts with the original steppes (map 2) and to implement mowing in places with former fields.

Motocross:

- Motorcycle rides should be kept regulated for specific days of the week (2–3).
- Rides take place on stable tracks. It is desirable to change at least 10% of the tracks every year, and leave the abandoned parts without intervention for at least five years.
- An alternative to shifting the track is annual removal of the soil substrate by bulldozer on a line at least 50 m long (and at least 4 m wide), with the open part left without intervention.
- Do not build other obstacles, try to ride in open terrain as much as possible.
- Do not use track modification material from elsewhere.

- The administrator of the motocross area is obliged to monitor the track and its surroundings, including jumps and obstacles, for the presence of invasive tree species, especially false acacia and tree of heaven. If they are found, clearing will be done by a suitable method approved by the regional authority and shepherds.

Other activities:

- It is necessary to control the regrowth of the shrubs removed during project implementation and remove it mechanically.
- It is absolutely necessary to control the regrowth of acacias in areas with removed trees and to clear them in the established way (repeated grazing combined with trimming of ungrazed regrowth) until the stumps die.
- It is necessary to check the condition and possible regrowth in the vicinity of acacia stands, which were left at the site as a source of shade for grazing animals. In the case of spread of acacia into the surroundings, it is necessary to clear it.
- The most suitable solution would be the change of the leftover acacia stands to other deciduous stands (by planting suitable tree species, especially oaks) and the subsequent clearing of acacias. The alternative is to leave the rejuvenating trees (especially cherries) in suitable places in an area similar to the leftover acacia stands without intervention and to allow the creation of new stands of these trees. Then remove the acacia stands for prevention reasons.
- In the northern part of Šibeník hill, where the site is in contact with adjoining continuous acacia trees, it is necessary to control the return of acacia trees to the site.
- It is desirable to proceed to further reduction of shrubs, especially on sites with original steppes (see map 2).
- As part of the protection of birds associated with dense shrubs, especially barred warbler, it is appropriate to continuously replace some aging groups of shrubs with younger ones or to rejuvenate old shrubs by cutting. As shrubs age, they become significantly thinner, especially in the lower layers, and cease to be a suitable habitat for the respective bird species, which leads to a reduction in the number of nesting pairs.
- Occasional burning is appropriate on selected parts with native vegetation.
- Vehicles (motocross, military equipment, etc.) should sometimes also be directed to places with grazing so that the conditions of the valid subsidy titles are not disrupted.

Traditional grazing at Načeratický kopec will continue after the project. (Foto: Markéta Jedličková)

Activities related to motocross will also continue. (Foto: Markéta Jedličková)

Mašovická střelnice a Havranické vřesoviště

- For Podyjí NP, participants involved in the grazing project at Mašovice and Havraníky outside the project will develop a Grazing strategy within Podyjí NP, so that the potential of this forest-free area management on large areas can be used to the maximum.
- The grazing infrastructure implemented within the project has a long service life (many decades), so it will ensure the long-term sustainability of management on grazed areas long after the end of the project.
- For the financial sustainability of the project, it is important to achieve at least such a range of pastures or areas eligible under Land Parcel Identification System LPIS/SAIF to allow the financing of breeding supervision, minor infrastructure repairs, and necessary animal handling (chipping foals, moving new herd members) from the payment for the area under standard grazing subsidies. It may be necessary to find another financial instrument for long-term financing. Due to the current extent of pastures, after the end of the project, its sustainability will be subsidized from other activities of Česká krajina o.p.s. However, the long-term goal (not only for the sites within Podyjí NP) should be their self-financing.

The grazing infrastructure has a long-term lifespan, so it will ensure the long-term sustainability of grazing management beyond the end of the project. (Foto: Beleco)

Blšanský chlum

Basic approach:

- The site will be maintained by grazing of a mixed flock of sheep and goats. To facilitate the grazing, the site was fenced with an electric fence as part of the project.

Specifying conditions:

- Grazing will take place all year round.
- The optimal grazing load will be set to a maximum of 50 animals and the impact on the site will be monitored. With regard to the long-term development of the vegetation of the site, the size of the herd will be adjusted if necessary.
- The economic sustainability of grazing will be supported by the inclusion of most of the area of Blšanský chlum in the system of LPIS land use and a suitable subsidy title will be drawn there.
- It would be appropriate to supplement the grazing with other types of grazers, especially horses. The inclusion of horses would more effectively regulate areas with wood small-reed, bulbous oat grass and other expansive grass species.

Other activities:

- It is necessary to control the regrowth of the shrubs removed during the project implementation and to mechanically remove them when they re-grow.
- It is absolutely necessary to control the regrowth of acacias in the area in the central part of the site and, in the event of their re-occurrence, to remove the regrowth with a suitable herbicide.

Grazing at Blšanský chlum will continue after the project. (Foto: Beleco, 2019)

Main follow-up activities in the field of public awareness and outreach

Website and social media

The website will remain up and running after the end of the project and will be managed by Beleco. During the autumn of 2022, a reconstruction of all the organisation's websites is planned, which will ensure better connectivity, easier editing and easier promotion of activities. Information about the implemented Military LIFE for Nature project will be an important part of the organization's presentation. The project website will continue to be the main source of information about the implemented project. For example, electronic versions of all materials produced during the project will be available here. Updates on the topic will be shared after the end of the project through the main website and social media of the project partners:

www.beleco.cz
www.facebook.com/wwwbelecocz
www.facebook.com/pribehyceskeprirody/
www.mzp.cz
www.program-life.cz
www.wetland.cz
www.ceska-krajina.cz
www.facebook.com/CeskaKrajina

E-learning

The project website includes a series of 21 on-line lectures on nature conservation in abandoned military areas. The e-learning will be offered for use by relevant organisations and institutions (universities, state nature conservation, NGOs and other interested parties) in the academic year 2022/2023 and onwards. Lectures will be available for collaborating institutions and organizations if they are interested in using them.

Videos

6 short videos were produced during the project. All videos will continue to be available on the project website and YouTube channel. 4 of these videos, which are directly related to the individual project sites, will be offered for use to cooperating local institutions and organisations, who can further disseminate them through their channels.

Publications

The remaining printed publications (mainly materials published before the end of the project) will be distributed through cooperating organisations and institutions. Electronic publications will continue to be available on the project website and through project partners.

Information boards

Regular inspection and necessary maintenance of the information boards placed in the field will be carried out in cooperation with the local stakeholders who are most often present at the individual project sites (herders, rangers, motocross managers, staff of the relevant nature conservation authorities).

As part of the project, information boards about the natural values of the sites and their protection were installed at all sites, and a tourist facility was built near the board at Pánov. (Foto: Beleco)

Public events

The public events organised during the project will continue to some extent in the future. The organisation of some of them has been taken over by cooperating entities. For example, the Hnutí Brontosaurus continues to organise volunteer events, and local NGOs and informal groups are interested in continuing the tradition of larger public events (Open Steppe Days at Načeratický kopec, military events on Pánov). Other events will be freely continued by project partners (e.g. corporate volunteer events, excursions, etc.). Last but not least, new events for the public are organized, related to new uses of the project sites (motocross competitions), which, although not primarily aimed at conservation management, are a suitable opportunity for disseminating information about the implemented project and the specifics of the project sites to groups that would otherwise hardly be reached.

Three weekends of volunteer activities have already taken place at Pánov and Načeratický kopec in cooperation with the Hnutí Brontosaurus, and more are being prepared after the end of the project. Dozens of young volunteers from all over the Czech Republic are helping with the restoration of steppes and the removal of invasive plants and trees (Foto: Beleco)

Cooperating institutions and organizations that can actively participate in the dissemination of project outputs

(These are entities with which we have already established cooperation during the project and which are already actively involved in the dissemination of the project outputs.)

- Beleco
- MŽP (Ministry of Environment)
- Česká krajina
- Wetland
- Krajský úřad Jihomoravského kraje (regional authority)
- Krajský úřad Ústeckého kraje (regional authority)
- Správa Národního parku Podyjí (Podyjí National Park Administration)
- Město Hodonín (Hodonín municipality)
- Město Znojmo (Znojmo municipality)
- Obec Blšany u Loun (Blšany u loun miunicipality)
- Obec Chumčany (Chlumčany municipality)
- Turistické informační centrum Znojmo (Tourist information centre Znojmo)
- Turistické informační centrum Hodonín (Tourist information centre Hodonín)
- Turistické informační centrum Louny (Tourist information centre Louny)
- Jáňův dvůr (local small farmers)
- Ovčí farma Podyjí (local small farmers)
- Motokros Team Znojmo

Larger public events with demonstrations of motocross and military equipment are a great opportunity to popularize conservation in military areas among groups that would otherwise be hard to reach. Thanks to the cooperation with local associations, this tradition is likely to continue after the end of the project. (Foto: Beleco)