



LIFE12 NAT/PL/053

*Protection of xerothermic habitats in Nature 2000 areas in the
Miechowska Upland*

KSEROTERMY

After - LIFE Conservation Plan

Beneficiary: Regional Directorate of Environmental Protection in
Kraków



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INTRODUCTION

Xerothermic grasslands (*Festuco-Brometea*) are extra-zonal, heat-loving, semi-natural, steppe-type vegetation communities that are found primarily in southern and southeastern Europe. They occur in the form of islands in other parts of Europe. Their range is determined by a number of factors including high temperature and high content of calcium carbonate in the parent material. Xerothermic grasslands most often occur on sunny hillslopes, small hills, hummocks as well as in gorges, on the slopes of valleys of large rivers and in paleo-valleys and on rock walls and rock shelves.

Xerothermic grasses also occur across many anthropogenic habitats: i.e. railroad embankments, former surface mines, and gravel extraction pits. They are mostly associated with soils such as rendzinas and para-rendzinas and sometimes with black earths and brown earths whose occurrence is facilitated by the presence of specific parent rocks such as limestone, marl, gypsum, loess, serpentinite, basalt, and boulder clay. These are rich and diverse collections of species whose multiple constituent species are frequently relict in nature. The history of the emergence of xerothermic grasslands reaches the last ice age (northern Polish ice age), which ended in Poland about 11,700 years ago, and the migration of vascular plants is dated at about 10,000 ago. Xerothermic plant species migrated to Poland via three different routes:

- from the south from the Hungarian Plain to the Silesia Upland and Małopolska Upland via the so-called Moravian Gate region of southern Poland
- from the east from the Podole and Bessarabia regions to the Volhynia Upland and the later the Lubelska Upland
- from the west via the so-called Brandenburg and Noteć Trail from Thuringia in Germany to northern Poland via the Toruńska and Eberswalde Paleo-valley

Currently in Poland, xerothermic grasslands (multiple subtypes) occur in a number of different regions:

- **6210-1 rock face grasslands:** Western Pieniny, Skalice Nowotarskie and Spiskie, Krakowsko-Częstochowska Upland (southern parts), Kaczawskie Foothills, Silesian Upland (eastern parts), Sowie Mountains, Strzegomskie Hills, Wałbrzyskie Foothills

- **6210-2 Stipa grasslands:** Nidziańska Basin, Kielecko-Sandomierska Upland (Pieprzowe Mountains), Lubelska Upland (near the towns: Chełm, Zamość), Lower Odra Valley including Cedzyński Landscape Park, Lower Vistula Valley including the Lower Vistula Landscape Park, Warta River Valley, and Noteć River Valley.
- **6210-3 Flowering xerothermic grasslands and 6210-4 or xerothermic herbs:** Pieniny Mountains, Pieniński Rock Belt, Krakowska Upland, Częstochowska Upland, Miechowska Upland, Nidziańska Basin, Kielecko-Sandomierska Upland (Pieprzowe Mountains), Lubelska Upland, Lower Odra Valley, Lower Vistula Valley, Warta Valley, Noteć Valley.

Flowering xerothermic grasslands (6210-3) were noted in 12 Nature 2000 areas in the Miechowska Upland region. Three subtypes of xerothermic grasses were noted in the Prądnika Valley: rock face grasses (6210-1), Stipa-type grasses (6210-2), flowering xerothermic grasses (6210-3).

CURRENT SITUATION

Xerothermic grasses are semi-natural plant communities and require some human assistance. Key forms of human involvement include reducing succession via the cutting down of trees and bushes, prevention of felt formation, and the prevention of the invasion and expansion of undesirable non-native species (ecologically and geographically) via mowing and animal grazing. The completion of these tasks was made possible on private land by attaining two important goals: increasing levels of local ecological awareness (especially among landowners in possession of valuable habitats), regular influx of funds for environmental protection. The implementation of the LIFE+ project has made it possible to overcome these types of obstacles and the purchase or leasing of land for protection purposes. In addition, the Regional Directorate of Environmental Protection in Kraków (beneficiary of the LIFE project) has been able to collaborate with local governments in the communes of Miechów, Charsznica, Słaboszów, and Książ Wielki as well as with the County Government of Miechów County. It has also been observed that the local community, especially schools, has become increasingly interested in the environmental value of places such as the Miechowska Upland. It has also been observed that the local community is making attempts to learn more about the abovementioned issues.

One key achievement of the project has been the survey of vegetation and certain groups of fauna in 12 Nature 2000 areas. The results of this survey have served as the basis for the formulation of Protective Action Plans. The newly collected data have also been used to update standardized data forms for fauna and flora.

Continued monitoring in line with GIOS methods will make it possible to determine a change pattern for habitats – especially the share of characteristic species as well as expansive and invasive species.

SWOT ANALYSIS

Strengths	Weaknesses
<p>1. Private landowners were visited about 600 times in 12 Nature 2000 areas in order to obtain 93 written permission to perform works on their land including cutting down trees and bushes or their uprooting along with grass mowing and animal grazing, all of which was slated to help improve the state of key natural habitats.</p> <p>2. Removal of excess trees and bushes by felling and uprooting in rock face grass areas and flowering grass areas found in the area Prądnika Valley PLH120004 (Ojcowski National Park) (9.83 ha) and across 24.68 ha of grass areas found in 12 Nature 2000 areas situated across the Miechowska Upland.</p> <p>3. Mowing of xerothermic grass areas on 0.86 ha of land in Ojcowski National Park and on 23.97 ha of land in 12</p>	<p>1.Lack of precise data in the Standard Data Forms regarding protection objects in Natura 2000 areas (including highly overestimated 6210 habitat area, inadequate assessments to the current state of the habitats)</p> <p>2.Resistance of landowners to sign written permissions to perform work on their land – some would express only a verbal permission that could not be honored in the designation of protective action areas.</p> <p>3.Small parcel size and lack of legal clarity with respect to landownership status. Small parcels owned by more than one person, lack of notarized documents that would allow a given owner to legally manage land; lack of permission from landowners.</p>

<p>Nature 2000 areas.</p> <p>4. Purchase of grazing animals: 152 sheep and 14 goats.</p> <p>5. Purchase of 23 plots with a total area of 8.55 ha and long-term (22-year) lease of 21 plots with an area of 10.03 ha</p> <p>6. Formulation of protective action plans for 12 Nature 2000 areas.</p> <p>7. Promotion of the environmental value of Nature 2000 areas – creation of the “Environmental and tourist guide to the Miechowska Upland,” recording of a film on social and environmental issues: “Between pheasant’s eye and carline thistle.”</p> <p>8. The film was then shown to about 500 people at the Gryf Cinema in Miechów and also on TVP3 Public Television in Kraków.</p> <p>9. Educational activity:</p> <ul style="list-style-type: none"> - an array of field and classroom workshops designed for teachers and students on many different levels. The main theme of the workshops was the biodiversity of xerothermic grasslands, their endangered status, and means of protection - creation of educational packages such 	<p>4. Lack of access roads to some areas of exothermic grassland, which made it difficult to transport grazing animals throughout the entire growing season.</p> <p>5. Extensive efforts coupled with few results in the area of permission to purchase or lease land.</p> <p>6. Lack of continuous funding by the national government. The need to constantly seek out external funds, both in Poland and abroad, in order to execute protective actions such as mowing, grazing, and felling, given the high costs of these actions.</p> <p>7. Extensive mowing and grazing is not a profitable business even with the funding from the PROW project in light of the small surface area of the habitats qualified for subsidies as part of Package 4 – Valuable habitats and endangered bird species in Nature 2000 areas.</p>
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<p>as lesson plans, games, worksheets, and posters.</p> <p>10. Growing interest in the protection of xerothermic grasslands: in 2017 and 2017 new events were organized such as Orchid Day in Kalina Mała whose organizers consisted of the Nature Protection Guard of Miechów and the City Hall of the City and Commune of Miechów.</p>	
<p>Opportunities</p> <p>1. Monitoring of the state of protection of protected entities (since 2015) in line with GIOS monitoring methods. The need to continue this task results from guidelines in PAP documents.</p> <p>2. Inclusion of selected habitat areas in the monitoring program, which is part of the National Environmental Monitoring Program.</p> <p>3. Collaboration with local organizations and associations in the area of valuable natural habitat protection.</p> <p>4. Requirement to introduce changes in rules found in planning documents due to PAP regulations for selected Nature 2000 areas that would make it not possible to allow for the forestation of xerothermic grassland areas.</p>	<p>Threats</p> <p>1. Private landownership, which can lead to mechanical damage to any habitat areas via plowing and also forestation.</p> <p>2. Lack of permission from a number of landowners to perform work on their land.</p> <p>3. Possibility of the revoking of work permissions granted by landowners by cancellation of permissions to perform protective works.</p> <p>4. Risk of loss of financial means to maintain habitats at some point during the active period of protective actions plans (2018 – 2028).</p>

<p>5.Ability to acquire funding for protective actions from external sources. At this time, actions such as monitoring work, grazing, mowing, felling, and uprooting are made possible by funding from a project called “Protection of endangered species and protected habitats as part of the Nature 2000 network across the Małopolska region” (2017 – 2020). This project is financed by the Infrastructure and Environment Operating Program – 2nd edition.</p>	
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PUT OF PROTECTIVE ACTIVITIES AND METHODOLOGY WAYS TO USE "STRENGTHS" TO MINIMIZE "THREATS"

As part of the A1 activity, the knowledge about the objects of protection was supplemented, the information contained in the Standard Data Forms was updated. For this purpose, detailed inventories of vegetation and selected groups of vertebrates and invertebrates were made. Protective Action Plans (PAPs) were prepared for all 12 Natura 2000 sites included in the Life + project. which were officially accepted by the Voivod of Małopolska in the first half of 2018. PAP includes an analysis of threats, goals and protective actions aimed at achieving them, identifies the entities responsible for their implementation, and (optionally) indicates the need to make changes to planning documents.

PAP is an act of local law of superior character in relation to all planned economic activities in Natura 2000 areas (in particular on areas occupied by valuable natural habitats), which significantly reduces the risk of f threatening factors (threats 1-4).

The main objective of the conservation measures is to improve the xerothermic grassland habitat (6210) from U1 to FV or maintain it at the current level (preventing deterioration).

The most important actions ensuring its achievement are: reduction of trees and shrubs (prevention of succession) and pasture or mowing and pasture

management, carried out at the right time, with appropriately selected stocking (preventing the postponement of budding and limiting the expansion and invasion of undesirable species). Performing the above-mentioned treatments would not be possible without the consent of the owners to carry them out on private land. The long-term process of concluding agreements and obtaining consents for buyouts and leases in a significant way was supported by parallel promotional and educational activities (organization of workshops, excursions, lectures). An important role was also played by responsible cooperation with local authorities, associations (participation in cyclical events in the Miechów district, film screening at the cinema in Miechów, sharing rooms for meetings and consultations). As a result, society's awareness grew and resistance to active habitat protection planned by the Regional Directorate for Environmental Protection in Kraków on private land was overcome to some extent. This resulted in obtaining consents for: for redemption (23 plots with a total area of 8,55 ha) and a long-term lease (21 plots with a total area of 10,0343 ha), to summarize, on the Miechowska Upland, were carried out:

- grazing in 11 Natura 2000 areas with a total area of 21.52 ha (which accounts for 65% of xerothermic grasslands occurring in 12 Areas);
- felling and grubbing up in 12 Natura 2000 areas with a total area of 24.68 ha (which constitutes about 75% of the surface of grasslands found in 12 Areas)
- mowing in 12 Natura 2000 areas on an area of 23.97 ha (which constitutes approx. 72% of the surface of grasslands found in 12 Areas)

In addition, the cutting together with the grubbing and mowing was done in the Natura 2000 area of the Prądnik Valley, on the total area of respectively: 9.83 ha and 0.86 ha.

The measures carried out (under measures C2-C4) significantly improved the habitat status in terms of "expansion of shrubs and undergrowth" and "native expansive species" in the total area of 24.68 ha, which in 2018-2020 will be increased to approx. 26 ha as part of felling and grubbing up trees and shrubs.

Protection against planting in a habitat of 6210 trees (on private plots) are also provisions regarding the exclusion of these areas from areas designated for afforestation in local spatial development plans.

An alternative to improvement of habitat status (in the absence of external funds) may also be activities carried out under the commitment resulting from the implementation of the "Agri-environmental-climate action" of the Rural Development

Program (Package 4 - Valuable habitats and endangered species in the Natura 2000 sites) 2000, variant 4.3 - Grasslands, in which beneficiaries may be both private owners, tenants, as well as the Regional Directorate for Environmental Protection in Kraków.

PROTECTED ENTITIES COVERED BY THE PROJECT

The survey of plant life made it possible to verify information on the protected entities listed in SDFs for Nature 2000 areas covered by the project. The survey resulted in the removal (loss) of 7 areas from the protection list (item: subcontinental and Middle European mixed-type forest (9170)): Kalina Mała, Pstroszyce, Poradów, Widnica, Uniejów-Parcele, Kaczmarowe Doły, Cybowa Góra. In one area (Poradów), the removal was applicable to juniper in grass growing on limestone or in heathlands (5130). In one case, a habitat (5130) was added (gain) to the protection list.

Protected entities in 12 Nature 2000 areas in the Miechowska Upland.

Three types of natural habitats subject to protection were observed in areas covered by the project.

6210 Xerothermic grasses (*Festuco-Brometea*)

The only grass subtype noted in the 12 Nature 2000 areas in the study is flowering xerothermic grass (6210-3), which is represented by the group: oman wąskolistny (*Inuletum ensifoliae*). This habitat covers a total area of 33.07 ha in 12 Nature 2000 areas.

The most valuable grasses were deemed to be those in Giebułtów and Kalina Mała and these grassland areas were assigned a priority designation (*6210) due to the large number of orchid species and/or stable orchid populations. Six orchid species were observed in Giebułtów: lesser butterfly-orchid (*Platanthera bifolia*), greater butterfly-orchid (*P.chlorantha*), military orchid (*Orchis militaris*), common twayblade (*Listera ovata*), fly orchid (*Ophrys insectifera*), white helleborine (*Cephalanthera damassonium*). Five orchid species were noted in the Kalina Mała area: lesser butterfly-orchid (*Platanthera bifolia*), marsh helleborine (*Epipactis palustris*), white helleborine (*Cephalanthera damassonium*), lady's slipper orchid (*Cypripedium calceolus*), military orchid (*Orchis militaris*). Both areas have a large and stable military orchid population of about 1,000 individuals.

Xerothermic grassland occupies an area ranging from 0.45 ha (Grzymałów) to 5.76

ha (Chodów Falniów). The total habitat area is 33.07 ha. Xerothermic grasses are found normally on south-facing and southwest-facing hillslopes with a gradient of 5 to 50°. Most xerothermic grasses grow on shallow, skeletal soils or rendzinas. These communities are characterized by varying degrees of compactness ranging from 50% to 100%, low height (30-50 cm), and diverse species composition with an average of 30 vascular plant species per 25m² of area. The largest communities are the following: swordleaf inula (*Inula ensifolia*), field cow-wheat (*Melampyrum arvense*), lilac sage (*Salvia verticillata*), Pannonia thyme (*Thymus kostelekyanus*), and Marshall thyme (*Thymus Marschalianus*). Other species encountered in the area are: European Michaelmas-daisy (*Aster maellus*), pheasant's eye (*Adonis vernalis*), large speedwell (*Veronica austriaca*), Siberian bellflower (*Campanula sibirica*), branched St. Bernard's lily (*Anthericum ramosum*), *Potentilla arenaria*, squinancywort (*Asperula cynanchica*). The clumpy structure is due to fescue species including tussock grass (*Festuca rupicola*), hard fescue (*F.trachyphylla*), sheep fescue (*F.ovina*). In most cases, the state of habitat protection (6210) based on data from 2015 and 2017 was deemed to be unsatisfactory (U1). In three areas the state of protection was deemed to be bad (U2): Grzymałów, Giebułtów, Uniejów Parcele. The highest assessment value was achieved by one area of the habitat in Sławice Duchowne (FV). All areas were floristically rich and characterized by a high share of species characteristic of the given habitat. Lower assessment values were given to habitats first and foremost on the basis of two key indicators: "Native, expansive herbal plant species" and "Expansion of bushes and tree growth." The primary threats to habitats are succession, lack of use, expansive species, and invasive species.

5130 thickets of common juniper in limestone-surface grasses or heathlands

Thickets of common juniper growing in grasses found atop limestone are the subject of protection in Nature 2000 areas in Cybowa Góra. This habitat occupies a surface area of 0.57 ha.

Common juniper is found in the western parts of the southern hillslopes of Cybowa Góra with a gradient of 10-30° as well as on the very steep western slopes with a gradient of 40-45° in the northern parts. Well-developed areas of the group *Inuletum ensifoliae* along with common juniper (*Juniperus communis*) and other bush species are found in this area: common dogwood (*Cornus sanguinea*), blackthorn (*Prunus spinosa*), dog rose (*Rosa canina*). The spatial structure of the habitat in the form of

single individuals or small thickets of juniper indicate its established role in this particular area. This species is good at renewing itself here, which indicates a high potential for habitat development. The state of protection of this habitat was deemed to be unsatisfactory (U1) due to the small surface area of the habitat and a low level of bush compactness (10%).

9170 Subcontinental mixed-type forest (*Tilio-Carpinetum*)

Subcontinental mixed-type forest is a protected entity exclusively in the Grzymałów section of Nature 2000 areas. This habitat is also found in Giebułtów (code: 9170, area: 0.75 ha); however, its low level of representativeness (D) does not afford it “protected entity” status.

Habitat areas in the Grzymałów area are observed in gorges stretching across its southwestern and northwestern parts. The habitat occupies an area of 4.47 ha. The tree stands are estimated to be about 50 years old and include species such as the common hornbeam (*Carpinus betulus*), silver birch (*Betula pendula*), common oak (*Quercus robur*) and sessile oak (*Quercus petraea*). The structure and compactness of tree stands varies from low with a rich layer of undergrowth formed by species such as common hazel (*Corylus avellana*), fly honeysuckle (*Lonicera xylosteum*), guelder-rose (*Viburnum opulus*), common dogwood (*Cornus sanguinea*), spurge laurel (*Daphne mezereum*). The grass level is dominated by species of the order *Fagetalia sylvaticae* such as hazelwort (*Asarum europaeum*), unspotted lungwort (*Pulmonaria obscura*), sanicle (*Sanicula europaea*), as well as Martagon lily (*Lilium martagon*). Several rare, protected species were observed in mixed-type forests: *Cimicifuga europaea*, white helleborine (*Cephalanthera damasonium*), broad-leaved helleborine (*Epipactis helleborine*), bird’s nest orchid (*Neotia nidus-avis*). The most valuable of the species on this list is the *Epipactis microphylla*, a very rare species in Poland, which is listed in the Polish Red Book and remains on the Red List.

2. Protected entities in Nature 2000 area Prądnika Valley PLH120004

The N2000 area Prądnika Valley was included in the project in 2017 as part of an important change accepted on Dec. 15, 2017.

6210 Xerothermic grasslands *Festuco-Brometea*

Three different subtypes of xerothermic grasses were identified in the Nature 2000 area Prądnika Valley:

6210-1 rock wall grasses

The habitat is represented by the group *Festucetum pallentis*. It occurs on steep rock walls, shelves, and ridges as well as in rock crevices and in initial rendzinas and para-rendzinas and consists of blue-green clumps of pale fescue with some *Allium montanum* and *Libanotis pyrenaica*. These areas of grass also include Carthusian Pink (*Dianthus carthusianorum*), goldmoss stonecrop (*Sedum acre*) and tasteless stonecrop (*S. sexangulare*), spotted knapweed (*Centaurea stoebe*). Rocks affected by strong insolation facing south are home to the heat-loving group *Fp. Sempervivetosum*. It is characterized by the presence of *Jovibarba sobolifera* and stonecrop. A shade-loving subgroup called *Fp. neckeretosum* formed on the northern rock slopes, along with pale fescue and bryophytes. It also includes three-leaved valerian (*Valeriana tripteris*). This is an unusually valuable natural community from an environmental point of view.

6210-2 Stipa grasslands

Stipa grasses occur on south-facing and southeast-facing hillslopes characterized by large gradients. They are semi-natural and usually form due to extensive grazing on limestone soils covered with a layer of loess. This is a very rare plant community in Ojcowski National Park – it is a relict of the area's formerly strong animal grazing economy. It is a habitat rich in species: 29 to 45 species in an area of 25 m². It is dominated by clumpy grass species such as *Festuca rupicola* and Boehmer's cat's tail (*Phleum phleoides*) and xerothermic Pannonia thyme (*Thymus kostelekyanus*) and Marshall thyme (*Th. Marshallianus*) as well as northern wormwood (*Artemisia campestris*) and absinthe wormwood (*Artemisia absinthium*) in addition to the rare in Ojcowski National Park intermediate wheatgrass (*Elymus hispidus*). Small areas of *Kolerio-Festucetum rupicolae* are found in the northern stretches of Prądnika Valley in an area known as the Długa Skała na Grodzisku Massif.

6210-3 flowering xerothermic grasses

The particular habitat is represented by goosefoot and brachypodium (*Origano-Brachypodietum pinnati*). This is a floristically rich plant community with up to 50 species of vascular plants in an area of 25m² and it may be described as a heat-loving herb community divided into three subgroups:

- **flowering herb grasses with goosefoot and vincetoxicum**

Origano-Brachypodietum vincetoxicetosum is associated with shallow limestone soils and occurs in the ecotone zone between rock surface grasses and xerothermic thickets. A surface area 5 x 5 meters holds between 27 and 56 species, while their average height is 25 to 35 cm. This community is characterized first and foremost by a lack or major shortage of the kłosownicy pierzastej (*Brachypodium pinnatum*). In this subgroup, we encounter rock surface grasses as well as the ciemiężyk białokwiatowy (*Vincetoxicum hirundinaria*), lebiodka pospolita (*Origanum vulgare*), dziewanna austriacka (*Verbascum chaixii austriacum*), bodziszek czerwony (*Geranium sanguineum*), perłówka siedmiogrodzka (*Melica transsilvanica*), and ostnica Jana (*Stipa joannis*).

- **secondary xerothermic grasses**

Origano-Brachypodietum agrimonietosum covers the hillsides of valleys. It is associated with deeper soils (20-90 cm) resembling rendzinas and brown soils. This is a floristically rich community with 25 to 72 species in an area of 25 m², with the mean height at 30 to 45 cm. The habitat is dominated by tor-grass (*Brachypodium pinnatum*), wild basil (*Clinopodium vulgare*), common agrimony (*Agrimonia eupatoria*) and meadow-grass (*Poa angustifolia*). This is an anthropogenic-type community that emerged at former sites of bushes and mixed forests and beech forests due to long-term animal grazing effects. Its largest surface area is estimated to have occurred at the turn of the 20th century when mass felling was practiced in the area. Today most areas are experiencing large changes due to the abandonment of animal grazing and overgrowth with trees and bushes.

COMPREHENSIVE PROJECT DESCRIPTION

The LIFE12NAT/PL/000053 project, "Protection of xerothermic habitats in Nature 2000 areas in the Miechowska Upland," was realized in the period 2013 – 2018 and includes 12 Nature 2000 areas scattered across the Miechowska Upland: Cybowa Góra PLH120049, Giebułtów PLH120051, Grzymałów PLH120053, Kalina Mała PLH120054, Komorów PLH120055, Kaczmarowe Doły PLH120062, Chodów Falniów PLH120063, Poradów PLH120072, Pstroszyce PLH120073, Sławice Duchowne PLH120074, Uniejów Parcele PLH120075, Widnica PLH120076.

In addition, the project called for the execution of protective measures such as tree and bush felling and uprooting as well as the mowing of grasses in the Nature 2000

area of Prądnik Valley PLH120004 situated in Ojcowski National Park located in the Krakowsko-Częstochowska Upland.

The main purpose of the project was to improve the state of flowering xerothermic grasslands (6210-3) subject to environmental protection as part of Nature 2000.

The following actions were planned and executed as part of the project:

A1 Formulation of protective action plans for 12 Nature 2000 areas.

In the period 2004 – 2016, a detailed survey was performed of plant communities, vascular plants, selected groups of vertebrates (amphibians, reptiles, birds, small mammals) and invertebrates (hymenoptera from the group *Apidae*, spiders, snails, beetles, butterflies).

Protective action plans were formulated for 12 Nature 2000 areas (approval dates provided in parentheses): Sławice Duchowne PLH120074 (21.02.2018), Komorów PLH120055 (21.02.2018), Kalina Mała PLH120054 (15.03.2018), Giebułtów PLH120051 (15.03.2018), Chodów-Falniów PLH120063 (15.03.2018), Kaczmarowe Doły PLH120062 (15.03.2018), Grzymałów PLH120053 (25.05.2018), Widnica PLH120076 (25.05.2018), Cybowa Góra PLH120049 (7.06.2018), Poradów PLH120072 (7.06.2018), Pstroszyce PLH120073 (12.06.2018), Uniejów Parcele PLH120075 (15.06.2018).

A2 Purchase of equipment needed in the project and fieldwork

In accordance with project assumptions, the following types of materials and other equipment were purchased in order to help complete the work of the project: 4X4 SUV – Suzuki Grand Vitara, promotional tent and associated equipment (brochure stands, metal tables, chairs, exhibition wall unit, rollup banners), digital camera (i.e. Nikon Digital Camera D 7000 with external flash), two multifunctional devices for A3 and A4 formats, field printer – A4 format, two netbooks, portable scanner (media-tech SCANLINE MT 4090), 11 sets of electrical devices known as electric shepherds along with associated equipment, office supplies (paper, toner, binders, etc.).

A3 Preparation of procedural outlines and collection of required permissions and agreements

All documents required by law were acquired in the course of the project. The set of documents made it possible to realize active protection plans in project areas.

The following actions were taken as part of A3: purchase of maps and sketches, collection of documents for all real estate part of the 12 studied Nature 2000 areas, creation of technical designs for educational pathways in all the Nature 2000 areas, creation of informational posters about the project, creation of official designations, creation of informational posters about Nature 2000 areas, acquisition of permits and agreements needed in the project (tree felling and bush trimming paperwork).

A4 Purchase of Olkusz-variety sheep and organization of grazing

A total of 152 Olkusz-variety sheep and 14 goats were purchased (plans called for 180 sheep and 20 goats). Animal grazing was introduced across selected flowering xerothermic grassland areas (6210-3) in 11 Nature 2000 areas with a total surface area of 21.52 ha. The current animal grazing surface area for maintenance purposes is 19.17 ha. The only area not included in the “grazing program” was Grzymałów – PLH120053 – due to difficult access to the area, which is a former limestone quarry with an uneven surface and broken glass in the area (dangerous for animals).

B1 Purchase and long-term lease of environmentally valuable land

A total of 23 plots of land were purchased for a total area of 8.5508. Leases were signed for 22 years for plots with a total area of 10.0343 ha, which makes it possible to perform protective actions today and over the next 22 years in order to maintain the effects of initial works.

C1 Garbage removal

A total of 94.3 tons of garbage was removed from 136.9 ha of land in the 12 Nature 2000 areas in the project. All illegal dumping grounds were cleaned up. The influx of garbage continued sporadically during the course of the project, but all garbage was systematically removed with the help of local governments.

C2 Tree and bush removal

Trees and bushes were felled and uprooted as part of the project across a total area of 24.68 ha situated in 12 Nature 2000 areas.

C3 Mowing of grasses

Grasses were mowed across a total area of 23.97 ha in 12 Nature 2000 areas.

C4 Organization of animal grazing

Animal grazing was conducted on a total area of 21.52 ha in 11 Nature 2000 areas. A total of 93 agreements were signed permitting animal grazing on 147 plots.

Actions C2, C3, and C4 were performed across all studied surface areas in Nature 2000 areas where permissions had been granted for the performance of protective actions or the land had been purchased or leased. Currently the assessment of the parameter “structure and functions” is improving. Over the long term, it is expected that another parameter will improve as well: “habitat surface area”. This is because tree and bush felling and uprooting reveals the surface and grazing makes this effect permanent, which then makes it possible for species characteristic of xerothermic grasslands to reproduce more easily.

D1 Environmental monitoring

In 2015 and 2017 a monitoring study was executed of the state of protected entities – xerothermic grasslands (*Festuco-Brometea*, 6210), juniper in limestone surface grasslands or heathlands (5130), grąd środkowoeuropejski and subkontynentalny *Galio-Carpinetum* and *Tilio-Carpinetum* (9170), and hymenoptera from the *Apidae* group. In addition, in 2017, a monitoring study of the effectiveness of protection work and impacts of protective measures on hymenoptera from the *Apidae* group was carried out.

A positive impact of protective measures is observable in areas featuring flowering xerothermic grasses (6210-3) with a total surface area of 24.68 ha. Improvement is observable in terms of two indicators: “expansion of bushes and tree growth” and “native, expansive species.” A decrease in tree and bush coverage is visible across layer B – an average of 10% in each N2000 area. In addition, the share of expansive grass species decreased in the habitat in some areas: tor-grass in the Kalina Mała area, tall oat-grass in the Chodów-Falniów area, and also bushgrass in the Sławice Duchowne area.

D2 Assessment of the social and economic impact of planned actions on the local economy, human community, and ecosystem functions.

This action included a survey of the perception of the project by local communities featuring Nature 2000 areas covered by the project. A total of 200 individuals were surveyed including 60 owners of land in Nature 2000 areas, 60 owners of land that is located outside Nature 2000 areas, 20 representatives of local governments, 20

employees of Agricultural Consulting Centers, and 20 schoolteachers. The surveys were conducted in 2 stages: Stage 1 (May–June 2014), Stage 2 (April–September 2017).

E1 Collaboration with local communities and institutions

Collaborative efforts were pursued with commune and county governments as well as local residents, which made it possible to obtain permission to perform protective works in each area and increased the level of ecological awareness of a variety of social groups. In addition, collaboration helped produce new community initiatives such as Orchid Day – organized since 2017 in the Kalina Mała Nature 2000 area by the Environmental Protection Guard in Miechów and the Commune Government of Miechów in collaboration with RDOŚ in Kraków and the Forest Management Office of Miechów.

E2 Website administration

A new subpage was added to an existing website (<http://www.kserotermy.krakow.pl>) run by the Regional Directorate of Environmental Protection in Kraków, which now offers current news on events such as meetings, workshops, and conferences.

E3 Information and publishing materials

A book called the “Environmental and tourist guidebook to the Miechowska Upland” was published (2,000 copies) in order to provide information on the environmental characteristics of 12 Nature 2000 areas, descriptions of material culture sites, bike trail options, and car touring itineraries making it possible to learn about the value of the natural environment in Nature 2000 areas.

A film was also recorded called: “Between pheasant’s eye and carline thistle” (500 DVDs). The film focused on the landscape value of the Miechowska Upland with its most valuable of environmental sites (Nature 2000 areas covered in the project) as well as on social issues that had produced a meaningful impact on the completion of the project and this included effects on project teamwork and the manner in which protective actions were carried out.

Production of promotional gadgets such as key chains (3,000 units), pens (3,000), t-shirts (1,000), and ecological bags (3,000).

E4 Educational activity in the project

Educational events were conducted in the field for elementary school students in

areas such as Kalina Mała, Cybowa Góra, and Grzymałów. Workshops for teachers were organized for personnel teaching at a variety of levels. In addition, lesson plans were prepared along with teaching aids such as special texts, worksheets, as well as games for preschool, elementary, and high school students. Finally, educational posters were produced featuring advanced information on xerothermic grasslands: definition of xerothermic grasses, threats to xerothermic grasslands, various forms of protecting grasses, grassland biodiversity.

E5 Popular science report and research report

The project was capped with the preparation of two reports in Polish and English. The first report was a popular science report written using nonscientific language and directed at a broad array of readers. It informs the reader about the purpose of the project, completed tasks, and survey results. The research report was written using scientific language and plays the role of a compendium of knowledge on the Nature 2000 areas covered in the project. It also includes the results of surveys and monitoring efforts along with their analysis as well as the assumptions in protective action plans.

E6 Installation of information signs in study areas

Information signs were produced for each study area discussing its environmental value and protected entities found therein.

Information signs were also produced for all four communes (Miechów, Charsznica, Słaboszów, Książ Wielki) affected by the project. These signs inform the reader of the environmental value in each area as well as local historical sites, sacred sites, material culture sites, and tourist trails that allow one to learn more about local sites. The signs were installed in the largest town of each studied commune.

E7 National conference

On May 24-25, 2017 a conference was organized that summarized the project. The participants of the conference included local government officials, scientific workers from the PAN Institute of Environmental Protection, Jagiellonian University, and the University of Agriculture in Kraków, key representatives of the Regional Directorate of Environmental Protection, organizers of other LIFE+ projects in Poland, forest area management workers, national park and landscape park employees, fieldwork staff and protective action workers, as well as several foreign visitors including the

Director of Moravian Karst in the Czech Republic, Director of the Camp Alatau Foundation in Kyrgyzstan, and an official of the ALNUS Foundation in Germany. The first day was focused on presentations organized by topic. A press conference was held during the break period – and was covered by Polish Radio in Kraków and TVP3 in Kraków. The second day consisted of a fieldtrip where participants could learn more about the environmental value of the Nature 2000 area Kalina Mała. They could also learn about the skills of trained shepherd dogs and obtain insights on the raising of Olkusz-variety sheep.

NEED FOR FURTHER PROTECTION – ACTION PLAN

Protective Action Plans (PAPs) were formulated for 12 Nature 2000 areas as part of Action A1. The plans were given final approval by the Regional Director of Environmental Protection in the form of ordinances during the first half of 2018. The plans will be in effect over a period of 10 years until 2028.

Protective actions performed in line with rules provided in PAPs are directed toward the maintenance of processes shaping two types of natural habitats: xerothermic grasslands (6210) and juniper thickets found in grasses growing atop limestone or in heathlands (5130). The surface area of natural habitats and their state vary in the different Nature 2000 areas studied. In addition, the threats facing each habitat area tend to also be somewhat different. In this context, the aims of protection of Nature 2000 areas and the types of planned protective actions vary to some extent based on area.

PROTECTIVE ACTIONS

In PAPs for the 12 N2000 areas covered by the project in the Miechowska Upland the following protective measures have been planned:

1.Actions associated with the active protection of natural habitats.

The extent of these works includes the felling and uprooting of some trees and bushes in order to achieve a target coverage rate of 5-10% in xerothermic grasses and 20% in juniper thickets.

Species that may remain across the habitat according to the above coverage rates are: common juniper (*Juniperus communis*), common hawthorn (*Crataegus monogyna*), common privet (*Ligustrum vulgare*), rose (*Rosa* spp), dwarf forms of

common oak (*Quercus robur*), common pine (*Pinus sylvestris*).

Trees and bushes to be uprooted will include those with a small diameter measured in the root neck – 5 cm or less. Thicker stems will be cut as close to the ground as possible or cut out in the root neck. The biomass obtained in this manner will then be collected and removed from the habitat area and then used by the landowner or disposed of in cases where the owner has no use for it.

Mechanical vehicles will not be used to perform these works. Their use will only be permitted in areas not threatened by erosion – i.e. not on steep hillslopes and not in wetland areas. In cases where such vehicles will be permitted, the gross weight limit will be 3.5 tons.

The work will be performed over a period of 10 years at a frequency consistent with current needs, which will be assessed based on an environmental monitoring plan and field reviews.

The entity responsible for performing these types of works is RDOŚ in Kraków. The work will take place on land purchased and leased by RDOŚ in Kraków and on land available based on a use agreement with its owner.

2. Actions associated with the maintenance or modification of habitat management methods.

The range of these protective actions includes the following:

1) extensive animal grazing, mowing of grasses, or both, managed by owners of land every year as part of their standard agricultural operations onsite

2) animal grazing conducted based on the following rules:

- animal grazing to be conducted from May to October at an annual level up to 0.6 LSU/ha (1 sheep=0,3 LSU/ha; 1 goat = 0,4 LSU/ha) and a short-term level up to 5 LSU/ha. Herd size and intensity of grazing will be determined in each case based on environmental monitoring results and the review of study areas.

- selective mowing, collection, and removal of unconsumed grass or native species (expansive and invasive) as well as cutting and removal of small trees and bushes. Areas dominated by native, expansive species (bushgrass) and invasive species (Canada goldenrod, daisy fleabane) should be mowed twice – once prior to the production of seeds between June 15 and 30, and again after July 15. Small trees and bushes should be uprooted or cut during the animal grazing period. This work should be performed every year during the entire period that a PAP is in effect. The entities responsible for the completion of these works are landowners or land users based on their agreement with the body supervising Nature 2000 areas or

agreement with the EU, which provides subsidies to selected farmers and ranchers.

3) in cases where animal grazing is not possible, it will be necessary to execute an extensive mowing program based on the following principles:

- mowing should occur after July 15
- mowing should begin in the middle and extend to the edges of the habitat
- 15-20% of the habitat surface should remain not mowed – different fragment every year
- areas dominated by native, expansive species (bushgrass) and invasive species (Canada goldenrod, daisy fleabane) should be mowed twice: once prior to the production of seeds between June 15 and 30, and again after July 15
- mowed grasses should be collected in the period between 1 and 2 weeks after the mowing event and should be removed from the habitat area

In addition, it will be necessary to mow areas dominated by both native, expansive species and invasive species in a 25-meter wide zone bordering both habitat areas. Mowing should be performed twice every year: once prior to the production of seeds between June 15 and 30, and again after July 15

The entities responsible for the completion of these works are landowners or land users based on their agreement with the body supervising Nature 2000 areas or agreement with the EU, which provides subsidies to selected farmers and ranchers.

3. Activities related to monitoring the implementation of protective measures

In the PAP two types of monitoring of the implementation of protective actions were planned:

1. Monitoring of the conservation status of natural habitats: 6210 xerothermic grasslands *Festuco-Brometea* and 5130 thickets of common juniper in limestone or moorland.

Monitoring will be carried out every 5 years, in accordance with the Monitoring Methodology of GIOŚ, in total on 22 monitoring areas, indicated in the PAP. Depending on the diversity and distribution of 6210 habitat patches in different Areas, a different number of transects has been determined:

- one transect - Natura 2000 areas: Cybowa Góra, Uniejów-Parcele, Widnica, Giebułtów, and Grzymały
- two transects - Natura 2000 areas: Pstroszyce, Kalina Mała, Kaczmarowe Doły, Komorów, Poradów, Sławice Duchowne
- 3 transects - Natura 2000 Chodów Falniów area

For habitat 5130 - one transect in the Cybowa Góra area. Monitoring of the conservation status was carried out twice - in 2015 and 2017 (in a manner consistent with PAP).

The status of the habitat will be assessed on the basis of the value of individual indicators, in accordance with the PMS GIOŚ Methodology. The most important of them are 3 indicators, called cardinal: "characteristic species," "native species of herbaceous plants", "expansion of shrubs and tree undergrowth". The first of these indicators, due to the relatively high biodiversity of habitat 6210, was assessed in each of the areas as FV (proper condition). Thus, the condition of habitat 6210 is mainly determined by 2 other indicators that can be considered as long-term indicators of monitoring necessary to assess changes occurring in xerothermic grasslands, and thus the effect of protective measures.

In the Prądnik Valley, the state of xerothermic grasslands (flower and rock terrains) was assessed on 29 areas based on the phytosociological photos taken with the Brown-Blanquet method, they are a picture of the qualitative (species) and quantitative composition (percentage of area coverage by a given species) habitats including four main layers: A-trees; B-shrubs and under-growth; C- herbaceous layer; D- bryophytes and lichens. The results of the research also showed a significant contribution of species characteristic for xerothermic grasslands, as well as significant coverage by trees and shrubs, which there is some analogy to the monitoring indicators (according to the GIOŚ Methodology): "characteristic species" and "expansion of shrubs and undergrowth"

2. Monitoring of the implementation of the objectives of protective measures - performed during and immediately after their completion (frequency correlated with the frequency of treatments); run in a similar manner in each of the 13 Natura 2000 sites covered by the Project

Monitoring of the implementation of protective measures is based on:

- pasture management control - field vision on each surface at least once every month during the grazing period (May-October) - based on checking the correctness of the conducted activity by including the following criteria: degree of biting (quantitative and qualitative), unconsumed grass (presence / absence - in particular with regard to invasive and expansive species), this annual shrubs and trees (presence / absence);
- inspection of felling and grubbing - field visions during performed operations (minimum 1 time during each of the areas) and after their completion to assess the

grubbing and logging performed (number of trees cut, area and depth of clearing, method of removal of biomass from the habitat) ;

- mowing control - visions on the ground (minimum 1 time during each of the areas) and after their completion to assess the quality of the action (area covered by mowing, way of making and removing biomass from the habitat patches).

4. Education in the field of natural values

The Regional Directorate of Environmental Protection in Kraków uses PAP rules to provide educational opportunities directed at communities in order to inform them of the environmental value of the 12 Nature 2000 areas in the project as well as the need to and methods of protecting this value. The goal is to also organize workshops that would help expand knowledge in the area of agricultural, environmental, and climate-related programs. The frequency of educational events will depend on the level of need in this area.

In addition, RDOŚ in Kraków will support other projects as part of its established mission – projects whose purpose will be to actively protect heat-loving habitats in the Małopolska region. The source of funding for these projects will be the LIFE+ Fund or other national or foreign sources of funding.

RDOŚ in Kraków will make data readily available and will support scientific work whose purpose is to increase the level of knowledge on the natural environment of heat-loving habitats including natural habitats protected as part of the Nature 2000 program and its association with the current project.

RDOŚ in Kraków will also participate in local events and initiatives whenever staff is available and able to participate.

In the Prądnik Valley, education in the field of natural values will be carried out by the academic and teaching staff of the Ojców National Park, through the organization of excursions, field workshops and chamber classes, as well as natural competitions for children and youth.

ACTION PLAN

Due to the 10-year period of validity of the PAP, protective measures were diversified into short- and long-term ones.

SHORT-TERM ACTIONS (IN THE PERSPECTIVE OF 10 YEARS)

All planned protective measures until 2028 will be implemented according to the PAP guidelines, if possible. Currently, in 2018-2020, activities implemented thanks

to funds obtained from the Operational Program Infrastructure and Environment, as part of the project no POIS.O2.04.00-OO-OI 80/l 6-00 pn. "Protection of endangered species and habitats within the framework of the Natura 2000 network in Lesser Poland". In subsequent years, the Regional Directorate will apply for obtaining funds from NFOŚ or WFOŚ.

1. Actions related to active protection and maintenance or modification of management methods

As part of the Life + project, grazing was conducted in total in 11 Natura 2000 areas with a total area of 21.52 ha (20.95 ha-habitat 6210, 0.57- habitat 5130). Under the POIŚ project in 2018-2020, the grazing area is 20.98 ha (20.41 ha habitat 6210, 0.57 ha habitat 5130). Ultimately, over the next 10 years, it is planned to cover about 24 ha in 11 Areas in the Miechowska Upland and about 10 ha in the Prądnik Valley Area.

As part of the Life + Project, the area was cut and grubbed up on the area of 24.68 ha (in 12 areas on the Miechowska Upland) and on 9.83 ha (in the Prądnik Valley), while mowing on the area: 23.97 ha and 0.86, respectively. ha. In the perspective of 10 years, the reduction of trees and shrubs is planned to reach the target coverage of 15% on the entire area occupied by the habitat 6210 (33.07 ha) and in the Prądnik Valley area (at a minimum area of 10 ha). The closest date for completing the task in 12 Natura 2000 areas is planned for 2019. However, the size of mowed area will depend on the size of the area covered by pasturage.

2. Activities related to monitoring the implementation of protective measures

Habitat status will be assessed in accordance with the GIOŚ Methodology. The first monitoring during the 10-year plan of conservation tasks will be carried out in 2020. The results of the monitoring will be published on the website of the Regional Directorate for Environmental Protection in Kraków. It is planned to apply for inclusion of xerothermic grasslands in the following areas: Giebułtów Kalina Mała and Chodów-Falniów to the list of monitored sites - under the State Environmental Monitoring - of habitat 6210.

According to PAPs for 12 Natura 2000 areas, monitoring of habitat protection status 6210 and 5130 will be carried out once every five years on the indicated monitoring areas.

In the Prądnik Valley area monitoring of the status of protection objects will be carried out every 5 years by employees of the Ojców National Park on 30 designated monitoring areas. The reference point will be the results of phytosociological inventory made in 2018 (on the above mentioned areas).

Monitoring of the implementation of the objectives of protective measures will be carried out each time during and after the performed operations (in 12 Areas on the Miechowska Upland and the Prądnik Valley Area). Its purpose is to evaluate the effectiveness of active protection measures.

Additional monitoring (since 2018) also includes 2 orchid species: *Orchis militaris* and *Ophrys insectifera* in Natura 2000 areas: Kalina Mała and Giebułtów. Observations were made on designated plots with an area of 1 m², three times in the growing season (taking into account the development stages of the species). In each research field, individuals of the population were calculated, their age structure was determined, the degree of damage by animals, and the following measurements were made: the height of flowering shoots, length of inflorescences, number of leaves, flowers / seed bags. The obtained data are treated as "status 0" monitoring. They will be compared with the results of research, planned for 2020. The observations made will serve as a supplement to the state of knowledge about the species populations and the changes that take place in them under the influence of pasturage. Taking into account the biology of orchids and the impact of other biotic and abiotic factors on their development, monitoring should be continued at a frequency of once every three years (with annual grazing).

3. Activities related to the provision of private plots for the protection of active habitats

As part of the Life + Project, there were agreements on carrying out protective activities - during the Project - in total, on 93 plots. The owners agreed to grazing (21.52 ha), grubbing and cutting (24.68 ha), mowing (23.97 ha). During the implementation of the Project - out of the aforementioned 93 plots- 23 (total area of 8.5508 ha) were purchased and 21 plots were leased for 22 years (total area 10.0343 ha).

Under the POIŚ project, protective activities are carried out on purchased and leased lands, and also on private plots, made available by owners for a period of 5 years. Permission was obtained for removing trees / shrubs and for mowing on 37 plots (total area 8.29 ha) and for grazing on 36 plots (total area 8.19 ha).

4. Education in the field of natural values

Education in the field of natural values in the years 2019-2023 will be continued through both small classes as well as field lessons. Under the POIŚ project, a minimum of 10 meetings is planned (each approximately 20 participants) in individual years: 2019, 2020. They include field workshops for children and youth from primary and secondary schools; workshops for teachers, training for grazers, trips and small classes for residents of the Miechów Upland regarding the possibilities of using the RDOŚ subsidies.

In addition, it is planned to participate in regular events, such as: "Orchid Day", "Miechow Days", "Cabbage Days"

Nature education will also be conducted in the Prądnik Valley by research and teaching staff of the Ojców National Park (organization of excursions, field workshops, lectures).

LONG-TERM ACTIONS (30-YEARS PERSPECTIVE)

Each time after 10 years, new plans for conservation tasks will be established. To this end, field tests will be carried out and new PAP documentation will be prepared, based on which protective measures will be designated. The surfaces indicated for monitoring may then change.

1. Actions related to active protection and maintenance or modification of management methods

Taking into account the specificity and genesis of xerothermic grasslands, maintaining the effect will require constant protection. Nevertheless, the frequency of performing treatments in a well-preserved habitat (high diversity of characteristic species, no undesirable species, share of trees and shrubs on the surface up to 15%) may be lower then. Felling and grubbing up can be carried out once every 3 years (in patches in which there is plum blackthorn, cornelia tridva), every 5 years (in patches without the aforementioned species of shrubs). The decision on the necessity to increase the frequency of the procedure will be made on the basis of monitoring results, as well as field observations.

2. Activities related to monitoring the implementation of protective measures

In the long-term, monitoring of the conservation status of natural habitats will be continued (and financed) as part of the State Environmental Monitoring on the indicated areas of xerothermic grasslands in three areas: Giebułtów, Kalina Mała, Chodów-Falniów. As far as financial possibilities of RDOŚ in Krakow are concerned, monitoring will be continued also in the remaining 9 Natura 2000 areas in the Miechowska Upland and in the Prądnik Valley (according to the CIEP Methodology), in the transects indicated in the PAP (established after 2028).

3. Activities related to the provision of private plots for the protection of active habitats

For approximately 30 years, it is planned to cover the entire surface of xerothermic grasslands (33.07 ha) and the entire area of the Yaroslavl habitat in the limestone grasslands (0.57 ha). It is possible to achieve this by concluding agreements with landowners or by running a mowing / mowing and pasture economy (compatible with PAP) by the owners as part of obligations resulting from the use of EU programs supporting farmers.

4. Education in the field of natural values

Educational activities will be continued mainly in the framework of cooperation with primary and secondary schools in the area of Miechów district and from Cracow, as well as universities - Jagiellonian University, Agricultural University (field classes), as well as through participation in local cyclical outdoor events.

DETERMINATION OF STAFFING NEEDS AND INSTITUTIONAL NEEDS AND ANALYSIS OF SOCIAL ISSUES

Staffing needs, financial needs, and institutional needs will be related directly to the extent of work needed in order to maintain the effects of the project.

Currently there are 3 RDOŚ research staff members (1.5 full-time job equivalents) who are responsible for work associated with the protection of xerothermic grasses and common juniper thickets in grasses growing on limestone as part of the project "Protection of endangered species and habitats within the framework of the Nature 2000 network in Małopolska" managed by RDOŚ in Kraków (yearly cost 99 630 pln) Before the said project ends, RDOŚ in Kraków will apply for external funding for the

continuation of protective efforts across natural habitats protected as part of the 12 Nature 2000 areas covered by the project. Staffing needs and equipment needs in addition to other needs will be assessed at the completion stage of the application. However, the staff of the new project should not be smaller than that of the current project – two persons working on scientific issues.

The management of Ojcowski National Park has expressed the desire to maintain the ecological effects of the protective actions taken in the Nature 2000 area of the Prądnik Valley.

ACTION PLAN – TASK LIST

Nr Działania Action no.	Nazwa Działania Name of action	Potrzeba Kontynuacji Need to continue	Co i jak Description of action	Kto Who	Kiedy When
A1	Execution of protective action plans	NO	The action was fully completed within the project. PAPs created in 2018 will remain in effect for 10 years. After 2028, RDOŚ in Kraków will create another PAP or protection plan for Nature 2000 areas covered by the project.		
A2	Zakup sprzętu do realizacji projektu i zadań terenowych Purchase of equipment used to complete the project and for fieldwork	NO/YES	<ol style="list-style-type: none"> 1. maintenance and utilization of purchased equipment 2. further needs in this area will be determined in the course of the preparation of a new application for external funding 	RDOŚ in Kraków	<ol style="list-style-type: none"> 1. throughout the period of the maintenance of the effects of the project – until the equipment is needed or it needs to be retired 2. during the completion of a new application for external funding

<p>A3</p>	<p>Preparation of procedural outlines and acquisition of required permissions and signing of agreements</p>	<p>YES</p>	<p>Preparation of detailed descriptions of protective actions for the purpose of public bidding for contracts, this would include data such as surface area of protected area, amount of biomass to be generated in the process of tree and bush uprooting and the mowing of grass, preparation of grazing plans. Acquisition of permissions and signing of agreements with landowners.</p>	<p>RDOŚ in Kraków</p>	<p>Throughout the entire period of the maintenance of the effects of the project and later in the course of the subsequent project.</p>
<p>A4</p>	<p>Purchase of farm animals</p>	<p>NO</p>	<p>The action was fully executed. There is no need to purchase sheep and goats throughout the entire period of the maintenance of the ecological effects of the project. Grazing plans will be realized using animals purchased during the current project along with animals already owned by ranchers part of the project. Ranchers are expected to maintain the current head count.</p>		

B1	environmentally valuable land	NO/YES	RDOŚ in Kraków will continue to purchase land with natural habitats that are protected as part of Nature 2000 areas if it is able to secure funding for this purpose.
C1	Garbage removal	NO	RDOŚ in Kraków will not continue this action. Currently it is the job of commune governments to clean up garbage. RDOŚ in Kraków will supervise the execution of this action by communes as part of its supervisory role in the management of Nature 2000 areas.

C2	Removal of trees and bushes	YES	Protective action consisting of the felling and uprooting of trees and bushes will be executed on the basis of the PAP currently in effect, results of environmental monitoring, and procedural outlines containing the detailed description of the extent of works.	RDOŚ in Kraków	Starting in 2018 and depending on current needs in the field. This action will be executed in areas where protective actions have been taken in the past with the permission of landowners as well as in areas not affected by past protective actions whose owners have given permission to realize such action plans.
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C3	Mowing of grasses	YES	Protective action consisting of the mowing of grasses will be executed based on the PAP in effect and procedural outlines containing a detailed description of the extent of works.	RDOŚ in Kraków	Starting in 2018 and depending on current needs in the field. This action will be executed in areas where protective actions have been taken in the past with the permission of landowners as well as in areas not affected by past protective actions whose owners have given permission to realize such action plans.
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C4	Planning of animal grazing periods	YES	Protective action consisting of the grazing of sheep and goats will be executed based on PAPs in effect, results of environmental monitoring, and procedural outlines containing the detailed description of the extent of works.	RDOŚ in Kraków	Starting in 2018 and depending on current needs in the field. This action will be executed in areas where protective actions have been taken in the past with the permission of landowners as well as in areas not affected by past protective actions whose owners have given permission to realize such action plans.
D1	Environmental monitoring	YES	Monitoring of the state of habitat protection using methods approved by the National Environmental Monitoring Office of the Main Inspectorate for Environmental Protection	RDOŚ in Kraków	Every 5 years starting in 2018

D2	Assessment of the social and economic impact of the planned actions on the local economy and community as well as the functioning of the ecosystem	NO	This action was fully executed in the course of the project – there is no need to continue it.
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E1	Collaboration with the local community and local institutions, consultations and agreements	YES	<ol style="list-style-type: none"> 1. Ongoing collaboration with commune and county governments in the realization of protective tasks outlined for the project "Protection of endangered species and habitats within the framework of the Nature 2000 network in Małopolska." The project period lasts from 2017 to 2020. 2. The extent of further collaboration with local governments will be determined at the stage of the completion of the next application for funding 	RDOŚ in Kraków	Starting in 2018 and performed every year depending on needs in this area. At least several times a year during the completion of the project, "Protection of endangered species and habitats within the framework of the Nature 2000 network in Małopolska." Starting in 2021 the collaboration will continue in the form of an RDOŚ booth at important events. In the event that a new project is started, collaboration will take place based on the guidelines set forth in that new project: use of workshops in the field, participation in special events and local government meetings and other events.
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E2	Project website: http:// http://kseroatomy- life-krakow.pl/	YES	Ongoing maintenance of publicly accessible website.	RDOŚ in Kraków	Updates at least twice per year
E3	Informational and publishing information	This action was fully executed in the course of the project – there is no need to continue it.			

E4	Project educational work	YES	Educational efforts targeting the community in order to inform it of the environmental value of Nature 2000 areas and the need to and means of protecting this value via the use of workshops generating increased social awareness of agricultural, environmental, and climate-related programs and via participation in events such as Cabbage Day, Orchid Day, and Miechów Days.	RDOŚ in Kraków	Starting in 2018 and performed depending on needs in this area.
E5	Popular science report and full research report on the project	NO	This action was fully executed in the course of the project.		

E6	Production of informational and government signs	YES	<ol style="list-style-type: none"> 1. Repair of damaged government signs 2. Repair of damaged informational signs 	<ol style="list-style-type: none"> 3. RDOŚ in Kraków 4. Commune governments 	Starting in 2018 and performed depending on needs in this area.
E7	Organization of a conference summarizing the project	NO	This action was fully executed in the course of the project – there is no need to continue it.		

F1	Project management	YES	<p>1) Regional Environmental Coordinator responsible for the implementation of the After-LIFE program and maintenance of the effects of the project.</p> <p>2) Coordinator of the project "Protection of endangered species and habitats within the framework of the Nature 2000 network in Małopolska" – a project completed in the years 2017-2020 – along with a team consisting of 1 research staff member and 1 accountant. Legal issues are handled by an outside law firm.</p>	RDOŚ in Kraków	<ol style="list-style-type: none"> 1. From January 2018 on 2. In the years 2018-2020
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F2	Work of the steering committee	NO	This action was fully executed in the course of the project – there is no need to continue it.		
F3	Monitoring of project completion work	YES/NO	<p>1) Coordinator of the project “Protection of endangered species and habitats within the framework of the Nature 2000 network in Małopolska” completed in the years 2017-2020 along with a team.</p> <p>2) The completion of this task will depend on the ability to secure funding for a new project starting in 2021.</p>	RDOŚ in Kraków	In the years 2018-2020

F4	Networking with other project leaders	YES	RDOŚ in Kraków will continue to work together with other LIFE project leaders and will present the results of work completed by its own staff and coworkers as part of the current LIFE project.	RDOŚ in Kraków	From January 2018 on
F5	External financial audit	NO	This action was fully executed in the course of the project – there is no need to continue it.		
F6	Protection plan to follow the LIFE project after it ends	NO	Protection plan following the completion of the LIFE project		

COSTS OF ACTIONS

Life12 NAT/PL/053 is very difficult to estimate at this point in time. These costs are dependent first and foremost on the rate of secondary succession, which will occur in actively protected areas – these will be the costs of continuing actions C1-C4. The costs of the continuation of active protection will be estimated on an ongoing basis. All steps taken will be consistent with PAPs. The estimates found below are designed to provide some insight into the costs of actions planned for the period after the completion of the project.

Action no.	Name of action	Funding	Estimated cost
A2	Equipment maintenance	RDOŚ in Kraków	3,000 zł/year
A3	Preparation of procedural outlines and acquisition of required permissions and signing of agreements	<p>1. In the years 2018-2020, the task financed from the funds of the project entitled "Protection of endangered species and habitats within the framework of the Natura 2000 network in Malopolska" (2 employees are responsible for preparing documents, working in the following areas: 1 and 0.5 full time)</p> <p>2. From 2021, RDOŚ in Krakow or funds obtained under the new project.</p>	<p>1. The cost of preparing documents is a component of the total remuneration of employees (the total amount of remuneration for 1.5 full-time employees is 298 890 pln in the 3-year scale)</p> <p>2. After 2021, approximately PLN 33,000 gross for an employee, 0.5 part time (per year) or according to costs planned in a new project</p>
C1-C4	Active protection of natural habitats	<p>1. In the years 2018-2020, this action is financed by the project "Protection of endangered species and habitats within the framework of the Nature 2000 network in Małopolska"</p> <p>2. From 2021 RDOŚ in Kraków or funds acquired as part of a new project</p>	<p>1. In the years 2018-2020 in line with costs estimated in the project: about 180,000 zł for the felling and uprooting of trees and bushes, about 43,000 zł for mowing, and about 1,250,000 zł for animal grazing</p> <p>2. After 2020 about 450,000 zł (gross) or according to cost estimates listed in a new project</p>

D1	Environmental monitoring	<p>1. In the years 2018 – 2020 funds were obtained from the project: “Protection of endangered species and habitats within the framework of the Nature 2000 network in Małopolska”</p> <p>2. Starting in 2021 RDOŚ in Kraków or funds acquired from a new project</p>	<p>1. In the years 2018 – 2020 in accordance with costs estimated in the project: about 150,000 zł</p> <p>2. After 2021 about 30,000 zł per 5 years or in accordance to costs estimated in a new project</p>
E1	Collaboration with local community and institutions, consultations and agreements	<p>1. In the years 2018 – 2020 the task will be funded by the project: “Protection of endangered species and habitats within the framework of the Nature 2000 network in Małopolska”</p> <p>2. Starting in 2021 RDOŚ in Kraków or funds acquired as part of a new project</p>	<p>1. In the years 2018 - 2020 in accordance with costs estimated in the project: about 21,000 zł</p> <p>2. After 2021 without any costs or in accordance with costs estimated in a new project</p>
E2	Project website management	IT staff at RDOŚ in Kraków will update the website	<p>No cost. This is work performed as part of the standard duties of RDOŚ employees in Kraków.</p> <p>Cost of internet domain: 100 zł/year</p>

E4	Project educational activity	<p>1. In the years 2018 – 2020 this task is financed by the project “Protection of endangered species and habitats within the framework of the Nature 2000 network in Małopolska”</p> <p>2. Starting in 2021 RDOŚ in Kraków or funds acquired as part of a new project</p>	<p>1. In the years 2018 – 2020 in accordance with costs estimated in the project: about 42,000 zł</p> <p>2. After 2021 without any costs or in accordance with costs estimated in a new project.</p>
E6	Repair of informational signs and government signs	<p>1. Contractor with a 5-year warranty. RDOŚ in Kraków.</p> <p>Commune government</p>	<p>1. Once the warranty period is over, 500 zł per sign once per 5 years (24 signs). The total cost of maintenance / renovation of tables - about PLN 60000 (cost for 30 years)</p>

F1	Project management	<p>1. In the years 2018 – 2020 the task is financed by the project: “Protection of endangered species and habitats within the framework of the Nature 2000 network in Małopolska”</p> <p>2. Starting 2021 RDOŚ in Kraków or funds acquired as part of a new project</p>	<p>1. In the years 2018 - 2020 in accordance with costs estimated in the project: about 250,000 zł (2 persons employed in 0.5 part time.)</p> <p>2. Starting in 2021 in accordance with the cost estimate for a new project</p>
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SUMMARY OF THE MAIN PURPOSES

PURPOSE 1.

Activities related to active protection and maintenance or modification of management methods.

In the perspective of 10 years - grazing about 24 ha (in 11 Natura 2000 areas); in the Miechowska Upland by 10 ha in the Natura 2000 area of the Prądnik Valley. Achieving target closure of 15% of trees and shrubs in 6210 habitat on an area of 33.07 ha (in 12 N2000 areas on the Miechowska Upland).

In the long-term, maintaining the achieved effect (after 10 years), covering the whole surface of xerothermic grasslands (33.07 ha)

PURPOSE 2.

Activities related to monitoring the implementation of protective measures.

Conducting monitoring of the conservation status of the 6210 habitat in 22 transects (in 12 Natura 2000 areas) and on 30 monitoring areas (in the Natura 2000 Prądnika Valley area), in accordance with the GIOŚ Methodology. Inclusion of xerothermic grasslands (from three areas) to PMŚ GIOŚ Monitoring the effectiveness and quality of protective measures (target area 6210: approx. 24 hawas, 33.07 hatching, cutting, grubbing). Monitoring of 2 species of orchids in 2 Natura 2000 areas.

In the long-term perspective, the monitoring method according to subsequent applicable PAP

PURPOSE 3.

Activities related to the provision of private plots for the protection of active habitats.

Conclusion of agreements for carrying out protective activities for a period of minimum 10 years (duration of the PAP): grazing on area around 24 ha, clearing and grubbing up on area 33.07 ha.

In the long-term - obtaining permits for grazing on the entire area of habitat 6210 (33.07 ha)

PURPOSE 4.

Education in the field of natural values.

Organization of a minimum of 10 meetings (each 20 participants) in 2018-2020; annual participation in cyclical outdoor events.

In the perspective of 30 years, continuation of educational activities in cooperation with schools and universities and local authorities.