



REPORT
2011

WE PROTECT
THE STEPPE OAK
WOODS TOGETHER



Nagykőrös



VIDÉKFEJLESZTÉSI
MINISZTERIUM



Conservation

Biodiversity

Sustainability

Conservation of the Steppe Oak Woods of Nagykőrös

Nature Conservation and Habitat
Restoration on the Great Hungarian Plain



IMPRINT

Written by: László Gálhidy • Klára Kerpely
Zsófia Mária Papanek • György Verő
Translation: Zsófia Mária Papanek
Proof-reading: Edimart Kft.

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www.wwf.hu • panda@wwf.hu

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Project homepage: www.pusztaitolgyesek.hu

WHAT IS LIFE?

Apart from the obvious meaning of the word LIFE in English, it is also a French acronym used by the European Union (L'Instrument Financier pour l'Environnement), which means “Financial Instrument for the Environment”. The LIFE program started in 1992, and has supported the implementation of more than 2500 projects in 40 different countries so far. LIFE-Nature gives financial support for the implementation of outstanding nature conservation activities – to different species protection projects, as well as to the complex conservation and development of habitats of European significance. LIFE has given financial support to 3 main areas: to the environment (LIFE-Environment), to nature conservation (LIFE-Nature), and to activities outside the EU (LIFE-Third Countries). LIFE-Nature supports the conservation of native flora and fauna, the complex protection of habitats, and many species protection projects, primarily in Natura 2000 areas.

The three areas of support in the LIFE+ program, which was launched in 2007, includes: Nature and Biodiversity, Environmental Policy, and Communication and Dissemination of Knowledge.

The LIFE program's EU homepage can be found at:

<http://ec.europa.eu/environment/life/home.htm>
<http://ec.europa.eu/environment/life/home.htm>

NATURA 2000

Natura 2000 is the ecological network of Europe with the aim of conserving European wildlife. After Hungary ascended to the EU in 2004, Natura 2000 areas were designated for protection. 90% of previously protected areas became part of the Natura 2000 network, but new areas that were unprotected before were also added. The assignment of Natura 2000 network sites is based on the criteria of two EU Directives, the Birds Directive and the Habitats Directive. Besides the assignment of sites, their appropriate management also has to be ensured in a way so that the flora and fauna species, as well as habitats of community importance, which merit the designation can survive over the long term.

Nature conservation at Natura 2000 sites is implemented by equally taking social, economic and cultural criteria into consideration and harmonising them. A great advantage of setting up this network lies in the fact that the natural treasures of Hungary have received a higher level of protection than before under EU law. In addition, new funds – for example the LIFE program – are now available for conservation activities. Hungarian nature conservation bodies are obliged to provide regular reports on the condition of Natura 2000 sites to the European Commission.



CONSERVATION OF THE STEPPE OAK WOODS OF NAGYKŐRÖS

NATURE CONSERVATION AND HABITAT RESTORATION ON THE GREAT HUNGARIAN PLAIN

Report on the achievements of the LIFE-Nature Project Conservation of Euro-siberian steppic woods and Pannonic sand steppes in 'Nagykőrösi pusztai tölgyesek' pSCI 2006-2011

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INTRODUCTION

Steppe oak woods are unique habitats in Hungary. They are part of forest steppes, a type of vegetation that stretches across the whole of Eurasia and reaches its Western border here in the Carpathian-Basin. They are home to a number of rare or endemic plant and animal species including the European Roller, the European Honey Buzzard, the perennial bunchgrass species *Stipa borysthenica*, and the Long-lasting Pink. The Pedunculate Oak is their characteristic tree species, and some old specimens on the Great Hungarian Plain have grown huge trunks and ramage. The canopy of steppe oak woods are interspersed with larger patches of clearings here and there, where typical steppe vegetation can be found on the sandy soil.



Photo: © László Gálicsy

This landscape has played an important role in our history, because migrating Hungarians followed the forest steppe zone to the West. The steppe oak woods of the Carpathian Basin in turn also became the site for livestock grazing over many centuries. Later on, most of them were converted to treeless pastures or plough-land. Unfortunately hardly any effort was made to restore the original vegetation later again, during the afforestation of the Great Hungarian Plain, and non-native forest plantations were established, creating the basis for the present landscape in the area. By today, only such a small number of patches survive of the original forest cover that most of them are known by their own name, given for the settlement to which they are near. The steppe oak woods of the city of Nagykőrös are one of the biggest among them.

Not only do steppe oak woods belong to the rarest, but also the most threatened type of forest. Forest managers continue to convert these woods into cultivated forests: Black Locust or poplar plantations even today, if conservation restrictions are not present. Non-native plant species also pose a threat to the surviving natural stands. Overstocked herbivorous game species cause

huge amounts of damage. Changing groundwater levels, together with ever more intensive climate change are leading to the slow decay and devastation of these woods. Fortunately, however, the majority of these adverse processes can be stopped, reversed or slowed down to a degree next to which this unique type of forest vegetation, also recognised by the EU, can be preserved.

This publication presents the objectives, efforts and achievements of the five-year LIFE-Nature project that was implemented by Danube-Ipoly National Park Directorate, the Municipality of Nagykőrös and WWF Hungary. The scope of our efforts did not stop at research, as well as the saving and preservation of natural assets. We also consider raising awareness about the steppe oak woods of Nagykőrös among as many people who want to take part in the conservation of plants and animals as possible – both within and outside of Hungary – to be of equal importance. We believe that raising the interest of people living in and around Nagykőrös, engaging them and securing their assistance is particularly important. The reason being is that only those can do the most who have appropriate knowledge and preserve our shared treasures in their immediate environment.

WHAT ARE STEPPE OAK WOODS?



Steppe oak woods belong to the forest steppe vegetation type, and can be found on the driest sandy soils. The forest steppe belt stretches 8000 km from Central Asia to the Carpathian Basin, and acts as a transition between the closed forests typical to wetter climates and dry steppes. The landscape is characterised by a mosaic of forest patches and steppes instead of a single dark and dense closed forest. Steppe woods, however, do not only mean the side-by-side occurrence of forest and grassland, instead they are unique habitats with characteristic communities. This is because they are not merely a habitat where forest and grassland species mix, as there are many endemic species that cannot be found or are rare elsewhere. These are called forest steppe species. Characteristic herbaceous plants include the Snowdrop Anemone, White Dittany, Bloody Geranium, and Hungarian Iris.



THE FOREST STEPPE ZONE IN EURASIA
(Molnár and Kun 2000)

There are three main types of forest steppes in Hungary, which evolve on soils with different properties, therefore their species composition is likewise different.

Open loess steppe oak woods used to be present both in the foothills and on plains. Nowadays their last remnants can almost solely be found in foothills, for example the Kerecsendi Woods – a famous sampling area for botanical research – or Hársas Valley near Pánd.

Open salt steppe woods were created mostly by the drying-out of closed forests, and thus are located near former riverbeds or oxbows. The forests of Ohat and Újszentmargita are the best known examples.

Steppe oak woods and closed lowland steppe oak forests belong to **sand steppe woods**. Steppe oak woods can be found on dryer soils, and are replaced by closed lowland steppe oak forests that likewise thrive on sand, but are more closed and in lushier areas with better water supply. The last remnants of formerly extensive steppe oak woods can be found in the Buckás forest of Csévharaszt, the Fényi Forest of Bátorliget, the Sóstói Forest in Nyíregyháza and the Csókás Forest and the Nagyerdő of Nagykőrös.

WILDLIFE OF SAND STEPPE OAK WOODS

The two main types of sand steppe woods are the steppe oak woods of drier areas, and the closed lowland steppe oak forests located in areas with better water supply. Both habitat types and their transitions can be found near Nagykőrös. In the following, the wildlife of the steppe oak woods near Nagykőrös is presented, concentrating on the easily recognisable trees, bushes, herbaceous plants, vertebrates and invertebrates. But let us not forget that species we hardly ever or do not at all encounter, indeed ones that are not even visible to the naked eye, can also play a very important role in the survival of a community.



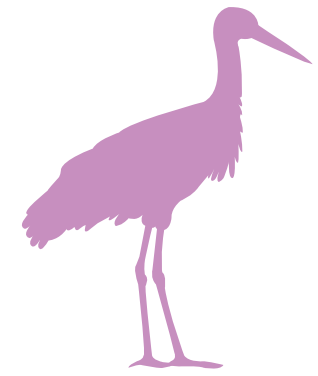
Photo: © DNPf

Steppe oak woods

The canopy level of the steppe oak woods are rich in species and a second, thinner canopy level can also be observed. The height of the stands is rarely more than 15 metres. The main tree species is the Pedunculate Oak, which is the tallest native oak species in Hungary. Grey Poplar and White Poplar are also typical in the Danube-Tisza Interfluve, and Pubescent Oaks – well-adapted to more arid mountainous areas – appear as a rare accompanying species. Further species include the English Elm, Field Maple, Wild Pear and occasionally Silver Birch. Common Hawthorn, Blackthorn, Common Dogwood, European Elder and Privet, which is often planted as hedge, are frequent at the well-developed scrub level.

The Pedunculate Oak is the “tree of Hungarians”. These trees offered protection and directions over several generations due to their long lifespan, and were very much respected. Toughness is an important characteristic of this species. It can adapt to changing levels of water supply, which is why it tolerated the floods that were once regular on the Great Plain. Its roots go very deep, which enables it to “wait” for better conditions, even for hundreds of years. Its trunk can produce sprouts until a certain age, and can thus be regrown when it is not possible by acorn. Its utilisation is very diverse, including beams, furniture, railway sleepers, barrels, boats, and served as food for animals and even people in times of famine.

There are old oaks that were spared during the centuries of forestry use in the woods of Nagykőrös, including Pálfája, which is the forest’s namesake. There are seven more trees, called token trees, of similar age in the woods with names of their own, and well-known stories are associated with them (e.g. Rákóczi Tree, Széchenyi Tree, Kisgatyás, Kincses Oak Tree).



STEPPE OAK WOODS ARE HOME TO MANY BIRD SPECIES

Characteristic Pannonic sand steppe and forest species mix below the more open steppe oak woods and in the patches of grass between groups of trees: fescue species (*Festuca vaginata*, *F. rupicola*), grass species (*Poa pratensis* ssp. *angustifolia*) and feather grass species (*Stipa* spp.). Additional typical species include: Hungarian Iris, Bloody Cranesbill, a sedum species (*Sedum maximum*), Dropwort, Broad-leaved Spiguel, Wall Germander, White Swallowwort, Germander Speedwell. Sand steppe relic species of the herb layer have high nature conservation values: such as the species of community interest in the area, the Long-lasting Pink, Sand Iris, Pulsatilla, Yarrow, Mountain Germander and Feather Grass.

Drying or rotting trees are important habitats of the older sand steppe oak woods. They are home to the European Rhinoceros Beetle and the Flower Beetle. The Violet Carpenter Bee often nests in dried out trunks. Steppe oak woods also provide a habitat for the very rare Pannonic beetle species (*Bolbelasmus unicornis*), which is a species of community importance in the area.

Gall Midges and Gall Wasps, which cause characteristic galls, occur in large numbers in sand oak woods, including *Andriscus hungaricus*. The presence of the three different rare gall wasp species in the area is unique.

Important butterflies of steppe oak woods which live on oak trees include: the Oak Hawk-moth, the sometimes proliferous Gypsy Moth, the Oak Processionary, *Spatialia argentea* and *Dryomonis dodonea*, Great Oak Beauty, Lunar Double-stripe, Alchymist and Green Oak Tortrix. The Scarce Swallowtail and Giant Peacock Moth live on the bushes of the forest edge. Leaf-mining moth species are also abundant in the area.

Steppe oak woods are home to numerous bird species. Populations of Middle Spotted Woodpecker, Syrian Woodpecker, Barred Warbler, Lesser Grey Shrike breed here, and Black Storks, and Honey Buzzards can also be observed frequently.

Closed lowland steppe oak woods

Lowland steppe oak woods are the neighbours of steppe oak woods, and can be found when groundwater levels are higher and a better soil structure enables the development of closed forests more typical of hilly areas. It was a common type of vegetation in the past, and most of the sand ridges of the Great Hungarian Plain were covered with this type of mostly closed sand steppe oak woods. These stands, however, have been reduced lately due to clear-cutting and decreasing groundwater levels.

The trees in a closed lowland steppe oak forest grow bigger because of better water supply, and stands can be as tall as 20-25 m. The Pedunculate Oak is the main tree species here as well. Due to favourable light conditions and sufficient water supply the European Privet and Common Hawthorn are frequent at the well-developed scrub level, while the Common Hazel, European Spindle, Blackthorn, Buckthorn, Common Dogwood and Wayfaring Tree also appear.



Photo: © János Bogoly

The Rhinoceros Beetle grows in old oaks

The herb layer is characterised by mesic forest species, for example the Lily of the Valley, which gave the Hungarian name to this type of forest, and which requires moist soil, or the Angular Solomon’s Seal and Broadleaf Solomon’s Seal, Early Dog-violet, Wood Bluegrass and False Brome. Species typical of dry forests appear as well, for instance the Purple Gromwell, Lungworth, Wild Liquorice or Swallow Wort.

The fauna of the closed lowland steppe oak woods is similar to that of the steppe oak woods. Big game species of both vegetation types include Fallow Deer introduced into Hungary for hunting purposes, which poses a significant threat to the natural regeneration of the woods due to overstocking. Roe Deer and Wild Boar numbers are also very high, and unfortunately so is serious damage they cause in saplings.

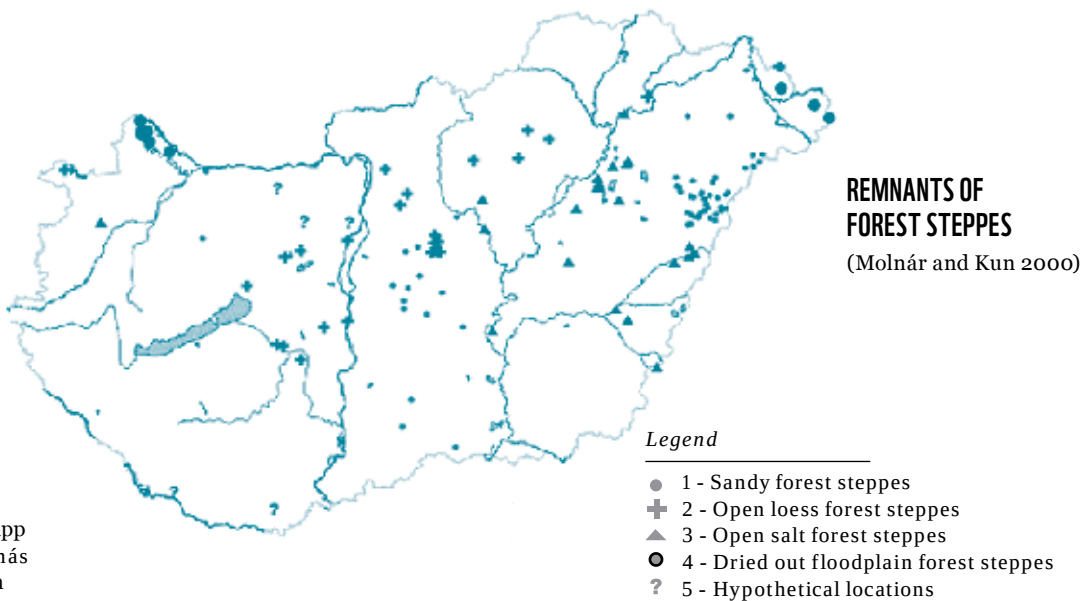
WHERE ELSE CAN WE FIND FOREST STEPPES IN HUNGARY?



According to its climate, and not taking human activities into account, 85% of Hungary would be covered by forests, and more than a quarter thereof would be forest steppe. Forest steppes were the main type of vegetation at the time of the Hungarian Landtaking (9th century AD) in the drier areas of the Great Plain far from floodplains. By now only a couple of thousand hectares are left at best, and most of them are in substantially degraded condition.



By the end of the 20th century sand steppe woods became one of the most threatened habitat types. According to IUCN (International Union for the Conservation of Nature) classification, they belong to the critically endangered (CE) category.



Edited:
Zsolt Ferenc Molnár

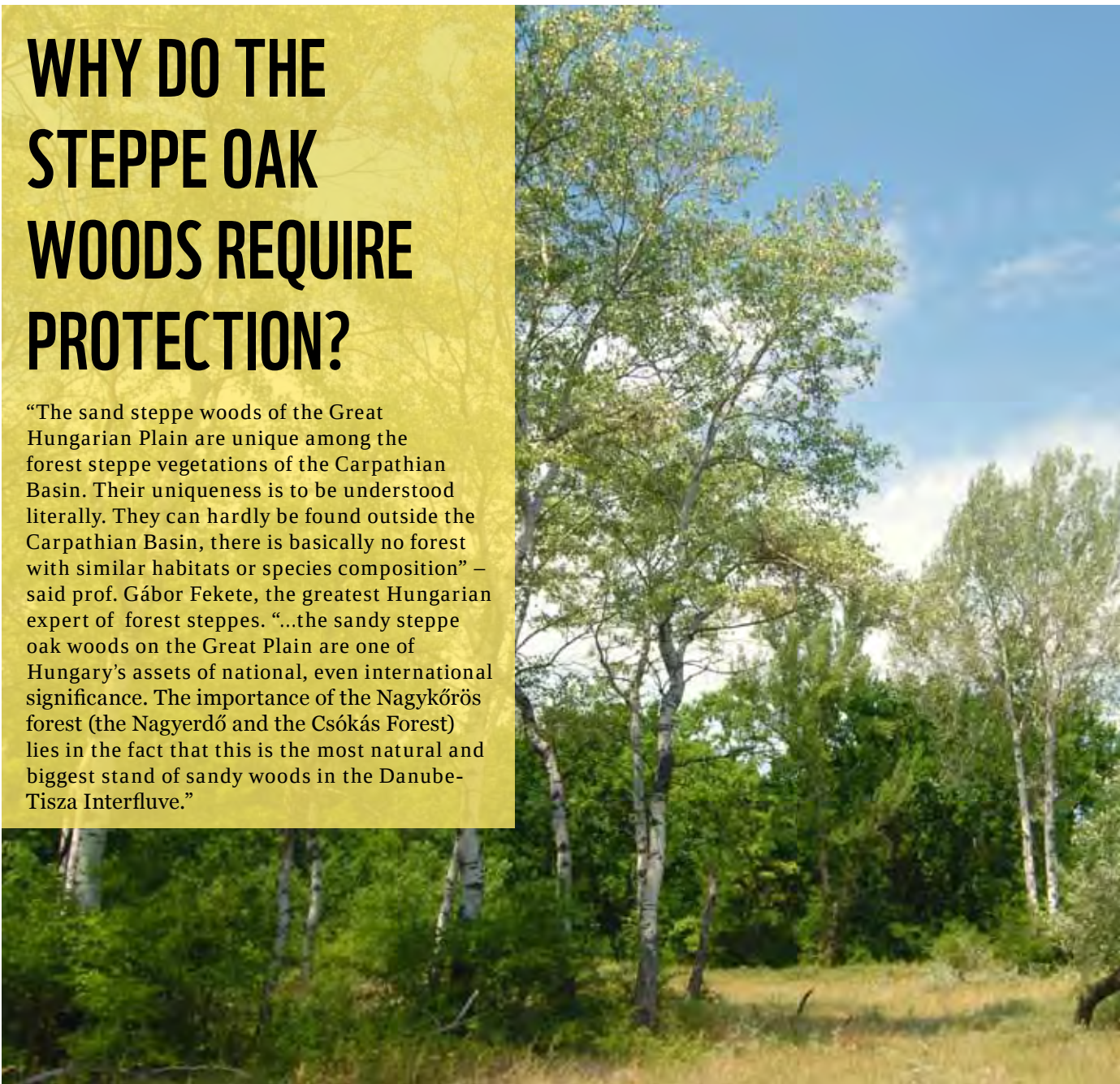
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Balázs Kevey
Attila Molnár,
Zsolt Molnár, László Papp
András Schmotzer, Tamás
Vidra and Kinga Virágh

Most surviving steppe oak woods are in the Great Hungarian Plain, but some stands can also be found on the Lesser Hungarian Plain, and Mezőföld in Transdanubia. Because of their small size, most woods have their own name, often after the village on the outskirts of which they lie.

WHY DO THE STEPPE OAK WOODS REQUIRE PROTECTION?

“The sand steppe woods of the Great Hungarian Plain are unique among the forest steppe vegetations of the Carpathian Basin. Their uniqueness is to be understood literally. They can hardly be found outside the Carpathian Basin, there is basically no forest with similar habitats or species composition” – said prof. Gábor Fekete, the greatest Hungarian expert of forest steppes. “...the sandy steppe oak woods on the Great Plain are one of Hungary’s assets of national, even international significance. The importance of the Nagykőrös forest (the Nagyverdő and the Csókás Forest) lies in the fact that this is the most natural and biggest stand of sandy woods in the Danube-Tisza Interfluve.”

Photo: © Gábor Székelyi



The size of the steppe oak woods of Nagykőrös is important not only in terms of quantity, but also because this resulted in the rich diversity of habitats and species is also valuable. The relatively large unfragmented area ensures the exchange of species between parts, and is also the basis for the resistance and sustenance of the woods.

The biodiversity of steppe oak woods, closed lowland steppe oak woods, and the steppes around them is outstanding. As in every habitat type, a single species can be of utmost importance. However, it is often difficult to determine the value of a seemingly unimportant species on the basis of our current knowledge, and therefore conservation of all the species is probably the best practice. This is the only way to ensure that the wildlife of this specific habitat survives.

The small surviving patches of this type of forest of extremely rich biodiversity can be compared to the last specimens of a critically endangered species. These woods tell us about the former state of the Great Hungarian Plain from centuries ago, much like an archaeological site does. A hike in the steppe oak woods is a bit like walking among the ruins of a thousand-year-old cathedral.

Steppe oak woods are important for the whole continent. The European Union recognised the value of this vegetation type by designating it a pSCI (Natura 2000 area). The steppe oak woods of Nagykőrös, however, does not enjoy any national protection (except for Strázsa Hill, which is locally protected), and until the start of the LIFE project its only kind of management was commercial logging.

STEPPE OAK WOODS OF NAGYKŐRÖS LIFE-NATURE PROJECT

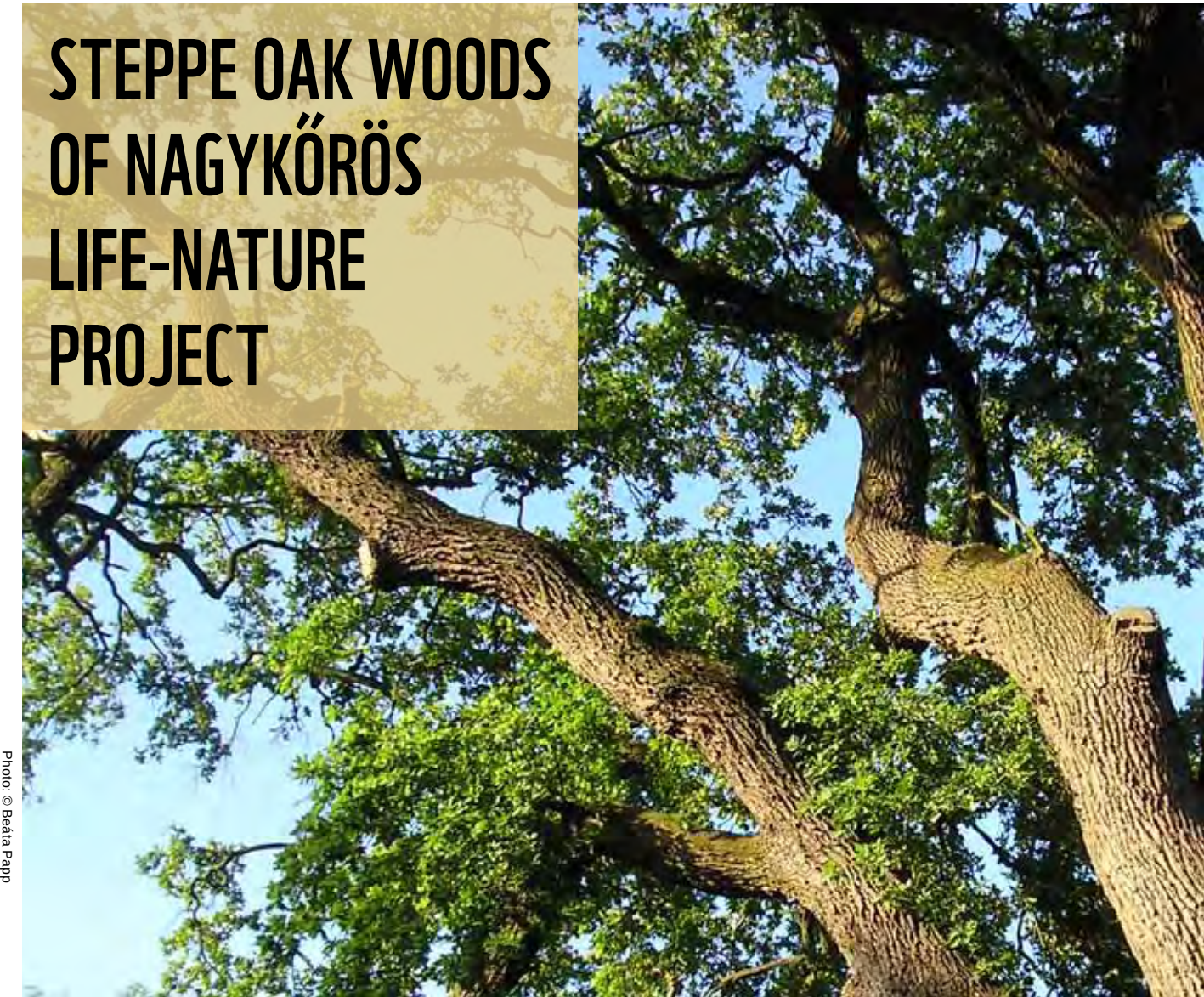


Photo: © Beáta Papp

WHAT DO WE PROTECT THE WOODS FROM AND HOW?



The project site and its history

The ‘Nagykőrösi pusztai tölgyesek’ pSCI (proposed site of community importance, or Natura 2000 area) is located on the sand ridge in the Danube-Tisza Interfluvium next to the city of Nagykovács and the village of Csemő. It is about 90 kms from Budapest, and 15 kms from Cegléd and Kecskemét each. Natura 2000 is the ecological network of the European Union, which aims to conserve wildlife in Europe. After Hungary ascended to the EU in 2004, Natura 2000 areas were designated for protection.

Pálfája Woods is located nearest to the city of Nagykovács, named after an old oak called ‘Pál’, which is still alive today. This forest is famous with hikers, there are trails, benches, and an extraordinary wooden building called Arena at its entrance, which was used to host dances. The forest stretches towards the northwest, and is dissected by the former “Pest Road” about 3 or 4 kms from the city. North of the road is the smaller Nagyerdő, and to the South is the bigger Csókás Forest. The Natura 2000 area is next to the town of Nagykovács and the village of Csemő.

**3300
HECTARES BELONG
TO THE “STEPPE
OAK WOODS OF
NAGYKŐRÖS”
SITE OF
COMMUNITY
INTEREST**

The habitats of community importance, which were the basis for the designation of “Nagykovácsi pusztai tölgyesek” pSCI can be found on an area of about 940 hectares (almost 2000 football pitches). The two most extensive types are the following:

- *Euro-siberian steppic woods with oak species (or grey poplar steppe oak woods of the Danube-Tisza Interfluvium in the Hungarian terminology)*
- *Pannonic sand steppes (including acidophilus sand steppes in the Danube-Tisza Interfluvium, open perennial calcareous sand steppes, and sand steppes)*

Animal species of community importance (from the Habitats Directive of the EU), which were taken into account for Natura 2000 designation:

- *Stag Beetle (Lucanus cervus),*
- *Great Capricorn Beetle (Cerambyx cerdo) and*
- *Bolbelasmus unicornis;*

And plant species of community importance:

- *Long-lasting Pink (Dianthus diutinus),*
- *Crocus (Colchicum arenarium), and*
- *Iris (Iris humilis ssp. arenaria).*



Brief history of the steppe oak woods of Nagykovács

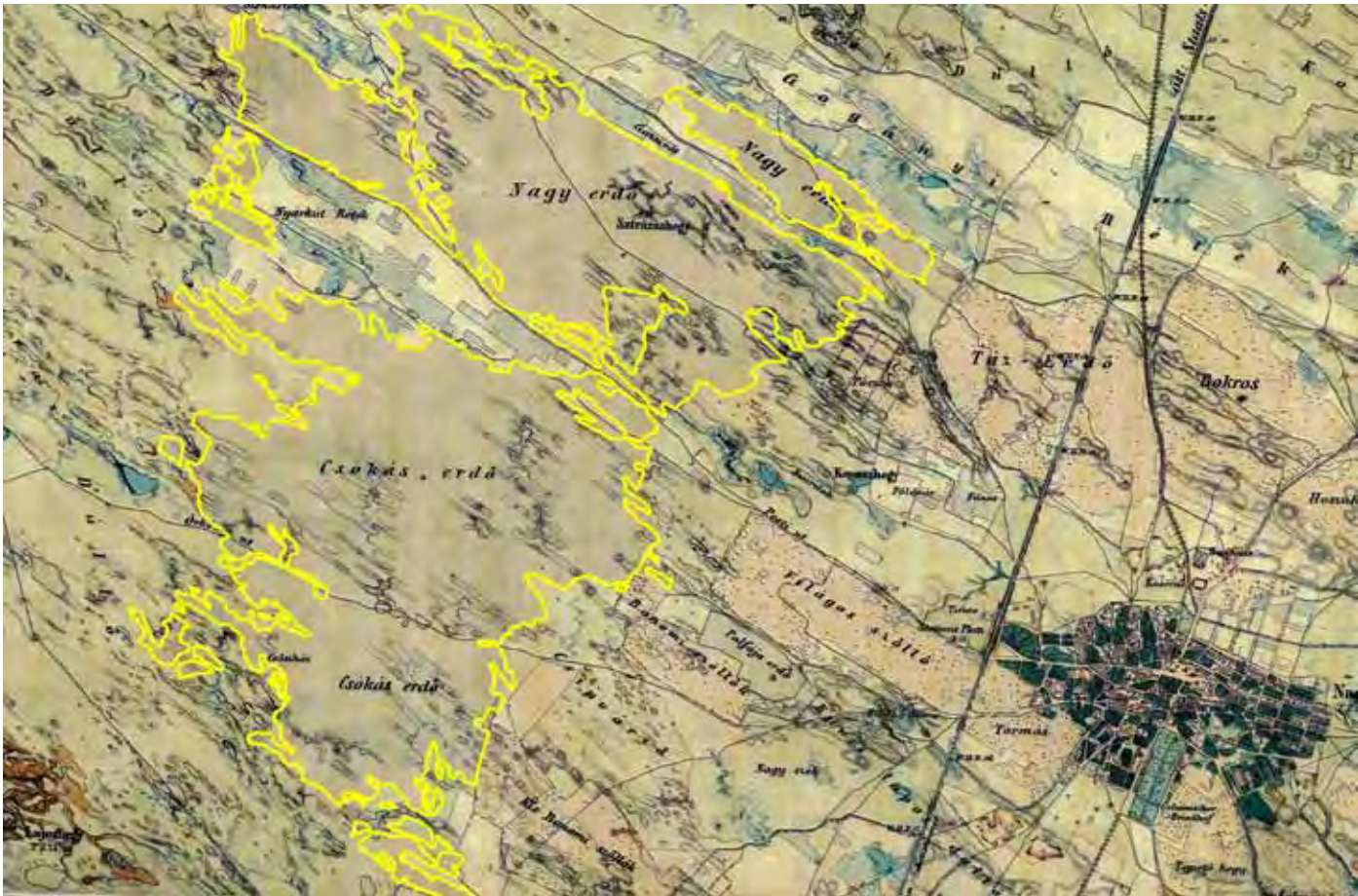
In the early Middle Ages a few locals scattered on the forested, swampy, hilly landscape of the Great Hungarian Plain depended on agriculture and pasture management for their livelihood. The area of Nagykovács was covered mostly by steppe oak woods at the time. Ever larger pastures were established around market-towns with significant livestock by destroying forests in the process. Sprouting was used to manage the remaining forests. During the Turkish occupation Nagykovács belonged to the Sultan’s treasury. Several documents preserved from the period give an account of significant timber production for boiling nitric acid, rampart construction and leather tanning. New plough-lands and hayfields were also established in many places, wedged between the woods. The former pristine state of the stands was destroyed during the time of the Turkish occupation.



Photo: © László Gáthdy

Regular forest management began with the forestry regulations by Empress Maria Theresa at the end of the 18th century. This is when the previous 10 year cutting interval was raised to 20 years. The forest was divided into 20 equal parts and 1/20 of it was cut every year, but about 10-20 strong trees were spared for seed production, and wild apple and wild pear trees were also left in place. At the time, illegal use of the forest incurred severe punishment. Grazing was forbidden for 4 years following logging. This ban was first increased to 15 years, then grazing was altogether banned in 1885. The forest started to grow. At the end of the century, however, non-native Black Locust and pine tree plantations were also established. From the beginning of the 19th century new settlers arrived and population numbers started to grow. The establishment of farms, logging, the growing pastures, increasing reaping and grazing, acorn collection for livestock, and the draining of wetlands had a profound effect on sand steppe oak woods. These processes were further accelerated by river management starting in the mid-nineteenth century.

By the beginning of the 20th century, the ancient sand steppe oak stands had shrunk to less than half of their original, 18th century size within the whole forest, and



The boundaries of wood-covered areas around Nagykovács on the map of the 2nd military survey (Bércesné Mocskonyi 2011)

their rapid decrease has continued ever since. The cutting interval remained 20 years until the 1930s, then it was gradually increased to 60 years. The transformed landscape was reforested with locust, pine and other non-native species from the second half of the 20th century. Those species characterise the present vegetation of the Great Hungarian Plain, and in many areas hardly a trace of the original flora can be found. The stand with the oak woods of Nagykovács is a fortunate exception, but most of it is also a non-native plantation. Clear-cutting is still a frequently used management technique in the case of oak forests, and one of the biggest threats to the unique sand steppe oak woods.

There are still some ancient oak trees in the Nagykovács forest which were always spared throughout the centuries. The start of the previous century saw the mayor of Nagykovács and his associates naming 25 trees more than a hundred years old. Out of those, only 8 age-old oak trees survive to this day:

Pál Tree	Estimated age: 600 years, trunk diameter: 610 cm
Kisgatyás	Estimated age: 400 years, trunk diameter: 360 cm
Kincses Acorn Tree	Estimated age: 450 years, trunk diameter: 470 cm
King Matthias Tree	Estimated age: 400 years, trunk diameter: 360 cm
Rákóczi Tree	Estimated age: 600 years, trunk diameter: 620 cm
Széchenyi Tree	Estimated age: 400 years, trunk diameter: 400 cm
Vilmos Fitoss Tree	Estimated age: 400 years, trunk diameter: 450 cm
Kálmán Szenthe Tree	Estimated age: 350 years, trunk diameter: 370 cm

There are many legends linked to these trees, which spread in the oral tradition. Tibor Kapás, a naturalist in Nagykovács has been researching the history of the token trees and the legends associated with them, some of which he published in a book, titled *Tales of the Trees of Kőrös*.



The history of the conservation of the steppe oak woods of Nagykovács



Pál Kitaibel, botanist

The recognition of the conservation value of the steppe oak woods in Nagykovács dates back to the 19th century. Pál Kitaibel, the greatest figure of botanical history in Hungary – often called the “Hungarian Linné” – was first to publish vegetation details about the vicinity of Nagykovács. Later Ágost Kanitz, and then László Hollós gave a more complete description of vegetation in the area, listing almost 730 plant species.

Between the two world wars Ádám Boros wrote about the adverse situation of our forests in his article “The flora of the Nagykovács sand steppe woods”. He accurately recorded habitat details for rare and endangered plant species, and already wrote the following about factors threatening the Great Plain’s native forests: “One and all they are the remnants of the ancient natural vegetation in the Danube-Tisza Interfluvium, and they are ever decaying, ever decreasing. The mounds lose their natural state due to grazing, the natural forests due to excessive Black Locust proliferation and reforestation with the species, while the wetlands do so due to draining. Any naturalist should fall into despair by seeing this destruction of the Great Plain’s endemic flora – which is unique worldwide – if it were not for some hope. The city of Nagykovács, you see, has recognised the importance of nature conservation and promised to afford protection to areas with characteristic vegetation, not only the old trees of the woods.”

Zoltán Hargitai added almost 130 new species to the list of plant species in the area, also describing plant communities and their microclimates. He incorporated the findings of his 40 research trips into his PhD thesis, which is regarded a pioneer effort in Hungarian ecological research. Unfortunately, his thoughts still hold true: “... Homeland means landscape, the grasses, flowers, trees with which we have bonded. The substance of the most sacred sense of patriotism includes a significant element of homeland, and leads to the natural world, which we so overbear in our struggle for daily sustenance that nothing remains of its original appearance.”



Photo: © DINPI

White Dittany, a fragrant flower of the edges of forests

Despite all of this, only a small part of the Nagykovács steppe oak woods was placed under protection in 1978 (Strázsa Hill, a conservation area of local significance). The area on the whole remained unprotected until Natura 2000 designation.

Most research during the 1980s and 1990s concentrated mainly on saving the critically endangered habitats that remained. The Danube-Ipoly National Park Directorate – the conservation manager of the area – started to seek opportunities for protecting the steppe oak woods, together with WWF Hungary’s forestry experts, as early as this period.

Bringing the LIFE project to life

After Hungary ascended to the European Union and the Natura 2000 areas were designated, financial support became available from the EU’s LIFE-Nature program. Thus the National Park Directorate, together with WWF and the Municipality of Nagykovács developed a plan for a five-year project. The proposal was submitted in 2005, and the project started in 2006 after EU approval. The aims of the project were to address the problems threatening the Nagykovács sand steppe oak woods, and thereby to protect its habitats. The following pages detail the threats to the oak woods, the conservation activities to eliminate them, as well as the achievements of the project.

THREATS TO THE OAK WOODS

The disappearing sand steppe oak woods are the most vulnerable of all sandy habitats. Their being threatened can be traced back to several different threat factors, and consequently steppe oak woods are in dire need of active protection. The LIFE Project was launched in 2006 with the aim of solving the problems presented below.



PHOTO: © Sándor Bíró DINPI

Regeneration problems due to decreased groundwater levels and big game damage

The Nagyőrös steppe oak woods are comprised of roughly even-aged trees between 80-100 years old. Only a few saplings and several year old young trees can be found among them, even though a large number of seedlings appear in years with a favourable acorn crop, but they die soon. One of the presumed reasons for this is the decreasing availability of the water supply. Groundwater levels sank by up to several metres in some places in the wake of water management projects in the last 80 years, and precipitation is becoming all the more uneven.

The other reason is supposed to be the high numbers of the (overstocked) big game population which gnaws the saplings or eats the acorns, and is also accountable for rooting, all of which leads to an imbalance in the system already vulnerable due to the scarcity of water. When there are more fallow and roe deer than the natural carrying capacity of the forest would allow, they damage the shoots of the young saplings by browsing, while boars consume large quantities of acorns and damage sand steppe pastures by rooting. Large predators (wolves, lynx, even bears) limited big game numbers before the times of drastic human intervention, but once these predators were eradicated, big game stock can only be managed by hunting or game exclusion. If we are unable to deal with the problems affecting natural regeneration, the stands of steppe oak woods will continue aging, and because of the death of the old oak trees this type of habitat will disappear.

The spread of invasive plants

Spreading non-native invasive plants (Black Locust, Black Cherry, Common Hackberry) are also a serious problem as they replace oaks. These were introduced from distant lands, and are called invasive plants because they are capable of quick invasion and transformation of habitats by replacing native species. The presence of the most problematic invasive species in the oak woods is no accident; they were used for forestation in the vicinity for decades or even centuries. The North American Black Locust (*Robinia pseudoacacia*) has been popular since the reforestation of the Great Hungarian Plain because of its quality timber and honey.

“Then what is the problem with locust?” – the reader might ask. The locust has two characteristics which make it one of the greatest threats to sandy habitats according to conservationists. One of them is its ability to sprout quickly, enabling it to spread from plantations to oak woods and overrun sandy steppes. Locust sprouts receive plenty of water through the developed roots of the parent plant, so they grow and spread faster than oak saplings, suppressing them in the oak forests. The other reason is that they change the chemical composition of the soil. As a result no herb layer survives in locust forests apart from some nitrophilous weeds. These forests are very poor in terms of biodiversity, and they are incapable of supporting the forest’s natural wildlife.

Black Cherry (*Prunus serotina*) was likewise introduced from North America, and in some cases was planted in pine plantations by foresters, only to set-off on its route of invasion. Its spreading is facilitated by birds eating its fruit. In many places it is almost exclusively Black Cherry saplings that can be found in the lower canopy and shrub layers of the steppe oak woods. Reversing their spread requires years of continuous management, because seeds in the soil germinate and start spreading again even in previously cleared stands.

These invasive plants pose a significant threat even on their own, let alone collectively, and therefore one of the most important activities undertaken in the project was to rid the some 400 hectares of steppe oak woods habitat of such plants.

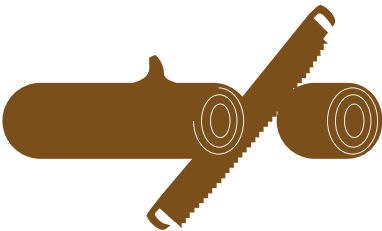


PHOTO: © DINPI

Forest management activities

The forest management practices typical in the Danube-Tisza Interfluvium during the previous more than one hundred years continue to jeopardise steppe oak woods to this day. The process of transforming native oak stands into non-native plantations (Black Locust, European Black Pine, Scots Pine, hybrid poplars) started in the 19th century, accelerated in the 20th century, and started to slow down only recently. Because forestry regulations stipulated closed forests up to just recent years, foresters planted trees (very often locust or pine) in the steppe oak woods clearings, leading to the destruction of sandy steppes, which were very important from the aspect of conservation.

Authority approved complete soil preparation techniques that are applied since the mid-1900s (comprised of clear-cutting, the removal of stumps and deep ploughing) destroy trees, shrub and herb levels, and the habitat of native animal species. This creates a monochronic forest without old, hollow or decaying trees which would be a very important habitat for several bird, insect, fungal and other microscopic species which play an indispensable role in the cycle of nature. This forestry technique would pose a threat to the entire habitat even if oak saplings were planted after clear-cutting. According to botanical researchers’ findings, the former biodiversity so typical of steppe oak woods is not restored in areas planted so even over several decades.



INVASION OF THE NON-NATIVE TREE SPECIES IS A SERIOUS PROBLEM





PHOTO: © László Galimdy

Very few plant and animal species live in artificial plantations

Fragmentation, isolation

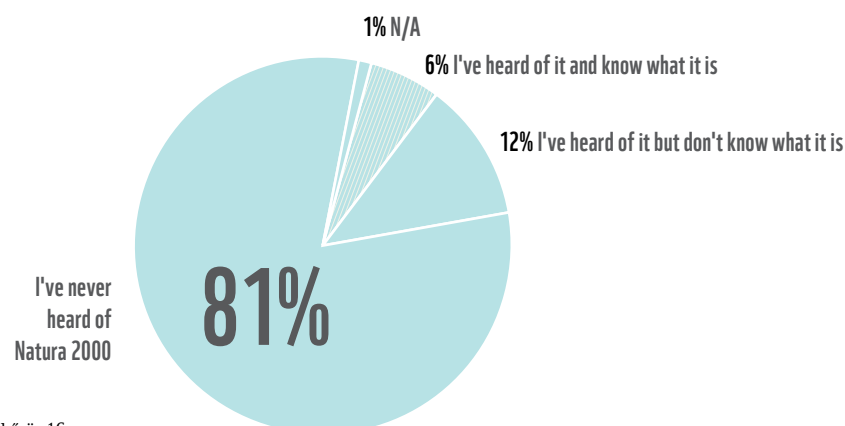
The above factors have led to a drastic shrinking in the area covered by steppe oak woods, and there is no continuity between the small remaining patches, which is a highly detrimental process in terms of the survival of the habitat and the species that live here. Only a few patches of varying dimension remain from once extensive steppe oak woods in the ocean of locust and pine plantations. The process when a large continuous habitat shrinks and is divided into multiple pieces by barriers impenetrable for wildlife is called fragmentation. Mostly we hear about fragmentation due to roads. In the steppe oak woods of Nagykőrös, however, the extensive locust and Scots pine plantations are just as harmful as roads or other line-bound facilities in terms of fragmentation by acting as a barrier between native stands and the individuals of species that live in them. The small enclosed habitat fragments are “left to fend for themselves” and are thus highly vulnerable. For instance, if an animal or particularly plant species disappears from such an area as a result of some external factor, there is no chance for its resettling because connection to more distant similar habitats is lost.

Social indifference, lack of information

The problems listed above are all results of conscious human activity, and they also lead to the decay of the steppe oak woods habitat. Because the natural treasures of critical significance near Nagykőrös were almost completely unknown to locals prior to launching the project, no social cooperation evolved for saving the steppe oak woods. Not even the significance of Natura 2000 designation was realised by the locals, and forest managers typically only saw a financially disadvantageous set of rules in the special designation granted to their forest.

There was no institution engaging in environmental educational in the city, and there was no hope for an improvement of the situation even going forward. One of the crucial pillars of preserving the steppe oak woods in the long run, however, could lie in raising awareness of natural assets, the locals' love and responsibility for nature, and the dissemination of the non-damaging use of forests worthy of protection (e.g. hiking, education, eco-tourism).

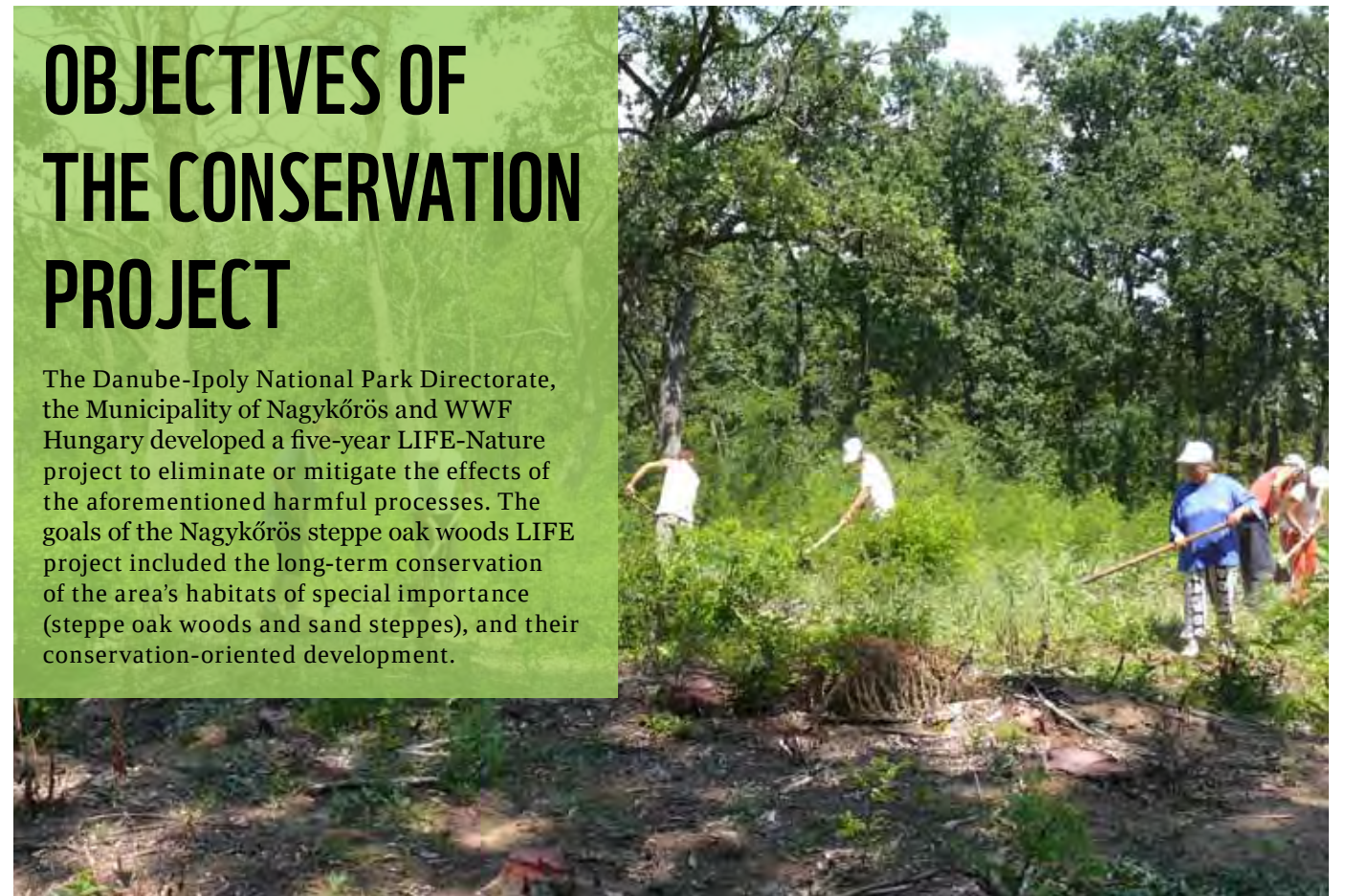
**AWARENESS OF THE NATURA
2000 ECOLOGICAL NETWORK**
(Source: EEA 2008)



OBJECTIVES OF THE CONSERVATION PROJECT

The Danube-Ipoly National Park Directorate, the Municipality of Nagykőrös and WWF Hungary developed a five-year LIFE-Nature project to eliminate or mitigate the effects of the aforementioned harmful processes. The goals of the Nagykőrös steppe oak woods LIFE project included the long-term conservation of the area's habitats of special importance (steppe oak woods and sand steppes), and their conservation-oriented development.

PHOTO: © György Verő



Our main goals include:

- 1 Mitigation of fragmentation and restoration of the steppe oak woods habitat within the project area. Transformation of non-native plantations by eliminating invasive plants, and planting forests comprised of native species. This is how we can guarantee easier and safer migration for several native plant and animal species, as well as increase the size and improve the quality of habitats suitable for settlement by such.
- 2 The eradication or extrusion of non-native invasive species in the project area of about 400 hectares (800 football pitches).
- 3 Termination of commercial silviculture for at least 90 years and implementation of conservation management practices in the steppe oak woods by means of an agreement with forest owners and managers. Ensuring the survival of forests and regeneration of the steppes by conservation-oriented management activities and facilitating that natural processes prevail.
- 4 Practical research into natural regeneration processes by a game exclusion experiment to learn whether the mitigation of big game damage could expedite the survival of oak saplings and the regeneration of the woods.
- 5 Raising awareness among locals by establishing a new forest education centre and educational path in Pálfája Woods. Renewal of the region's love and responsibility for the forest through environmental education programs and other events organised in the education centre.
- 6 Raising awareness about natural values of the steppe oak woods habitat and the Natura 2000 area via the media and the internet, not only at the local, but also the national level.
- 7 Gathering further knowledge about forest steppe habitats for their better understanding and scientific conservation. Report on conservation management achievements and the dissemination of the results among the scientific community.
- 8 Development of a long-term management plan for the Natura 2000 site.

THE LIFE PROJECT'S IMPLEMENTATION AND ACHIEVEMENTS

In the course of the project implemented between 2006 and 2011, we mainly focused on factors posing the most serious threat to the long-term survival of the Nagykőrös steppe oak woods based on our present knowledge, the mitigation of which can be accomplished by tools readily available to conservation. The most important activities aimed at reaching the set goals are presented in the following, along with the results that were achieved.



Photo: © Klára Kerpeley

The site and the conservation activities in figures

Area:

- Natura 2000 area: 3300 ha
- Habitats of community importance: 942 ha
- Project area: 418 ha (of which: 59 ha Municipality, 133+28 ha State, and 175+23 ha privately owned)

Field work:

- Eradication of 90-95% of invasive plant species on 418 ha
- Forest transformation on 65 ha, planting of native species
- Reclassification of 146 ha of oak woods as soil protection forest instead of former status as timber production forest
- Building of game exclusion or electric fence around 261 ha.
- Taking 175 ha of privately owned forest into lease for 90 years
- Purchase of 28 ha forest of unsettled ownership (Strázsa Hill)

Communication, awareness-raising:

- Inauguration of forest education centre, 15 000 visitors over 3 years
- Construction of an educational path with 10 stops, publishing a trail guide
- International conference with 100+ participants
- Publishing of Rosalia research paper compilation on steppe oak woods and Pannonic sand steppes
- Press excursions, TV broadcasts, articles in the local and national press
- Website

Long-term lease of privately owned forests

The Danube-Ipoly National Park Directorate has taken over the usage rights of privately owned forests formerly used for timber production for 90 years in the scope of an innovative contract. This area of altogether 175 hectares (about 350 football pitches) includes privately owned steppe oak patches of the best conservation status. Commercial logging has been discontinued here, and only conservation-oriented management is allowed besides research and hiking. The owners were compensated for their income loss due to the cease of logging, and the timber from the removed invasives (e.g. Locust or Black Cherry) is given to forest managers. The National Park Directorate has developed partnerships with the forest owners, and we consider reinforcing this to be important going forward.

The other extensive area is State owned and its trustee is NEFAG Zrt. This forest management company committed to allowing conservation management activities on its grounds without compensation, and will continue to support the preservation of the steppe oak habitat in the future.

Conservation management activities

Reducing the fragmentation of the area, eliminating invasive species and transforming the forest structure posed the greatest challenges during habitat restoration. Our goal was to approximate the integrity, species composition and structural characteristics of the steppe oak woods to their natural state as best as we could. Several kinds of conservation management activities were applied to accomplish this goal.

Eliminating invasive species throughout the project area (more than 400 hectares) was the most important activity. This task involved the removal of locust sprouts or older locust trees and Black Cherry saplings that primarily spread inside the steppe oak woods, then the continuous follow-up treatment of reappearing sprouts. Common Milkweed, which is another non-native invasive plant, but fortunately a less serious threat than Black Locust or Black Cherry for now, also required treatment. Several methods were tried to prevent locust sprouts from growing back (a characteristic which makes it capable of very fast invasion). Trunk injection proved to be the method that is the most effective and least harmful to flora and fauna. It involves the desiccation of locust trees while still standing, and only removed thereafter.

As a result of this treatment, we managed to achieve the eradication of 90-95% of invasive tree species from the project area overall, thereby mitigating the impact of one of the biggest threat factors very significantly. This is one of the most important achievements of the project. Keeping-up this treatment of invasive plants will, however, be indispensable after the conclusion of the LIFE-Nature project on December 31, 2011. This is how we can guarantee the regeneration of the structure and species composition of the habitats, and the prevailing of the natural dynamics of steppe oak woods.

Larger continuous non-native (locust and pine) stands wedged into steppe oak woods were replaced by native species on approximately 65 hectares. During this activity, invasive tree species were removed with extensive care for forest vegetation in the shrub and herb layers and without complete soil preparation. Efforts were made to use gentle forest management techniques that are less harmful to undergrowth. Forestry authority regulations made the job difficult, because standards were tailored to non-native timber production forests, and required high sapling density and fast growth. Besides native poplar species, Pedunculate Oak, Narrow-leafed Ash, Norway Maple and other native maple species, Field Elm, European White Elm, Wild Pear, Wild Apple, and other shrub saplings were planted, together with pedunculate oak acorn. The goal was to create steppe woods of native tree species appropriate for the conditions of the site as a replacement of non-native tree plantations.



Photo: © Klára Kerpeley

**OUR GOAL IS
TO CREATE
FORESTS OF
NATIVE TREE
SPECIES THAT
CORRESPOND TO
CHARACTERISTICS**



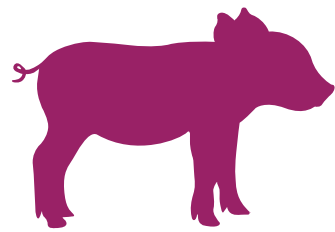
A game fence protects the oak woods from game damage

Game exclusion experiment

Despite decreasing groundwater levels, healthy regeneration of the surviving steppe oak stands can be seen in areas out of the reach of big game around Nagykőrös. Thus, during the project large areas were fenced-off to exclude big game in the interest of mitigating the adverse effects of game damage and wild boar rooting, which make survival substantially difficult for saplings.

Some experts believe that apart from (or next to) overstocked big game, decreasing groundwater levels are the reason why the forest is unable to regenerate. The several year game exclusion experiment, started during the project, will also contribute to studying the effects of these two factors and potentially to deciding the matter. 261 hectares were fenced-off in the area using more than 27 kilometres of game exclusion and electric fences, from which fallow and roe deer, as well as boars were removed by hunting or driven out with the help of the local hunting association and volunteers.

Fortunately the game exclusion wire-mesh fence is very effective. There are no boars in any of the enclosed areas, and just one or two fallow and roe deer specimens which can be driven out with regular fence inspections. Based on experiences from previous small-scale game exclusion experiments we hope that pedunculate oak saplings will survive their first years in greater numbers in the coming decades. We are anticipating the start of natural regeneration in the steppe oak woods thereafter. Further improvements are required, however, in the case of electric fences that demand substantially more maintenance to achieve the aforementioned results.



**PEDUNCULATE OAK
SEEDLINGS WILL
THUS SURVIVE
THEIR FIRST YEARS
IN GREATER
NUMBERS**



**AS A RESULT, RARE
PLANT SPECIES,
THOUGHT TO HAVE
BEEN LOST FOR
DECADES,
REAPPEARED**



Monitoring

Multiple types of research were conducted in the course of implementing the recently concluded LIFE-Nature project. Some of these facilitated better understanding of the area; others played a role in monitoring the effects of implemented conservation management activities. The latter studies include recurring surveys to record changes in vegetation, as well as research into the change of various elements in arthropod fauna.

The baseline condition of the project area vegetation was recorded in the scope of the program, and we tracked the impact of forest conversion and invasive species containment on vegetation (Kun and Rév 2011). Botanical research during the five years showed that species thought to have been lost 70-80 years before, and others not yet observed are appearing one after the other in the wake of conservation management activities in the forest of Nagykőrös. These include some dry forest and forest steppe species dear to the botanist's heart and unique to the Great Hungarian Plain, for instance the Dwarf Cherry, Veronica (Veronica paniculata) or Wayfaring Tree. It is a sign of successful management that certain elements of “buried” flora lost for decades due to plantations are making their comeback. They include for example St Bernard's Lily, Crocus (Colchicum arenarium), Grape Hyacinth and also Scorzonera purpurea, which have blossomed where felled locust plantations used to be. Further rarities include the onion species Allium atropurpureum, Storksbill and Diffuse Clover.

Research into animal species, especially insects, concluded with similarly promising results. Researchers studying the order of Orthoptera identified specimens of 40 insect species, three of them protected – the Heath Bush-cricket, and also Acrida ungarica, Calliptamus barbarous – along with those of a further 12 valuable species. This species count (32% of the Hungarian Orthoptera fauna) can be deemed relatively high, and is due to the unusual diversity of the habitats (Szövényi 2011). Spiders found in the area are mostly of species typical to natural habitats that do not tolerate disturbance, but some other, interference tolerant species typical to disturbed habitats are also characteristic of the area, which might be the result of the disturbance that large-scale forestry management activities and overstocked game populations involve (Szinetár et al. 2011).

Entomologists identified 650 beetle species from the specimens collected and observed in the area. These included relatively high numbers of sandy steppe species, and some woodboring beetles as well. 11 protected species were found in the area (European Rhinoceros Beetle, caterpillar hunter species, and some ground beetle and long-horn beetle species), including one species of community interest, Cucujus cinnaberinus. Smaller numbers of saprophagous beetles (e.g. Stag Beetle) is likely the result of traditional forestry practices which removed all dead trees from the forest. A significant improvement is expected because native trees will not be removed from the site at all during the next 90 years. (Merkl et al. 2011)

The description of the insect fauna in the Nagykőrös steppe oak woods is far from complete yet. Research completed so far, however, can serve as the baseline for a better understanding of an area regarding the insect fauna of which we previously had no information whatsoever.

Although the study of mammals was not in scope of the scientific program, the employees of the National Park Directorate also made some important observations in this field. During the area walkthroughs they found that at least a dozen protected bat species live in the area, for example the Western Barbastelle, Bechstein's Bat, Lesser Mouse-eared Bat, and Geoffroy's Bat. Some of these are of community importance, and include some, which are known from the forests of the Hungarian mountains.



Photo: © László Galimdy

Performance of the Bor Kalán Traditional Archery Association at one of our press excursions

Dissemination of scientific results

Project results were presented at several scientific conferences and events during past years. We also arranged field visits of varying lengths for interested conservation and forestry specialists in the project area, which also afforded excellent opportunities for exchanging experiences.

In 2011, the final year of the project, WWF Hungary, the Danube-Ipoly National Park Directorate and the Kiskunság National Park Directorate organised an international conference jointly with the “Conservation of the Pannon endemic *Dianthus diutinus*” LIFE project to present results and discuss next steps. In addition to habitat rehabilitation work in Nagykőrös, participants also received an overview of the Central and Eastern European forest steppes’ current conservation situation. Experiences were exchanged about the most important threat factors, invasive species, decreasing groundwater levels, moreover the effects of forestry and wildlife management. The practical aim of the conference was to foster cooperation between Hungarian and international researchers, foresters, NGOs and trustees in order to increase the efficiency of nature conservation.

The scientific results of the two LIFE projects were published in the Rosalia research paper compilation. The volume can be purchased from Danube-Ipoly National Park Directorate.

**MORE THAN
650
BEETLE
SPECIES LIVE
IN THE OAK
WOODS**

Development of a Natura 2000 management plan

The long-term management plan that aims to preserve the Nagykőrös steppe oak woods Natura 2000 site is being developed, relying on data from previous research, as well as the results of the LIFE project. The planning process includes obtaining the Ministry’s approval and consultation with all stakeholders (forest owners, authorities etc.), so that all parties learns of the principles and tasks that are specified in it, and consensus is reached as far as possible. We hope that this management plan will be of assistance for the conservation of other similar habitats in Hungary.

Environmental education

No matter how many books we read about natural treasures or the beauty of the forest, actually seeing, hearing and smelling it in person is worth so much more. This is why the Nagykőrös Pálfája educational path and the Pálfája Education Centre were built, where children and adults can learn about the flora and fauna of steppe oak woods and sandy steppes. The education centre was opened in the forest section nearest to the city in 2008, after the refurbishment of a dilapidated summer camp building of the municipality. Its name was given after the at least 400-year-old Pedunculate Oak that stands here, the Pál Tree, which was once climbed by every child in Nagykőrös.

The building was completely refurbished and upgraded, all required educational equipment was bought, and the environmental education program was developed in the frame of the project. The education centre's garden was fenced and equipped with furnishing to help environment education activities (touch course, benches, sports equipment). The Pálfája educational path starts out from here, and presents sandy steppe oak woods’ wildlife to visitors. There is an interactive trail guide (can also be downloaded from the website) that goes with the educational path for those who want to hike or bike the trail on their own.

Over 15 000 children and adults have visited the Pálfája since its inauguration, and it has thus become one of the most visited presentation sites of the Danube-Ipoly National Park Directorate. Visitors mainly include locals and the vicinity, but it is also popular with groups from Budapest, and even ones arriving from twin cities in the Netherlands and Germany. The educational path program is the most popular activity together with the guided walks associated with it, where participants have first-hand experiences of steppe oak woods’ wildlife and conservation efforts. Open-air school classes are held in the spring and autumn, and there are one-week summer camps for kids with a focus on nature. Several churches and NGOs from Nagykőrös also organise camps and other events at the “Pálfája” – which is what the visitors call the Education Centre among themselves.

Environmental educator Mária Sági – the head of the Education Centre – has developed fruitful relationships not only with education institutions in Nagykőrös and the surrounding settlements, but also with county and local municipality institutions, churches, NGOs, as well as people interested in the forest and nature conservation. All of this has made the Pálfája Education Centre an integrated part of the life of Nagykőrös, and thus plays a highlighted role in establishing social cooperation for conserving the town’s natural heritage.



Photo: © László Galimdy

**MORE THAN
15 000 CHILDREN
AND GROWN-UPS
HAVE VISITED
PÁLFÁJA SO FAR**



Photo: © Mária Sági

THE NATURA 2000 NETWORK
ACROSS BIOGEOGRAPHICAL REGIONS



Communication, awareness-raising

Dissemination of information activity first of all supported the Pálfája Education Centre in awareness raising among the locals, and we also tried to spread the word about this hidden treasure of the Great Hungarian Plain to the wider public. The Municipality of Nagykőrös published regular reports about the conservation work in the forest and the programs at the Education Centre in its weekly journal. Information about the progress of the project was made available continuously to the greater public through the project website both in Hungarian and English, as well as the media. More than a hundred articles were published about the project, the steppe oak woods appeared on TV several times, and more than 120 000 visits were registered on the website. Events related to the project included a drawing contest for kids, a photo competition, and very popular volunteer programs in the field, with the participation of civilians and companies. In addition to the trail guide for the educational path, project publications included a project kick-off brochure, a multimedia DVD, and there were special editions of the ‘Cincér’ Newsletter and WWF Magazine dedicated to the Nagykőrös steppe oak woods.

WHAT IS IN IT FOR
NATURE
AND PEOPLE?

The contract which allowed the National Park Directorate to take over the management of the steppe oak woods for 90 years, and thus to cease commercial logging, was one of the most important achievements of the project. Oak trees in the most valuable steppe woods of Nagykőrös are now free to grow for at least another 85 years, because only conservation purpose interventions, research activities and excursions are allowed here. Partnerships were developed with forest owners thanks to the grant support. The National Park Directorate finally became the permanent trustee of locally protected Strázsa Hill, the ownership status of which was previously unsettled.

Photo: © Klára Kerpely



Dozens of consultations with authorities and forest managers made the minimum required restrictions that Natura 2000 designation involves more accepted among the forest owners. The management plan which is being developed will provide guidance to forest managers regarding the further use and management of the whole Natura 2000 site.

It is a very important achievement that aggressively spreading non-native invasive plants were eliminated from more than 400 hectares. Furthermore, by planting native forest we helped fragmented steppe oak forest stands start-out on a course of regeneration and they will soon form a continuous, close to natural forest steppe (a mosaic of clearings and wood patches).

We hope that the scientific research conducted during the project – the results of which were published in the Rosalia journal – has drawn the scientific community’s attention to this particularly endangered habitat.

One of the most important achievements from the perspective of the steppe oak woods’ long-term survival is that an increasing number of people are aware of this formerly unknown natural treasure, and not just in Nagykőrös, but also around the country. The opening of the Pálfája Education Centre and its always cheerful “hostess”, Mária Sápi, played a very big role in this by organising interesting and useful programs for school and kindergarten groups visiting the woods. In addition, the Pálfája educational path that was built in the scope of the project is readily accessible and can be visited without guidance. Local civilian cooperation has emerged during recent years thanks to Pálfája, and perhaps it will guarantee that the steppe oak woods will never again be under threat in the future.

WHAT'S NEXT?

An era has ended in the forest of Nagykőrös with the conclusion of the Steppe Oak Woods LIFE-Nature project, but our work is far from over yet. Activities started in the area must be continued in the interest of sustaining the accomplished results.



Photo: © Gábor Székelyi



Voluntary action: painting the signs of the nature trail

We are happy to say that the knowledge, experiences and supporting partners we acquired during the project's five years will allow us to continue along our course leading to the conservation of this unique natural treasure. We are going to need lots of patience and perseverance because the natural regeneration of the steppe oak woods will take a long time on the sandy soil of the Great Hungarian Plain. We will only be able to enjoy the fruits of our labour decades from now, together with the children of the next generation.

Further conservation tasks

The containment of Black Locust sprouts and Black Cherry requires continuous attention. Furthermore, the completion of the started reforestation in line with authority expectations, will also fall in the "After-LIFE" period. The widest possible scope assertion of conservation opportunities stemming from new forestry regulations is another task. The new Forestry Act that became effective in 2009 introduced the concept of an "opening forest", and thereby allows that the more open landscape with patches of oak woods and steppe clearings are maintained, without requiring reforestation to more closed plantations according to previous practices. As a result, it will be possible to preserve the variety and outstanding biodiversity of forest steppes not only within the project area, but in other similar habitats as well.

Together in the forest for the forest

Seeing the locals' rekindled love for nature, we intend to continue organising volunteer activities in the oak woods. Needless to say the Pálfája Education Centre will continue operation, and will be maintained by the Municipality of Nagykőrös. The Centre will welcome visitors from spring to autumn, offering several tried-and-tested programs, educational path hikes and summer camps. The city plans to commission the renovation of the Arena building and develop the Education Centre into a certified "forest school". This, however, calls for the building of winter accommodation, which primarily depends on the availability of funding.



**THE NEW
FORESTRY ACT
LETS THE MOSAIC
OF SPARSE OAK
WOODS AND
GRASSLANDS
TO BE
MAINTAINED**



What can I do?

Most of us are not in the position to make significant decisions about our natural environment. All of us can, however, pay attention to avoiding unnecessary environmental impact and contributing to nature conservation even in our daily lives.

Here are some suggestions:

Take ownership of the problem!

When we see any sort of activity we do not like in the forest, we are often unsure about who we can turn to and what we need to say. If you happen to know the area's owner or trustee, it is a good idea to ask them what is happening and why. In case you do not get a reassuring answer, you might want to inform the regional Environment Protection, Conservation and Water Inspectorate or the National Park Directorate about any activity supposedly damaging to nature.

Volunteer for field work!

You can do a lot if you join conservationists working in the woods of Nagykőrös or other places in Hungary. If you have the time, take part in the National Park Directorates' or WWF Hungary's volunteer programs. There are many activities you can join, from tree planting through the elimination of invasive plants to building educational paths.

Do not waste natural resources!

It only takes subtle changes to make your way of life less environment polluting or wasteful. Buy local products with less packaging that are transported from closer by, e.g. fresh food, and take it home in your own linen shopping bag instead of plastic ones. Try to use the least possible paper, plastic, energy or water, because the Earth's resources (for example forests) are not infinite and are running out fast.

1%

Support conservationism!

You can decide what to do with 1% of your personal income tax paid in Hungary; you can offer it to any non-profit NGO. Support nature conservation NGOs by offering this 1% to them.



Motocross riders' trails on protected Strázsa Hill



Photo: © Klára Kerpezy

Volunteers at the renovation of the Pálfája Educational Centre

ACKNOWLEDGEMENTS



Realising this project was only possible with the active support and participation of many people and organisations. Instead of a long list of names – which would not fit on these pages anyway – we would like to take this opportunity for thanking everyone who gave and are giving their professional, financial or personal support to the conservation work for protecting the steppe oak woods. On behalf of the oak woods and future generations, we would like to thank the support by the employees at the Danube-Ipoly National Park Directorate, the Municipality of Nagykőrös, WWF Hungary, NEFAG Zrt., KőVa Zrt., Csókáserdei Hunting Society, Pest County Central Agricultural Office Forestry Service, and all other organisations that took part in the project. We would like to thank all participating contractors and researchers who all contributed to our accomplishing the set conservation goals. Our gratitude is also due to the owners and managers of the forests – Mihály Bárkai, Tibor Fajth, Györgyné Fajth, Ferenc Farkas, Béla Utassy, Béláné Utassy, Zoltán Zsoldos and Zoltánné Zsoldos – their understanding and support is essential for the conservation of the Nagykőrös oak woods. We would like to particularly highlight and thank all the volunteers, as well as the NGOs, cultural and educational institutions and the nature loving residents of Nagykőrös for their help in protecting the forest. We would like to thank the supporters of the project, the European Commission and the Ministry of Rural Development of Hungary.



Photo: © László Galhidy

The hundreds of years old Pál Tree, the giant oak that gave the name to the Pálfája Woods

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Conservation of the Steppe Oak Woods

100%



0,3 %

of Hungarian forests are
the remained forest steppes

600

year-old oak trees
live in Nagykőrös

15 000

visitors walked along
the Pálfája nature trail

2 000 000

hectares are covered by
forests in Hungary



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