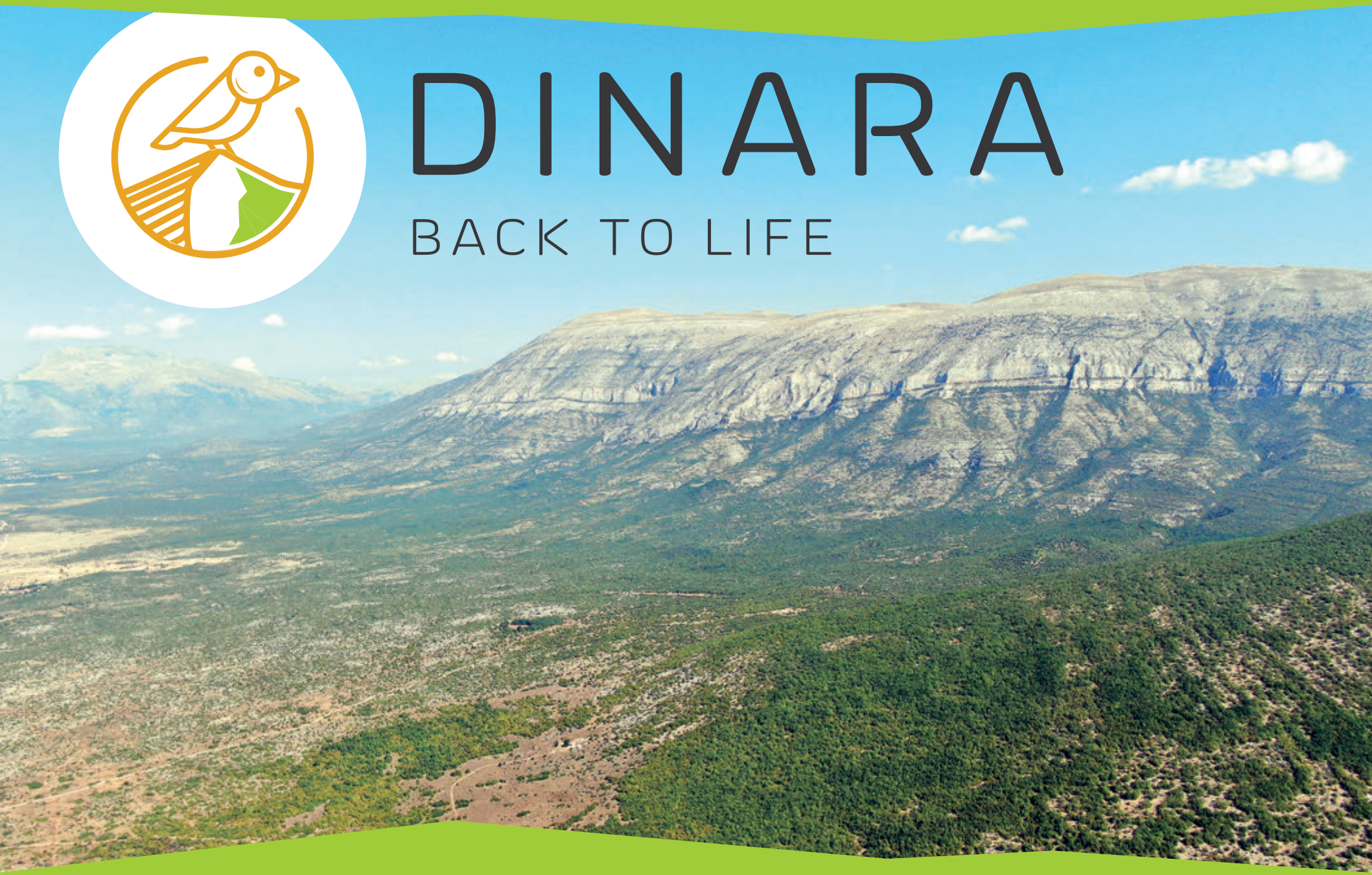
DINARA

BACK TO LIFE



LAYMAN'S REPORT

Life

NATURA 2000

1 Dinara back to LIFE: Why are grasslands important?

WHAT HAPPENED TO THE DINARA GRASSLANDS?

The former grasslands in the Mount Dinara area, used as livestock pastures since ancient times, are now largely unkempt. During the last thirty years this area has suffered from war destruction, its inhabitants are getting older and the young people are moving to the cities. Once known for its high quality traditional products, Mount Dinara has lost its inhabitants whose livelihood depended on it, and left with only a small number of locals who still keep livestock in the traditional way.

When grasslands are not used, they become overgrown and lose their features that contribute to rich biodiversity. The predominant species that threaten the grassland habitat develop and spread, leading to a loss of the specific natural values and biodiversity of Dinara.

LET'S RESTORE THE GRASSLANDS!

With the aim of preserving Mount Dinara, reviving its pastures and protecting the birds dependent on this Dinaric habitat, we have launched the **Dinara back to LIFE** project. The main task is to restore part of the overgrown grasslands, to acquire the knowledge and experience in implementing various grassland restoration methods, and to record them for future use. Nature conservation through sustainable use soon became the guiding principle of the project. In addition to grassland restoration, much emphasis was placed on improving collaboration with various institutions involved in grassland management and with the local community.

The terms PASTURE and GRASSLAND are both correct and not mutually exclusive. Grassland is a type of herbaceous vegetation from the grass family. Depending on the type of management, grasslands can be divided into hay meadows, which are managed by mowing and pastures, which are managed by grazing.

GRASSLAND TARGET SPECIES

The diversity of habitat types on Mount Dinara is the main reason for its importance. Of the eight habitat types recognised as priority for conservation, three are different grassland habitat types. If the grassland areas are not systematically used, especially due to the decline of extensive livestock farming, they grow into dense vegetation and lose their characteristic features that contribute to the natural values and biodiversity.

Watch the short film 'Open-type habitat grasslands''

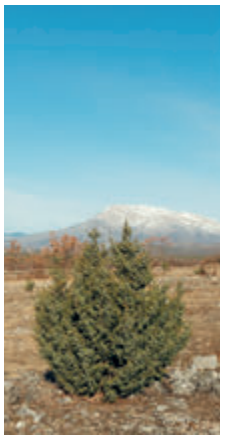
DRY CONTINENTAL GRASSLANDS This habitat comprises dry grasslands developed on steep, calcareous slopes. Since the grasslands are situated in upland areas of Croatia, where the number of people and livestock is decreasing, they are poorly maintained and are currently in various stages of gradual transition to shrubs and forest. The areas were traditionally used as hay meadows which contributed to the development of a rich and diverse flora. Due to the inaccessible terrain, they have not been thoroughly explored yet.

SUBMEDITERRANEAN DRY GRASSLANDS
Although they seem bare and species-poor, they provide habitat for a wide variety of plant species, many of which are endemic, and thus represent the outstanding natural richness of the eastern Adriatic coast. The grasslands contain a high proportion of rocks and were mostly used as pastures. In the project area they are the predominant grassland type and cover a relatively large area.

ALPINE AND SUBALPINE CALCAREOUS GRASSLANDS
These grasslands are widespread around mountain peaks and have often developed in regions exposed to extreme climate conditions where forest vegetation cannot grow due to strong winds and low temperatures. The flora differs significantly from that of other grassland habitats. Traditionally, they were used as summer grazing areas and hay meadows, a practice that almost completely disappeared in the recent decades. Currently, encroachment of woody species is spreading at the expense of grasslands, thus increasing the risk of summer wildfires.

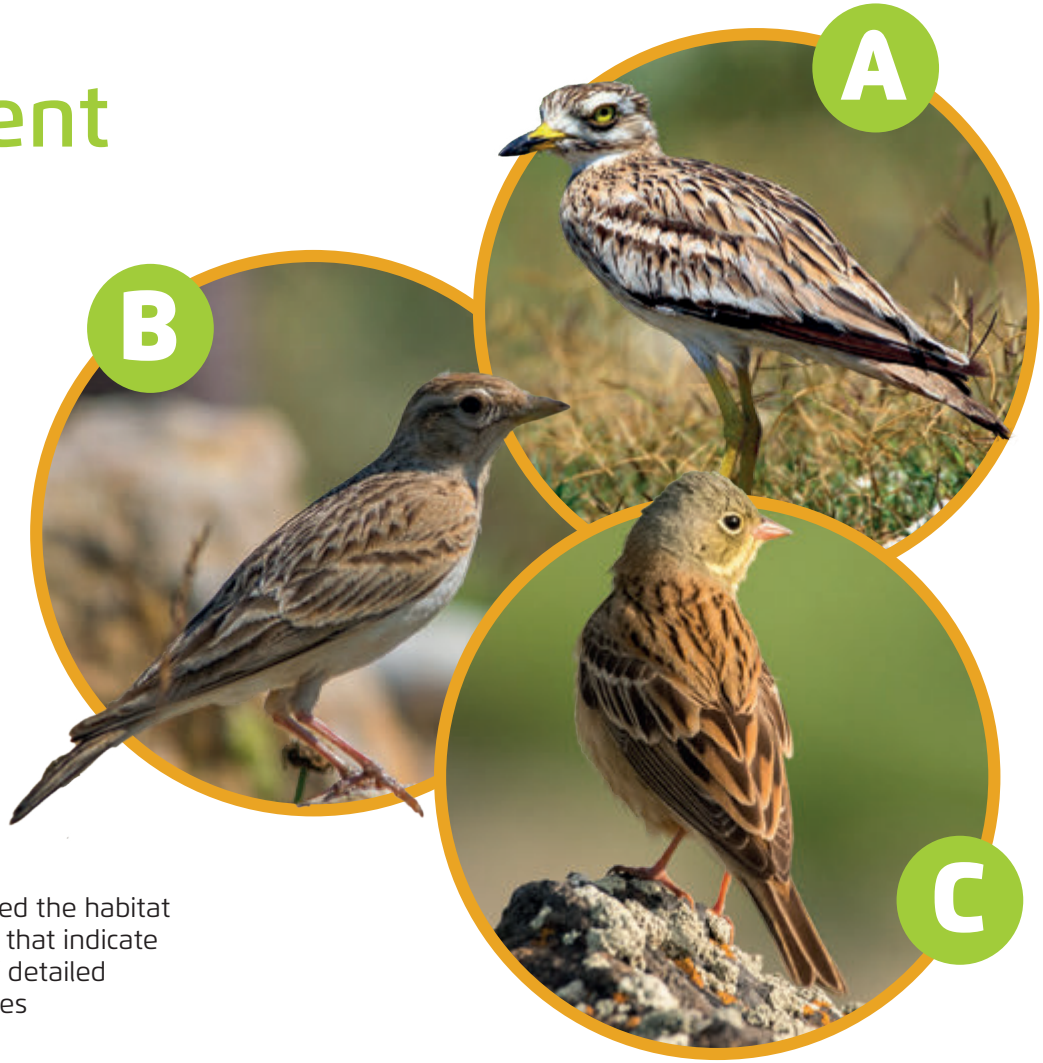
PROJECT OBJECTIVES

- Contribute to more favourable conservation status of target habitat types and species
- Develop guidelines for dry grassland restoration and sustainable management
- Reduce negative influence of wildfires and demonstrate the positive impact of controlled burning
- Build capacity of local community stakeholders for sustainable management
- Promote EU instruments for nature conservation



Ungrazed grasslands tend to get overgrown by numerous species. In the Dinara area the most common species is prickly juniper (*Juniperus oxycedrus*). Prickly juniper is adapted to warm and dry conditions and bare soils which enables its encroachment onto areas of dry grasslands where traditional management by grazing and mowing is abandoned. This type of habitat loss due to extensive livestock farming is taking place throughout Europe, which adds to the importance of this problem.

2 The birds dependent on open habitats



Numerous bird species nest in the open grasslands of Dinara, a habitat that has developed and is maintained through grazing and controlled burning. The bird species that nest in these extensive pastures and habitat mosaics are endangered or extinct in Western Europe. Species disappearing mainly due to overgrowth of grasslands include ortolan bunting, red-backed shrike, Eurasian hoopoe, rock partridge and, unfortunately, many others.

The Dinara back to LIFE project aims to preserve 3 target species: stone-curlew (*Burhinus oedicnemus*), short-toed lark (*Calandrella brachydactyla*) and ortolan bunting (*Emberiza hortulana*). Our goal is to increase the habitat and nesting area for the target species by restoring grasslands.

BIRDS AS INDICATORS

Birds are known to be good indicators because they move, are easy to spot, play an important role in the ecosystem and respond to various changes in the environment. The species we have chosen as indicators are closely linked to specific habitat conditions and their presence or absence is related to habitat conditions and habitat quality. Since we have restored and improved the habitat of the open grasslands in the Dinara area, it was logical to select the species that indicate whether our actions have led to the desired changes. The chosen method of detailed habitat mapping allowed us to identify the habitat requirements of the species mentioned and to plan future restoration activities in the area.

A STONE-CURLEW (*BURHINUS OEDICNEMUS*)

Dry flat habitats, usually with thick gravel layers, are called dry fields (suhopolje) and are the only habitat for the stone-curlew during the warmer seasons. Besides its unique call at dusk and at night, it has a distinctive appearance with large yellow eyes, a strong bill and long legs. It mostly stays on the ground and avoids being spotted when it moves. When disturbed, it runs away with its body held horizontally and its head hunched into shoulders. It needs a wide and open space without shrubs and trees.

B SHORT-TOED LARK (*CALANDRELLA BRACHYDACTYLA*)

In open habitats, but in smaller areas, there is also the short-toed lark, a medium-sized songbird. It is a migratory bird easily recognised by its characteristic undulating flight. The bird feeds and nests on the ground and spends nights in shallow holes that it digs beforehand.

C ORTOLAN BUNTING (*EMBERIZA HORTULANA*)

The third species whose population is declining in large parts of Europe, and Dinara as well, is ortolan bunting. The bird is shy and wary and prefers clearings with trees and shrubs at medium altitude, where it feeds and breeds on the ground.

3 How have we addressed grassland restoration?

To respond to the challenges related to grassland overgrowth, we developed a range of project activities that can be divided into conservation activities, restoration of livestock infrastructure and work with the community.

CONTROLLED BURNING IS ONE OF THE METHODS OF THE GRASSLAND MANAGEMENT METHODS that has been used in livestock keeping since ancient times. It is mainly used to keep grassland areas free of shrubs and improve grazing quality. Controlled burning improves the habitat quality for certain species, such as strictly protected ortolan bunting (*Emberiza hortulana*). Additionally, it has a positive impact on the maintenance of the pasture and the possibility of grazing by livestock. Controlled burning was conducted in cooperation with the Public Firefighting Brigade of Sinj and contributed to the restoration of 56.7 ha of grasslands.

Watch the short film "Controlled burning of overgrown grasslands on Dinara"

OVERGROWN VEGETATION IS REMOVED MANUALLY, in this case shrubs of prickly juniper (*Juniperus oxycedrus*) as this species most often overgrows the grasslands of Dinara. Because of the juniper's sharp needles and bitter taste, the livestock don't feed on it. In the past, it was removed by the local population and shepherds with axes. Juniper-covered grasslands are not a habitat for birds and other species. Moreover, the thick juniper is an ideal place for wolves to prowl through, which increases the risk of damage by predators and makes it more difficult to protect livestock. 105 ha of grasslands were restored by this activity.

THE PROJECT LED TO COLLABORATION WITH 16 LOCAL CATTLE BREEDERS AND THE INTRODUCTION OF MIXED HERD GRAZING. As each livestock species feeds on different plants and avoids others, mixed herd grazing is the best outcome for biodiversity. When pastures are constantly grazed, the chances for the growth of plants that are not eaten by livestock decrease.

Often unnoticed, extensive livestock farming is important not only for human nutrition, but also because the people who still live on Dinara and keep livestock naturally maintain grasslands and contribute to nature preservation and biodiversity.

4 What have we achieved in the last 3 years and 11 months?

RESTORATION OF LIVESTOCK INFRASTRUCTURE

Besides the main project activities aimed at restoring overgrown grasslands, additional activities have also been implemented. They are designed to restore infrastructure associated with livestock farming and are expected to have a positive impact on livestock farming by facilitating the work of the breeders. As part of the project some mountain and livestock paths have been restored and many water facilities are back in operation. Special attention has been given to dry stone walls restoration as a component of the traditional heritage and to teaching about the valuable skill of dry stone building.

IN TOTAL RESTORED:

11562 m of livestock and mountain paths

9 wells

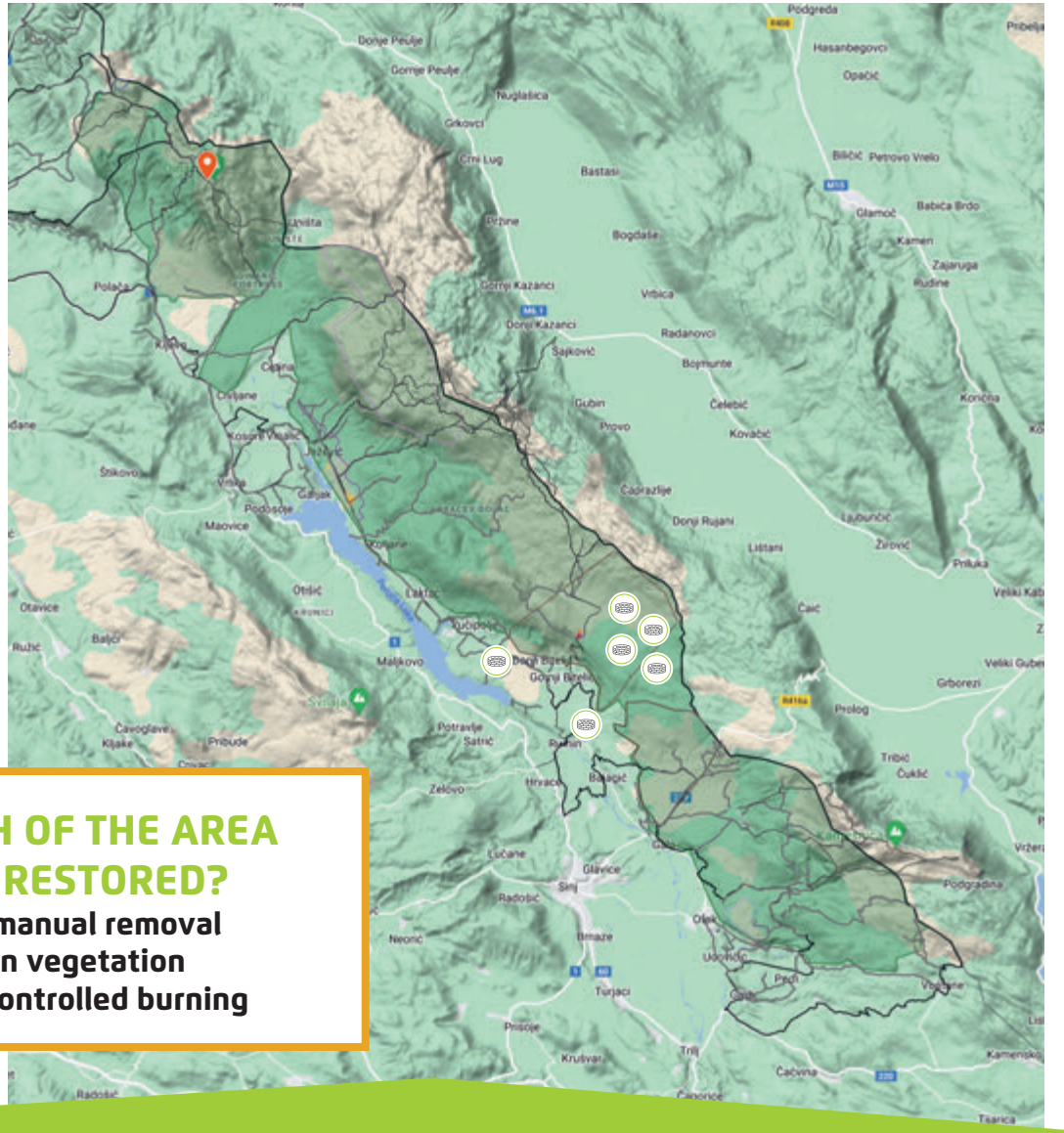
2053 m of dry stone walls

11 ponds

Scene of grassland restoration through controlled burning

HOW MUCH OF THE AREA HAS BEEN RESTORED?

- **112,3 ha by manual removal of overgrown vegetation**
- **56,7 ha by controlled burning**



IMPACT OF THE ACHIEVED RESULTS ON THE BIRDS

For some species the impact of restoration is visible quite soon, while for others it takes several years before the overall effects are visible and assessed. This is clearly seen in the case of the target bird species: the number of pairs of short-toed lark has increased, the ortolan buntings have moved to a more favourable habitat, which we have improved, although their numbers have not increased significantly. For the stone-curlew, on the other hand, the project came too late. During the time of project preparation, there were only two pairs, and the quality of the habitat deteriorated drastically before project implementation began. As a result, they had stopped nesting in the project area before we had the opportunity to improve their habitat. As this is a migratory species, there is still hope that one of the birds will decide to nest here and establish the population, as habitat conditions have improved significantly.

Since it is a migratory species, there is still hope that now, when the habitat conditions are favorable, some of the birds will decide to stay in this area and establish a population. The real ecological impact of restoration will be visible over the next approximately 5 years. With increased habitat quality, it will be possible to increase the number of breeding pairs of short-toed eagles and ortolan bunting, or the re-establishment of nesting for the stone-curlew. An increase in abundance is expected either through the independent recovery of the population, as the habitat conditions will support the survival of a larger number of individuals, or from surrounding populations that will fill the reopened or improved habitats that were lost in the recent past, and from which these birds withdrew to more suitable habitats if such were nearby.

Restored well Venišica

Cleaning the trail

Only those who live and breathe with karst, with the things that make this nature what it is, can understand Dinara.

(Signed by an anonymous participant of the project survey of public opinion and knowledge, 2020)

Restored dry-stone wall

Watch the short film "The Art of Dry-Stone Walling"

IMPACT OF THE ACHIEVED RESULTS ON THE HABITATS

The project area covers more than 50,000 ha. Although the specific restoration activities have been implemented on a relatively small area of just over 700 ha, their impact is visible. This is best seen in the overgrown areas where we applied the method of manual removal of unwanted woody vegetation, which was the aim of the project.

In the areas where controlled burning and mixed herd grazing have been applied, the impact is less visible, as these methods do not involve the complete removal of larger shrubs and smaller trees, but only the removal of smaller individual trees or shrubs. This slows down or even temporarily stops the process of grassland overgrowth.

The greatest positive impact has been achieved on the legislative agenda where, stimulated by the project activities and advocacy, changes have been made to the legal framework. This means that it will be much easier to implement grassland restoration projects in the future.

5 Work with the local community, communication and education

The majority of project activities were dedicated to working with local communities, education and supporting sustainable rural development. Long-term and successful nature conservation is only possible with the support of the local population. The local community of the Dinara area showed a strong connection with nature and their potential, together with the return of young people to rural areas, is an example that traditional values have their place in modern society.

SUPPORTING SUSTAINABLE RURAL DEVELOPMENT:

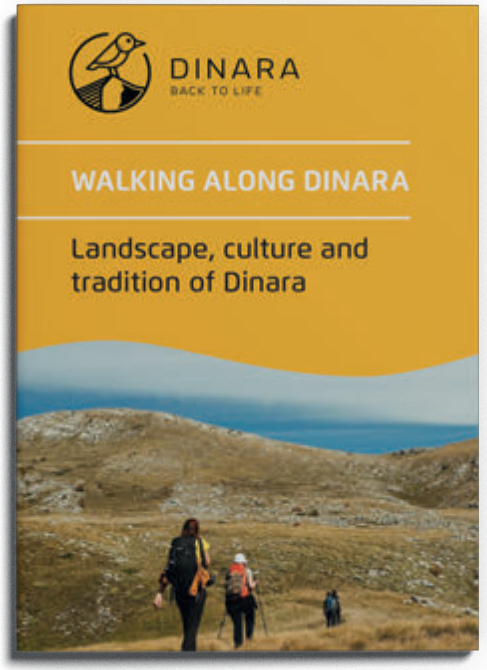
- business plans (12)
- educational activities on rural development (8)
- Round tables on beekeeping challenges (2)
- educational activities on ecological production (5)

3 VOLUNTEER ACTIONS

Restore dry stone walls in Vrdovo
Action for the restoration of the Vučipolje - Privija *trail*
The pond that means the world: the restoration of Marunska bunarina *pond*

2 VOLUNTEER CAMPS

Student camp *Dinara back to LIFE*
Educational-volunteer dry stone wall camp Ježević 2022



BROCHURES AND PUBLICATIONS

In an effort to encourage others to conserve the Dinara grasslands, we have created a series of educational materials for all ages. For primary school children we have prepared two editions of the booklet *Flower-loving Insects*, a brochure *A Wondrous World of the Dinaric Plants*, and a set of educational cards for the Gljev nature trail. For adults, there is a short leaflet about the project, a poster about the services of the Dinara ecosystem and a brochure *How to Help Urban Biodiversity*. Considering the growing number of tourists, we have published a bilingual guide *Walking Along Dinara: Landscape, Culture and Tradition of Dinara.*

STUDIES AND SCIENTIFIC PAPERS

We have successfully published 4 studies, 3 scientific papers, 1 professional paper, and 5 abstracts.

STUDIES:

- The Ecosystem services assessment study Dinara back to LIFE
- Improving urban biodiversity with melliferous plants in landscaping public spaces
- Key steps in establishing short-chain supply in the area of local self-governing units in the project area Dinara back to LIFE
- Climate in the area of the project Dinara back to LIFE according to the maps of the Climate Atlas of Croatia

SCIENTIFIC PAPERS:

- Estimation of forage value of dry grasslands on the Dinara mountain based on the analysis of the botanical composition
- The first insight into the status of grasslands in the payments support system in the area of Dinara Nature Park
- Possibilities of using Sentinel-2 satellite imagery to estimate the Dinara foothills pasture productivity

PASTURE MAP

The crucial data were collected for pasture mapping. The processed data will provide cattle breeders on Dinara with a way to optimise the use of grassland resources. So far, only the estimates and maps have been produced for grassland productivity in the foothills of Dinara. As Mount Dinara is a large area and includes more vegetation types of the climatic zone with increasing altitude, it is necessary to supplement the pasture map with newly collected data.

Find and check all materials here.

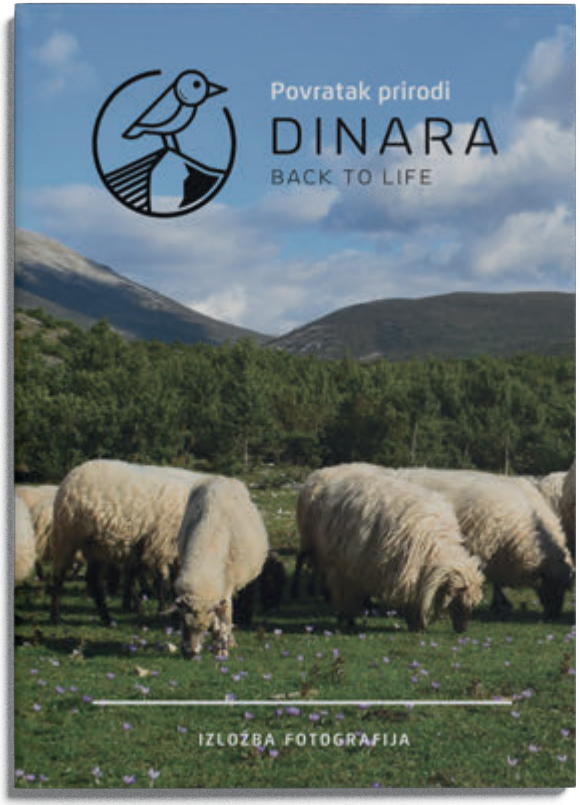
Not just for us, but for all new generations who need to know about the importance and beauty of this area.

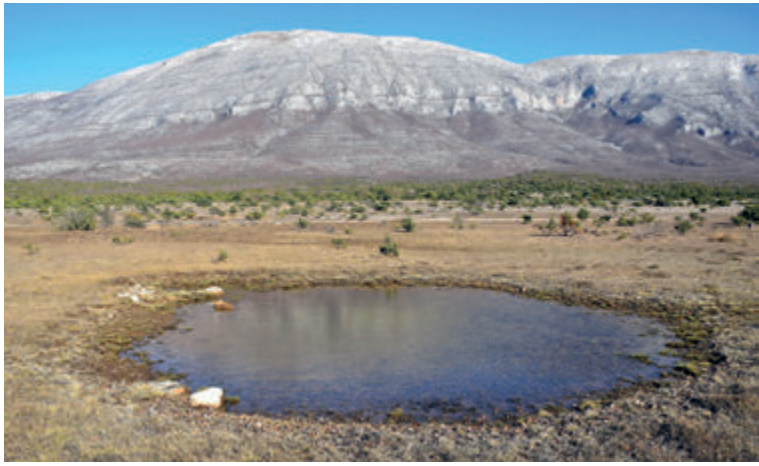
(Signed by an anonymous participant of the project survey of public opinion and knowledge, 2020)

RETURN TO NATURE TRAVELLING EXHIBITION

The Return to Nature is an exhibition about Mount Dinara inspired by conversations with its inhabitants at the foot of the mountain and the stories about their coexistence told through photographs. The exhibition was presented at numerous events, such as the Alka Tournament and the Feast of the Assumption in Sinj, the popular Festival of Science in Šibenik 2022, the opening of the Eco-Trilj Festival, and on the occasion of the International Mountain Day in Kiev. Through storytelling in pictures, we wanted to point out the importance of a host role in preserving the natural values and cultural heritage of the Dinara region.

Exhibition in Šibenik





Boris Alegić - livestock farmer and project collaborator

Look at the exhibition catalog.

Fieldtrip to the top of Dinara Mountain

A person feels comfortable here; that's how Dinara is.

(Signed by an anonymous participant of the project survey of public opinion and knowledge, 2020)

Collaboration council


Students at the camp

NETWORKING AND SUPPORT

Cooperation councils - Through cooperation councils we have brought together the representatives of cattle breeders, hunters, bee-keepers, tourism professionals, local self-government and mountaineering associations. They have developed ideas for possible restoration, education and tourism activities that will enrich the region during the project period, but also in the future.

Online marketplace - We launched the online group 'Digital Marketplace' to promote agricultural products and tourist services from the Dinara region.

International conference in Sinj! - With the aim of sharing knowledge and practices from various fields of agriculture, local action groups, forestry, nature conservation and self-governing units, we organised a four-day international conference **"Working Together Towards Grasslands Sustainability (Cross-Sectoral Approach)"** in Sinj. Almost one hundred participants had the opportunity to join the networking and hear from the experiences of local and foreign experts on the various challenges of sustainable grassland management and Natura 2000 management.

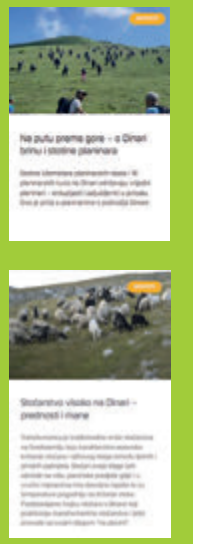
6 Media attention

Before the project started, Mount Dinara was not a very present topic in the media.

Due to the project activities and our presence in the field, but also due to the fact that Dinara was declared a nature park in February 2020, Dinara experienced a media boom. We sent out a number of announcements, appeared on TV and radio programmes, wrote articles for popular magazines, and spoke about the importance of grassland restoration and sustainable development of Dinara through our presence at local events.

FIELD TRIP STORIES

As we connected with local people we listened to their needs but also absorbed their stories that connect them to Dinara. Each of them lives with Dinara in their own way. We wrote down the stories and they were the most read texts on the project website and social media.



AWARDS

In 2021, the Dinara back to LIFE project received the prestigious Yellow Frame Award in the category "Eradicating hunger and promoting sustainable agriculture". The following year, when presenting the long-awaited proposal for the important Nature Restoration Law, the European Commission included Dinara back to LIFE among 19 nature restoration projects across the EU in 2022. Moreover, on the occasion of the Day of the City of Vrlika, the city awarded the project the Collective Award for the contribution in 2022.

7 The future of Mount Dinara grasslands

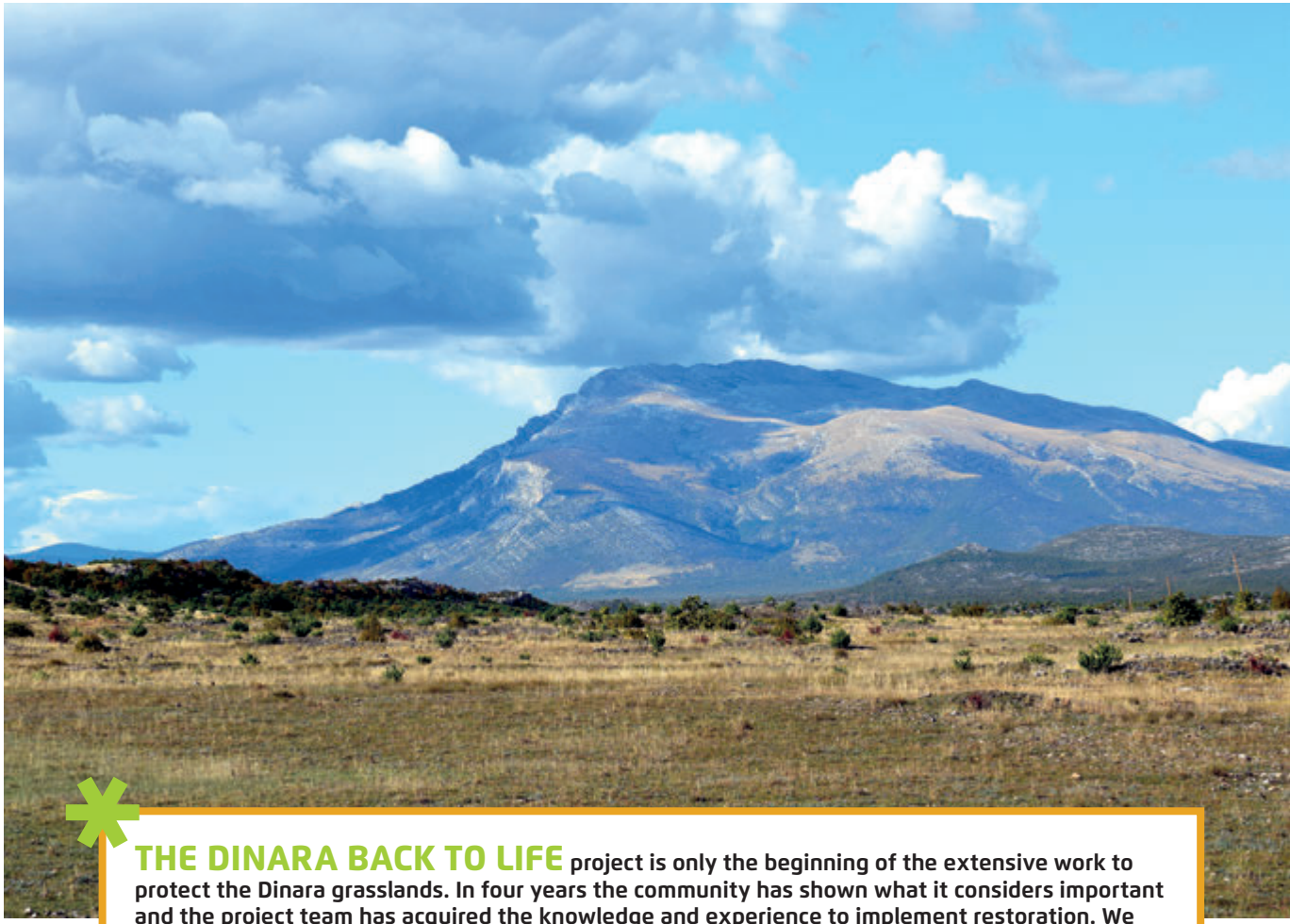
In order to maintain the restored grasslands, their sustainable management is essential.

Regular grazing is the best way to prevent the grasslands from becoming overgrown and local cattle breeders play a very important role in this. The changes in nature are clearly visible and the local population has shown great interest in the grassland restoration and the re-establishment of recognisable pastures in the Dinara landscape.

The project team recorded the entire experience of restoration planning and implementation in Guidelines for Sustainable Grassland Management. Numerous local and foreign conservation experts participated in creating the Guidelines, the aim of which is to share the knowledge with institutions and facilitate grasslands management in the future.

The Dinara region was declared a nature park in 2021 and this valuable karst space finally received strong legal protection and recognition. During the project period the management plan for protected areas and ecological network areas of Dinara and Cetina was prepared. We are very proud that the experience and recommendations from **the Dinara back to LIFE** project were used and served as a basis for designing activities that will preserve the grasslands of the youngest nature park in the future.

Watch the short film "Caretakers of the Dinaric Mountain Pastures"



THE DINARA BACK TO LIFE project is only the beginning of the extensive work to protect the Dinara grasslands. In four years the community has shown what it considers important and the project team has acquired the knowledge and experience to implement restoration. We are ready to apply everything we have learned and this knowledge is the basis for future projects to restore and protect this region.

8 Dinara back to LIFE

Management planning and restoration of Dinara dry grasslands to save biodiversity and support sustainable development (LIFE18 NAT/HR/000847)

Project duration: 15 January 2020 – 15 November 2023

Total project value: € 1,296,509

EU co-financing: € 777,903

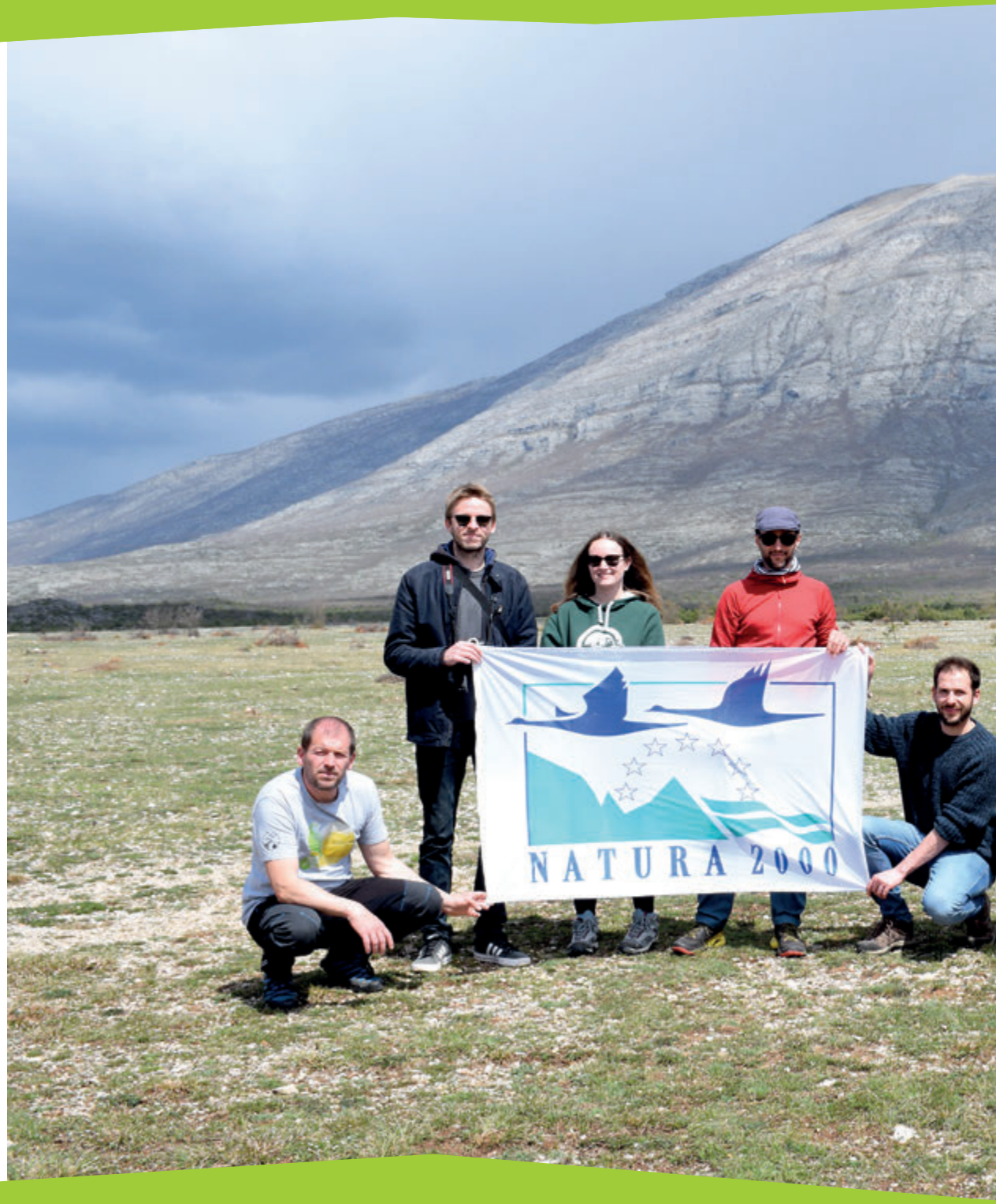
Number of employees in the project: 14

Coordinator: Associaton BIOM www.biom.hr

Partners: **University of Zagreb, Faculty of Agriculture** www.agr.unizg.hr; **Hrvatske šume Ltd.** www.hrsume.hr; **Local Action Group Cetinska Krajina** www.lag-ck.hr

Project co-financiers: Environmental Protection and Energy Efficiency Fund; Office for Associations of the Government of the Republic of Croatia; Split-Dalmatia County

www.dinarabacktolife.eu



2023.

PROJECT PARTNERS

The project responded to the challenges of rewstoring overgrown grasslands with a multidisciplinary approach, and the project partners are experts from different fields, such as agronomy, forestry, biology and rural development, each contributing with their expertise.

The participation of Hrvatske šume Ltd. is valuable as they manage forests and forest lands, many of which are part of the Natura 2000 Ecological Network. The project provides a framework and the potential for forestry expertise to halt the decline of biodiversity in Croatia.

Local Action Group Cetinska Krajina is oriented towards socio-economic impact of the project, and the role of the LAG in the project is to support rural development by promoting sustainable livestock farming and education on funds available for its co-financing.

The University of Zagreb, Faculty of Agriculture, covers the agronomic aspect of the project activities and focuses on quantifying the grazing potential of Mount Dinara through the use of state-of-the-art technology and optimising the use of grassland resources.

Association BIOM, as a leading partner, leads the implementation of grassland conservation activities and promotes the sustainable use of grasslands through education, advocacy and sharing of project results.

LIFE PROGRAMME

The Dinara back to LIFE project has been carried out with the financial support of the LIFE Programme, the EU's main funding instrument for nature conservation, environment and climate action. The goal of the LIFE Programme is to contribute to the implementation, updating and development of EU policy and legislation in the fields of environment, nature conservation and climate action by co-financing projects with European added value. For more information on the LIFE Programme, visit www.lifeprogramhrvatska.hr

ACKNOWLEDGEMENT

Although the project is finished, we do not want this Dinara story to end. We have met numerous people on the field who testify that life still exists on Dinara. We would like to thank them and all those who have worked with us for their trust and support in preserving the richness and diversity of the region where we live and work.

PHOTOGRAPHS:
Cover photo: Ante Gugić;
Association Biom Archive: Ivan Budinski, Krunoslav Bošnjaković, Zdravko Budimir, Biljana Ječmenica, Melani Glavinić, Ivana Selanec;
Contributors: Ante Gugić, Sven Ratković;
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DINARA

BACK TO LIFE

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BIOM UDRUGA / ASSOCIATION
HRVATSKE ŠUME
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Life
NATURA 2000
VLADA REPUBLIKE HRVATSKE
Ured za udruge
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