



LIFE
Lynx

LIFE Lynx

project Bulletin – 2019

Message from the Editor: Seth Wilson

The chance to save the Eurasian lynx from extinction in the Dinaric Mountains of Slovenia and Croatia is an honor. This chance might happen once or twice in a conservationist's lifetime. Today, we have this chance—to build off of the historic work of hunters and foresters from the 1970s who initiated the first successful reintroduction of lynx to this region and to bring cutting edge science and a spirit of collaboration and international partnerships to our generation's effort.

In the first LIFE Lynx project bulletin, we are pleased to present our work on historic lynx reintroduction efforts, conser-

vation genetics, international partners, and lynx monitoring with hunters. We also discuss where we plan to release lynx and how we hope to build and expand the lynx population for long-term persistence in the Dinaric Mountains and the southeastern Alps. And, underpinning all of these efforts are the local people and communities whose support and participation in the project are vital for success.

We hope you enjoy this issue and we invite you to follow us on our path to conserve the lynx.

Seth M. Wilson

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Message from the Coordinator: Rok Černe

In 1973 hunters and foresters brought lynx back to our forests after eradication at the turn of the 20th century. This effort was one of the most successful reintroductions of a species in Europe. Nevertheless, the population started to decline by the 1990s mainly due to inbreeding. I understand the LIFE Lynx project, within which we will reinforce the population with new lynx from the Carpathian Mountains, as an important stone in the mosaic of conservation of lynx in this part of Europe.

The LIFE Lynx project will enable lynx to maintain their presence in this part of Europe and ensure a place for lynx in nature for future generations.

In early February, our Romanian partners captured a healthy, adult male lynx. This is the first lynx that will help us begin the task of reinforcing the lynx population in

the Dinaric Mountains of Slovenia and Croatia. He was named Goru, after a mountain near his capture site and he is in excellent condition. He will be the first lynx released into Slovenia under the LIFE Lynx project. After a quarantine period in Romania he will be transported to Slovenia for another period in a release enclosure to acclimate to his new forest environment before release this spring. And even more good news has arrived from Romania—a second lynx was captured at the end of February—another male in excellent condition who will be released in Croatia this spring. These exciting developments bode well for the future of the project.

I am proud that we have this opportunity to contribute to the important goal of restoring lynx to this part of Europe again.

Rok Černe



Background to the LIFE Lynx Project

Maja Sever

Background

By the early 20th century, the Eurasian lynx (*Lynx lynx*) population in the Dinaric Mountains of Slovenia and Croatia went extinct due to habitat loss, lack of prey, and human persecution. For nearly seventy years, lynx were absent in the landscape. However, in 1973 a group of hunters and foresters brought six lynx from former Czechoslovakia to Slovenia and released them in the Kočevsko region. The lynx reproduced and the population expanded, but remained isolated.

By the mid-1990s, the lynx population declined mainly due to genetic deterioration or inbreeding since the original six lynx were related. Currently, the population is small, inbred, and remains isolated. Although robust population estimates are lacking, there are likely 10 – 20 lynx left in Slovenia and 40 - 60 lynx in Croatia.

The LIFE Lynx Project

The goal of the LIFE Lynx project is to prevent the extinction of the Dinaric-SE-Alpine lynx population by bringing fourteen lynx from the Carpathian Mountains in Slovakia and Romania and releasing them in Slovenia and Croatia. The LIFE Lynx project builds off of important previous work from the Interreg DinaRis project and ULyCA (Urgent Lynx Conservation Action – lynx re-inforcement in Friuli Venezia Giulia, Italy).



Preventing the extinction of the Dinaric-SE-Alpine lynx population through reinforcement and long-term conservation



Eurasian lynx (*Lynx lynx*)



credit: Miran Krapež

Historic Lynx Reintroduction

Seth Wilson

Lynx had been locally extinct in the Dinaric region of Slovenia and Croatia since the early 20th century, but by the 1970s, as global environmental awareness increased, efforts to restore carnivores like lynx to Switzerland, illustrated the conservation ethic of a new generation. Slovenia and Croatia followed suit. In 1972, six lynx had been live-trapped in Czechoslovakia by Štefan Zátroch, a hunter and lynx trapper, and were being held at the Zoo Ostrava originally intended to be reintroduced into the Harz Mountains of Germany, but the project was postponed.

As chance would have it, during a visit to Kočevje, Slovenia by a Swiss hunter, Karl Weber, discussions ensued with Lado Švigelj, Ciril Štrumbelj, and Maks Konečnik, officials from the Rog State Hunting Ground, that the six lynx could be available for reintroduction in Slovenia. The group felt that lynx had been missing from the region and should again, play an important role in the ecosystem. Weber offered to pay for all costs. The group

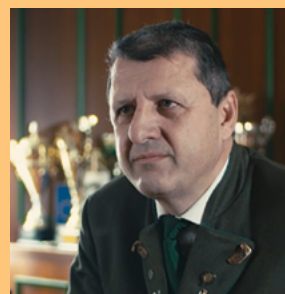


credit: Seth Wilson

Ciril Štrumbelj explaining the 1973 lynx reintroduction to LIFE Lynx project team member, Matija Stergar

agreed to move forward and the lynx were brought to a quarantine enclosure in the Rog State Hunting Ground. After a 46-day quarantine, the six lynx were released on March 2, 1973. These original lynx were related and despite population growth after release, the population was isolated, hence inbreeding occurred. The Slovenians and Croatians knew that the genetic situation would need to be addressed, but their past efforts provide us with another chance to preserve this lynx population. To learn more about this historic effort, please view the 25 min. film, *Path of the Lynx*, on our website:

<https://www.lifelynx.eu/>



Lado Bradač – President of the Slovenia Hunting Association (HAS)

“The Lynx in our forests is the heritage of our ancestors. The Lynx is here because of the brave and courageous hunters who had a vision in 1973. Conservation of biodiversity and healthy wildlife population is one of the main tasks of the HAS. Therefore, HAS strongly supports the Life Lynx Project and will provide all necessary support.”

credit:
Kawka Productions – Gregor Subic

FEATURE ARTICLE - The Genetics of Lynx Conservation

Tomaž Skrbinšek

There is a good reason that mating between relatives is a taboo in practically all human societies, and often actively avoided by many animal and plant species. All organisms that sexually reproduce carry a "mutation load": harmful genetic mutations that hamper an individual's survival and ability to reproduce. Such mutations are mostly hidden in large populations in "recessive" alleles – parts of genetic diversity that have little effect on an individual carrying them if they are contributed by only one of the parents. Although we can expect many such harmful mutations in any large population, the frequency of each of them is usually negligible, making the probability of an individual receiving such a mutation both from the mother and the father very low.

The story becomes different when close relatives breed to produce offspring. For example, if a brother and sister mate, the probability of the offspring obtaining the same harmful mutation from both parents suddenly is not low, but becomes 25%. When such inbreeding occurs regularly in a population, it causes a reduction in survival and reproductive success we call "inbreeding depression." In small populations, or populations originating from just a handful of founders, animals soon have only the option to mate with close relatives, or not mate at all. Inbreeding in such populations accumulates until the point when inbreeding depression becomes too much and the population collapses. Like cancer, it slowly eats the population from inside, with a predictable and unfortunate outcome.

All contemporary lynx in the Northern Dinaric Mountains originated from three pairs that were reintroduced to the area in 1973. While this reintroduction was a tremendous success and the population rapidly increased in numbers and range, soon there was little chance for lynx to mate with animals they were not related with. As the population decreased, inbreeding depression occurred. Today, the population has the lowest genetic diversity of all studied lynx populations and inbreeding has

reached a critical level. Left alone, even if everything in the environment was ideal, we can expect the population to collapse sooner rather than later. Since genetic deterioration is the major factor threatening our lynx, the main goal of the population reinforcement is to improve the genetic outlook and reverse the population decline.



Credit: Aleksandra Majic Skrbinšek

Dr. Tomaž Skrbinšek – Wildlife Geneticist – University of Ljubljana

"In small populations, or populations originating from just a handful of founders, animals soon have only the option to mate with close relatives, or not mate at all. This is what happened with lynx that were reintroduced in the Dinaric Mountains in 1973. Inbreeding in such populations accumulates until the point when inbreeding depression becomes too much and the population collapses. Like cancer, it slowly eats the population from inside, with a predictable and unfortunate outcome. Without new lynx, our population will inevitably go extinct in the near future."



International Partnerships

Jakub Kubala & Mihai Pop

In-Focus: Slovakia

Jakub Kubala

The population of Eurasian lynx in the Carpathian Mountains is considered to be one of the best preserved and largest in Europe. It was the source of lynx for several reintroduction projects between the 1970s and the 1990s. In total, there were approximately 172 – 177 lynx translocated within these programmes and released in 8 European countries. Many of the translocated animals came from Slovakia, where the lynx is an autochthonous species. The current population size is estimated to be roughly 200 - 400 lynx. Cooperation among foresters, hunters, and conservationists has helped ensure that official reintroduction programs are sustainable and are considered models for international conservation of lynx in Europe.

To ensure that the Slovakian population of lynx is protected and that the genetic health of the lynx is maintained, a rigorous scientifically based monitoring effort has been initiated that complies with IUCN Guidelines. A systematic camera trapping methodology combined with DNA sampling and analysis will provide lynx density estimates and trends that will ensure that no harm comes to the resident lynx population. This science-based approach is a new direction compared to the past two decades of lynx monitoring in Slovakia where expert-based opinion significantly overestimated the population.



The lynx named "Cyril" during tranquilization in the Muránska Planina (LIFE LUCHS) being readied for translocation to the Palatinate forest in Germany - credit: Jerguš Tesák

In-Focus: Romania

Mihai Pop

Public authorities, forest managers, hunters, and conservationists from Romania agree that the objectives of the LIFE Lynx project are important enough to make the effort to trap individual lynx from the Romanian Carpathians for translocation to Slovenia and Croatia. This international partnership is an exciting opportunity to restore lynx to the Dinaric Mountains and SE Alps.

In Romania, there is approximately 70,000 km² of suitable lynx habitat in the Carpathian Mountains that support an estimated lynx population of close to 2,000 individuals, one of the healthiest populations of lynx in Europe. Under the LIFE Lynx project, 7-10 lynx from Romania will be trapped and translocated to Slovenia and Croatia. At present, the lynx population is in a favorable conservation status and the outlook is positive for implementing a successful LIFE Lynx project through this international partnership.

IMPORTANT NEWS!

In early February, the Romanian ACDB team supported by game managers and personnel from the Natural Park Putna Vrancea Administration Unit - Romsilva, safely captured their first adult male lynx.

This magnificent lynx is name Goru, after a mountain near his capture site. Goru is in excellent condition and will be the first lynx to be released into Slovenia under the LIFE Lynx project. After a quarantine period in Romania he will be transported to Slovenia for another period in a release enclosure to acclimate to his new environment before release.



Goru in the quarantine enclosure in Romania
credit: Gabriele Retez



credits: Hannah Kirkland

Lynx named Goru captured in the Carpathian Mountains of Romania

MORE NEWS!

A second male lynx was also captured at the end of February.



credit: ACDB Team - Romania

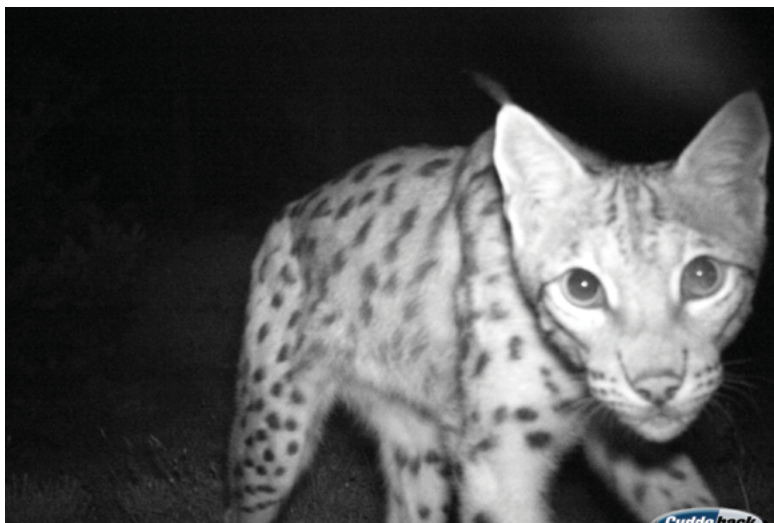
Using Monitoring to Choose Lynx Release Areas

Magda Sindičić

Finding appropriate release locations for lynx is a critical aspect of our reinforcement effort so that we can increase the chances that lynx will find mates and reproduce. During the first 18 months of the LIFE Lynx project, we focused on finding the best release locations in Croatia and Slovenia. To do this, we set up a network of camera traps, and we are collecting samples from lynx for DNA analysis. With camera traps, we can identify territories of individual animals and find out in which areas there are no lynx. DNA samples tell us the sex of the animal present within a territory where the sample was collected. This information will help us direct the release process since lynx exclude individuals of the same sex from their territory but allow overlap with individuals of the opposite sex. For example, this would allow us to identify a territory where a female could

be released and would likely reproduce with a resident male.

Currently, we have more than 230 active cameras in Croatia and Slovenia, and we are grateful to many hunters and other volunteers who are helping us to install and regularly visit the cameras to retrieve the photos. This important phase of the project will help ensure that we choose the best lynx release areas and help set the stage for a successful population reinforcement effort.



Lynx caught on camera traps in the Dinaric Mountains of Croatia

credit: LIFE Lynx project

LIFE Lynx project Teams up with Celebrity Ambassadors

We are honored to have the support of NHL ice hockey player, Anže Kopitar and World Cup ski jumper, Peter Prevc as our celebrity ambassadors to the LIFE Lynx project. To learn more from our ambassadors, please check out our website or follow us on Facebook.



Photo credit: Primož Pičulin

Anže Kopitar

Captain of the LA Kings NHL ice hockey team



Photo credit: Neža Reiser

Peter Prevc

World Cup Champion and Olympic ski jumper



Hunters and Lynx Conservation

Matija Stergar & Vedran Slijepčević

In-Focus: Slovenia

Matija Stergar

There are more than 20,000 hunters in Slovenia who have unique skills that are invaluable to the LIFE Lynx project. In Slovenia, lynx will be held in release enclosures for at least three weeks prior to being set free in nature. Selection of sites for enclosures, their construction and maintenance are all carried out in co-operation with local hunters. The hunters will also take care of the lynx while they are in the release enclosures.

Similar to Croatia, we began intensive monitoring of lynx using camera traps in 31 hunting grounds in Kočevsko and Notranjska regions with the help of hunters beginning in 2018. Our first monitoring results are promising. We recorded at least 10 adult lynx and 5 cubs. Hunters are important partners in these activities. Together we are building a solid foundation for the long-term conservation of lynx in the Dinaric Mountains and SE-Alps.



Checking a camera trap with a hunter

credit: Maja Sever



credit: LIFE Lynx project

Lynx caught on a camera trap in the Dinaric Mountains of Slovenia

In-Focus: Croatia

Vedran Slijepčević

Hunters have a strong connection with lynx in the Dinaric mountains of Croatia. Therefore, it was natural for hunters to be included in the LIFE Lynx project. Since the project area in Croatia is large, covering roughly 10,000 km² of terrain, the help of hunters was welcomed. The assistance of the County Hunters Associations was crucial for establishing cooperation among hunters and researchers. The results of this new collaboration have been exciting. By working with hunters, we have learned that their practical “forest” knowledge of habitat and tracking ability are impressive and invaluable. When their knowledge is combined with researchers’ knowledge of lynx biology, together, we gain a much clearer overall picture about lynx. For example, together we have successfully located a large number of suitable locations for lynx camera trapping. Although initially there were some challenges in establishing mutual trust, these new connections have made a strong path for mutual cooperation and understanding that will help us make the project a success.



credit: LIFE Lynx project

Lynx caught on a camera trap at abandoned cabin in the Dinaric Mountains of Croatia



credit: Nikola Magličić

Hunter Bruno Brovet and researcher Vedran Slijepčević checking a lynx camera trap



credit: Igor Jovanović

Igor Jovanović - Vice President of “Košutnjak” Novi Vinodolski Hunting Club

“The lynx is a priceless treasure not only in appearance, but also as a valuable regulator of the natural balance. In the area I hunt - Primorsko - goranska county, we have the highest prevalence of lynx compared to the rest of Croatia. As hunters, we are trying our best to keep it that way. Therefore, we have found a good partner in the LIFE Lynx project to share information with for a cause-saving the lynx population.”

Lynx Releases

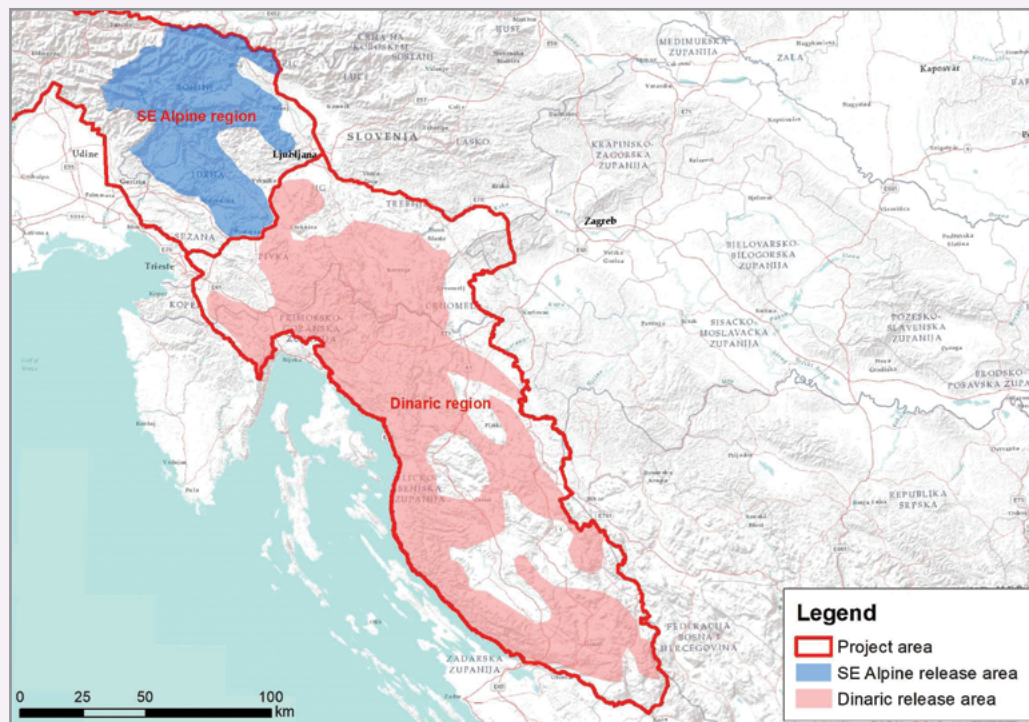
Miha Krofel

How many?

The goal is to integrate 14 lynx into the population: 4 in the Dinaric Mountains of Croatia, 5 in the Dinaric Mountains of Slovenia, and 5 in the Slovenian Alps.

Where?

Lynx will be released in the Dinaric region, where a highly endangered and inbred population exists. We will also release lynx in the Alpine region, where lynx can be considered functionally extinct and a new population nucleus or "stepping stone" will be created.



Lynx release areas in the Dinaric and SE Alpine regions.

When?

The first lynx will be released in the Dinaric region in the spring of 2019. In the Alpine region, we expect that the first releases will take place during the period, 2020-2023.

How?

In Slovenia, lynx will be released using a "soft release" procedure. This means that lynx will be kept and fed at release sites for about 3 weeks in an enclosure maintained by local hunters. This method can reduce the chances that lynx will move away from the release site since the period spent in the release enclosure allows lynx to become comfortable in their new environment. In the population core area in Croatia, there is less chance that lynx would move outside of the species range, therefore lynx will be released immediately after transport from the Carpathians.



The Stepping Stone

Anja Molinari-Jobin

If a population consists of few individuals, it is inevitable that relatives mate. Scientists call reproduction between close relatives “inbreeding.” In an evolutionary process, an inbred population loses adaptive potential, may have less young or have a weaker immune system. These are just a few consequences of inbreeding. There may be more. This is exactly what happened with the Dinaric SE Alpine lynx population. Without countermeasures, this population will inevitably collapse.

To save an inbred population, new individuals that are not related need to join the population concerned. Within LIFE Lynx, at least nine lynx will be integrated into the Dinaric population. This will assure that the population will not go extinct in the short term. But what about long-term viability? Based on IUCN recommendations, a population should have at least 1,000 mature individuals to survive with



more than 90% probability over the next 100 years. But in west and central Europe no lynx population reaches this number, not by itself. However, if populations are



credit: Maja Sever

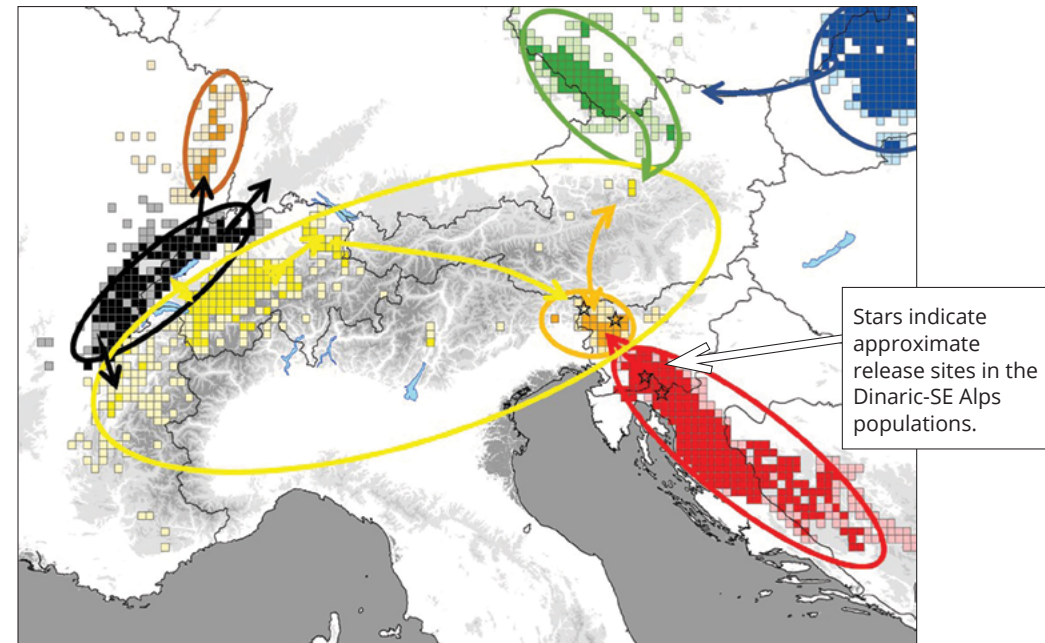
Miha Marolt – President of Gorenjska Hunting Management Area

“We Slovenian hunters can be proud of our work for conservation of wildlife and nature so that conditions are favorable for lynx reinforcement. The cooperation of hunters with the LIFE Lynx project shows that Slovenian hunters have a strong conservation ethic. The active role of hunters in the project is vital for conservation of this rare species in our forests.”

connected, the target of more than 1,000 mature individuals can be reached.

The closest well-established neighbor-population to ours is the Western Alpine population in Switzerland and France. Our long-term vision is to achieve a connection between these populations across the Alps by creating additional population nuclei—so called stepping stones. For this purpose, two lynx have already been released in the Italian Julian Alps in 2014 to join the remnant lynx that arrived in this area from the Dinaric

Mountains in the 1980s and 1990s. In the period from 2020-2023, another five lynx will be released in the Slovenian Julian Alps to help in development of this stepping stone nucleus. Our wish is that in the future this nucleus connects with the lynx in Dinaric Mountains and at the same time expands towards the Western Alps. The long-term viability of lynx populations in central Europe can only be guaranteed if the present isolated populations are connected into larger European lynx meta-population.



Lynx populations that could eventually create a Central European lynx metapopulation. The Dinaric-SE Alps population is represented in red and orange, respectively. The lynx distribution is based on Kaczensky et al. (2013).

Source: Kaczensky, P., G. Chapron, M. Von Arx, D. Huber, H. Andrén, and J. Linnell. (Eds). 2013. Status, Management and Distribution of Large Carnivores—Bear, Lynx, Wolf & Wolverine—in Europe. Part I: Europe Summaries. Large Carnivore Initiative for Europe Report to the European Commission.

Collaborating with Local Communities for Lynx Conservation

Urša Marinko

Collaborating with local communities is an essential part of the LIFE Lynx project. We believe that by communicating early and often about our project goals and objectives, that we can develop strong partnerships that will enable us to save the lynx population. One way we are doing this is by establishing local consultative groups where stakeholders from each community can be represented.

The consultative groups function as a discussion forum where local people can be informed and consulted about the project

activities so that conflicts can be resolved and trust can be earned. We have developed a consultative group with community members from Loški Potok and Loška dolina, where lynx release enclosures are located. Additionally, in Notranjska Regional Park, the project joined an established group of local stakeholders within another LIFE project and consultative groups are being set up in Kočevje and in Pivka. These efforts are important first steps in building community acceptance and support for our project.



Hunter Stanko Anzeljc and Urša Marinko from the LIFE Lynx project sharing information about the project with the local community in Loški Potok – credit: Seth Wilson



credit: Seth Wilson

Stanko Anzeljc - President of Loški Potok Hunting Club

“To me and most members of our hunting club, the idea of lynx reinforcement seems to be the right solution. In our area, we still have lynx. It is always nice to see them, but it is difficult. If I see them once every couple of years it is a great success. In order to keep it that way, lynx reinforcement is the only way. That is why we support and collaborate with the project in the best possible way to help with its successful implementation.”

First year of the LIFE Lynx project



1.7.2017 - 31.8.2018



586,423.45€



TIMEFRAME – FROM 1.7.2017 TO 31.3.2024

TOTAL BUDGET: 6,829,377.00€

TERMINOLOGY

Inbreeding

breeding between individuals that are genetically closely related, such as siblings and first cousins

Inbreeding depression

reduced biological fitness as a result of inbreeding, expressed in different ways (premature deaths, heart defects, infertility...)

Population Reinforcement

addition of individuals to an existing population of the same species with the goal to enhance long-term survival of the population

Stepping stone

a patch of suitable habitat, crucial for facilitating animal movement between other habitat patches thus reducing the effects of habitat fragmentation

EURASIAN LYNX

The Eurasian lynx is a solitary and secretive animal which prefers dense forests with abundant hiding places. Lynx are native to most of Eurasia, including the project area. Due to its elusive nature, indirect methods are used to learn about the status of the population such as:

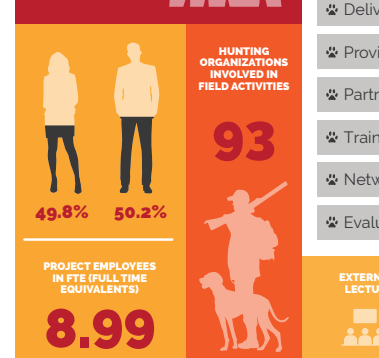
- ❖ Snow tracking
- ❖ Remote camera traps
- ❖ Collecting non-invasive genetic samples (e.g., hair, urine, scats, saliva)



KEY PROJECT STATISTICS



KEY PROJECT STATISTICS



PEOPLE

Creation of stakeholder-supported population reinforcement process and cultivation of broad public acceptance is essential for the long-term success of the project.

LIFE LYNX PRINCIPLES:

- ❖ Delivering transparent and timely information
- ❖ Providing opportunities for the public to engage with the project
- ❖ Partnering with community-based organizations
- ❖ Training project staff to improve public engagement skills
- ❖ Networking with colleagues
- ❖ Evaluating our efforts

PROJECT

Preventing the extinction of the Dinaric-SE Alpine lynx population through reinforcement and long-term conservation

LIFE Lynx
LIFE16 NAT/SI/000634
1/7/2017 – 31/3/2024
www.lifelynx.eu
Facebook: @LIFELynx.eu / @lifelynx.hr
lifelynx.eu@gmail.com

PARTICIPATING COUNTRIES



THE CHALLENGE

Severe decline of Dinaric SE Alpine lynx population size due to inbreeding depression.

THE GOAL

To rescue the Dinaric- SE Alpine lynx population from extinction by reinforcing the population with inclusion of 14 individuals from Romania and Slovakia

About the project

Name

Preventing the extinction of the Dinaric-SE Alpine lynx population through reinforcement and long-term conservation

Acronym

LIFE Lynx

Reference

LIFE16 NAT/SI/000634

Time Frame

1/7/2017 – 31/3/2024

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On line

www.lifelynx.eu



@LIFELynx.eu / @lifelynx.hr



Life.lynx.eu@gmail.com

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FOND ZA ZAŠČITU OKOLIŠA I
ENERGETSKU UČINKOVITOST

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Preventing the extinction of the Dinaric-SE
Alpine lynx population through reinforcement
and long-term conservation