

LIFE *with bears*

LIFE DINALP BEAR project bulletin 2017



**LIFE
DINALP
BEAR**



**How people perceive human-bear conflicts?
Bear-related ecotourism – Discover Dinarics
Bear population in Slovenia has increased
Genetic monitoring of bears in Trentino
Important step on the way to population-level brown bear management
Solid cooperation between experts and local inhabitants is fundamental**

Dear Readers,

We offer you the third issue of LIFE DINALP BEAR project bulletin "LIFE with bears". Besides important ecological findings, results of project activities gave us interesting and crucial insights into the challenges of the human dimensions of brown bear management. Today, after exterminating the species from much of Europe, we as a society recognise our moral obligation to preserve bears for future generations. In densely inhabited Europe, where vast areas without human presence do not exist, the only possible solution is coexistence of human and bear.

Project objectives aim to contribute to a mosaic of human-bear coexistence. Coexistence means searching for compromises; it means preserving good conservation status of bear populations; and it means keeping social carrying capacity and tolerance at an appropriate level. Consequently, it is a necessity to manage bear internationally, scientifically, sustainably and for the long-term, as well as resolving problems-successfully and promptly-of those local inhabitants that share space with bears. We focus our work to address both objectives.

We also hope that this issue will offer you insightful and valuable information and kindly invite you to read.

Nives Pagon

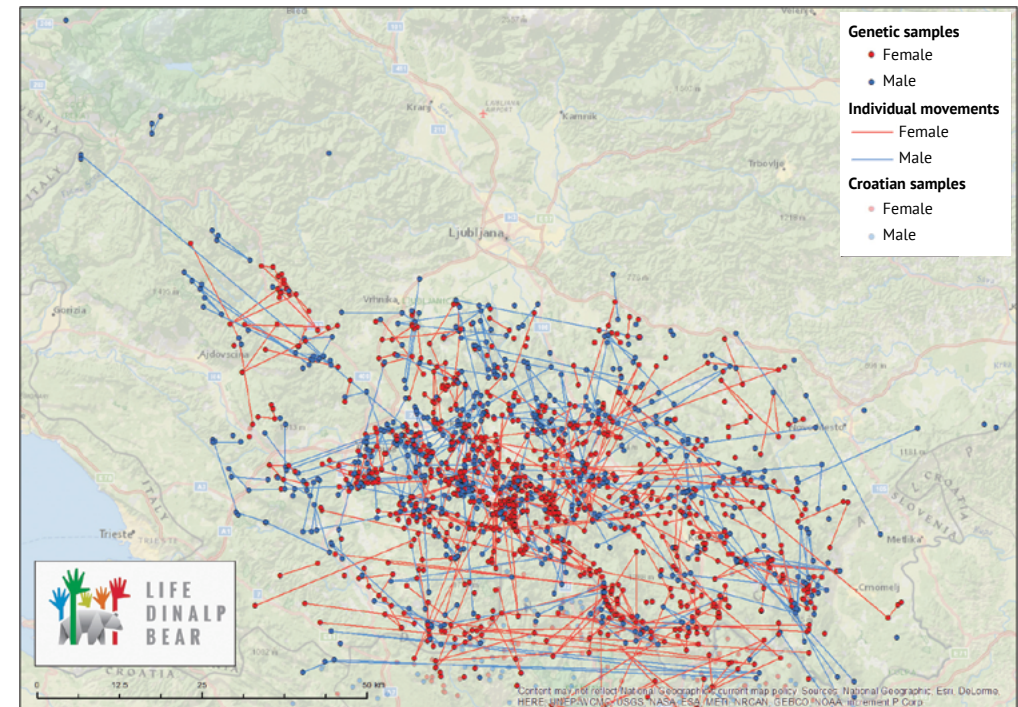
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Bear population in Slovenia has increased

In autumn of 2015, more than 1.000 foresters, hunters and other volunteers joined experts in the field to conduct an intensive non-invasive bear sampling. In the laboratory, we isolated genetic material of each animal from the samples of bear scats, hair and saliva. Developing and using the most innovative scientific methods in molecular genetics, *we estimated the number of brown bears in Slovenia*. At the end of 2015, there were 564 bears (95% confidence interval from 533 to 598), thus increasing their numbers by a third in eight years.

The first brown bear genetic estimate for Slovenia was obtained in 2007 using similar methods. Repeating the research, we now have gained important insight into the trends of this bear population, thus gaining a solid scientific basis and a tool for successful brown bear conservation and management. This estimate will also help shape the preparation of future strategic documents. Additionally, the innovative laboratory and genetic methodology will enable fast and cost-efficient long-term genetic monitoring of the bear population.



In 2015, numerous participants in the field collected more than 2.400 genetic non-invasive samples in three months, which were the basis for bear genotyping and obtaining a population size estimate.

Genetic monitoring of bears in Trentino

Genetic monitoring is one of the principal methods used in Trentino, Italy to estimate the size of bear population. This kind of monitoring is based on the analysis of DNA obtained from organic samples (hair, scats, urine, saliva, tissue), collected by an opportunistic or systematic method. The opportunistic method is performed during every-day activities of territory vigilance: the operators casually find organic material on rub-trees (Photo 1), inspect damages to human property, or collect material after bear sightings, etc. This method is useful for providing data on presence and distribution of the individuals. Systematic monitoring, executed by "hair traps" (Photo 2), is based on precise spatio-temporal sampling design (Figure 1) for obtaining population data trend.



Photo 1: A bear rubbing against a tree, where some of its hair will remain, and will be collected by vigilance agents to be used in DNA analysis.



Photo 2: A bear within a "hair trap".

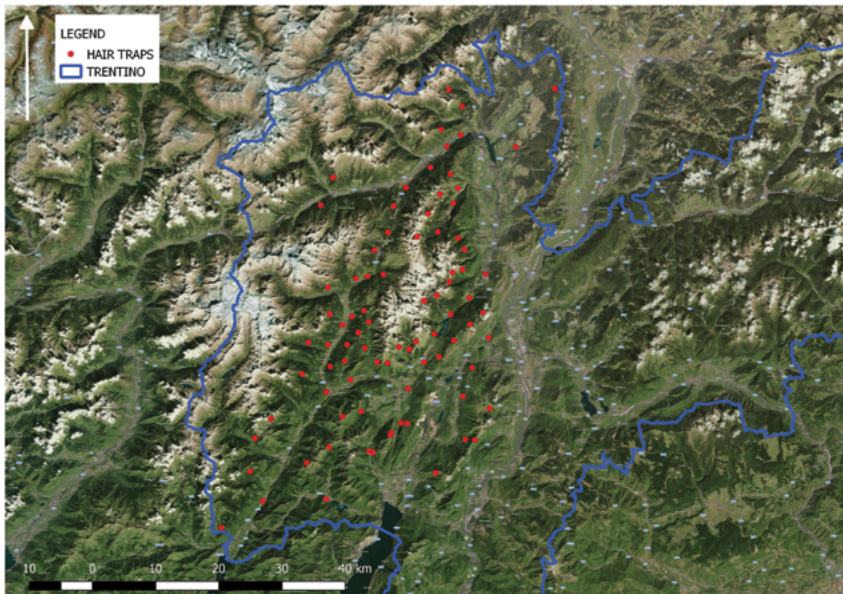


Figure 1: Position of "hair traps" for collecting bear hair samples in Trentino in 2017.

Important step on the way to population-level brown bear management

Bear presence in the Alps and Dinaric Mountains ranges over numerous countries and regions, whose borders traditionally represent separating lines of various systems of bear management. These different bear management approaches are one of the main threats to long-term bear conservation in this area. LIFE DINALP BEAR project team aims to ensure better management approaches. We aim to reach this goal with common, population-level management of the population in the project study area and beyond.

Bearing this in mind, we produced *Common guidelines for brown bear management* on a population level. For the first time, we have a framework for population-level management of Alpine and Northern Dinaric bears. The document deals with key issues regarding bear

conservation and long-term management, lists management goals to be met and provides measures of how to reach them.

It is important to note that the idea of common, international bear management has already moved beyond the project study area; the guidelines include the whole Alpine area, as well. Namely, WISO platform, which operates in the frame of the Alpine Convention, participated in the preparation of Common guidelines. In addition to Alpine countries' representatives (Switzerland, Liechtenstein, Germany), experts from Bosnia and Herzegovina participated. The next step – implementation of common guidelines into the strategic documents for bear management in respective countries – will take place in Slovenia and Croatia first.



Guidelines for Common Management of Brown Bear refer to two management units (Alpine and Northern Dinaric – borderline shown on the map), which differ in recommended management tools and objectives.

Livestock guarding dogs – Investment for the future

Livestock guarding dogs (LGDs) effectively protect sheep from large carnivores. That's why we focus a lot of attention on establishing and maintaining this practice among livestock breeders. For instance, we collaborate with experienced dog breeders (who are also sheep breeders) who know how to raise proper guarding dogs. From this, ten pups joined new owners in 2017. Eight Tornjaks and two Sarplaninec pups are already integrated in their new herds. However, just a simple inclusion of dogs

into the herd is not enough. During the first two years, the owners have to make sure the dogs integrate into the herd properly through observation of dogs' behaviour in relation to other animals. If they notice an unwanted behaviour, they have to correct them immediately to prevent the development of negative habits. Therefore, owners work closely with our dog breeders and cynologists, who provide help and guidance on how to raise effective guardians of domestic animals.



First "project" livestock guarding dogs joined the new sheep herds in late winter, when the animals were still kept in the stall. Here, a female pup, Kala, eagerly awaits introduction to the new sheep herd.



In summer, we made the first visit to the "project" LGDs on the pasture.



Our cynologists checking the behaviour and socialization process of "project" livestock guarding dog.

Reducing brown bear-vehicles collisions

In Slovenia, 180 bears were killed in vehicle collisions from 2005 to 2016. Two to three bears were killed on average per year on highways. The highest bear mortality was detected on Primorska highway between Logatec and Postojna, between Divača and Kozina, and on Dolenjska highway between Grosuplje and Ivančna Gorica. In 2017, additional electric fencing was installed on the sideway fence along highway Logatec – Ravbarkomanda (up to 30 km considering both sides).

At the same time, the third dynamic traffic sign was installed along state road Ljubljana – Kočevje near Turjak. Our monitoring of vehicle speed in the last two years confirmed the positive impact of activated dynamic signs on drivers reducing speed. During video surveillance in the vicinity of sensors, coupled with dynamic signs in last three years, the following wildlife species were recorded in the direct vicinity of the road: brown bear, wild boar, red deer, roe deer, red fox, European badger, marten, European hare and squirrel.



Video-camera for monitoring wildlife in the dynamic traffic signs area.



Red deer stag, photographed by a photo-trap in the direct vicinity of road in the dynamic traffic signs area.



Electric fence installed on Primorska highway between Logatec and Lom to reduce bear and other wildlife collisions with vehicles.



Solid cooperation between experts and local inhabitants is fundamental

While trying to improve bear population management and better coexistence with bears, experts often have insufficient understanding of how their measures and actions are received by local inhabitants. The main reason for this is insufficient communication between experts and inhabitants of the bear presence area.

With the LIFE DINALP BEAR project, we have been given the opportunity to mitigate this drawback, at least in some cases. While implementing bear-proof garbage bins and composters, we collaborated closely with representatives of local communities. Likewise, while distributing electrical fences and livestock guarding dogs, we collaborated with livestock breeders and beekeepers. Through the positive communication, we developed constructive and locally adapted solutions for better coexistence with bears.

One of the best examples of constructive cooperation between the project team and the local inhabitants is in the Municipality of Loška dolina, where we set up 28 bear-proof garbage containers and 15 bear-proof composters. By doing this, we protected only a fraction of all households in the municipality; however, for long-term bear conservation and for the welfare of the local population, the communication

established with municipality representatives is even more important than the measures implemented. Through good cooperation, we have already come up with ideas for future measures to make life with bears easier. In the future, we will collaborate to realize these measures.



Such bear-proof garbage bins are used by individual households to decrease conflicts with bears.



Janez Komidar, mayor of Loška dolina Municipality, Slovenia

Our inhabitants show an extremely tolerant and respectful attitude towards large carnivores. However, I share the common opinion that there are too many bears in the municipality of Loška dolina, and that their abundance should be decreased in the future. Within the LIFE DINALP BEAR project, in cooperation with Slovenia Forest Service, we set up bear-proof composters and garbage containers in some of the conflict hot-spots on the outskirts of the Stari trg settlement, and the desired effect was reached. The bear is an extremely intelligent animal, which is why bears started to search for easier accessible food in the neighbourhood. This provides us with the insight that the measures need to be implemented on a large-scale in cooperation with the Slovenia Forest Service experts.

How Austrian stakeholders feel about bear in Carinthia?

Livestock protection by means of electric fences, livestock guarding dogs, shepherds, or combinations of these, are demonstrably effective and keep damages caused by large carnivores low. Carinthian alpine pastures in Austria, however, pose specific challenges for livestock protection in certain areas, due to changes in livestock keeping during the past long-term absence of large carnivores.



LIFE DINALP BEAR project team visiting Carinthia pastures, while meeting stakeholders.

We have visited the Carinthian alpine pastures in the border region of Slovenia and Italy, where we met some farmers and landowners to listen to their opinions and beliefs. They discussed the importance of maintaining the present cultural landscape with grazing. They pointed out that the pastures are used by very small flocks (50-150 sheep), owned by up to twenty different farmers. This is likely the very core of the problem, as small-scale flock owners feel they cannot protect their flocks against

bear attacks in an effective and economic way. Considering the economic perspective, it might help to combine the sheep from several pastures to flocks of several hundred sheep. This poses a challenge both in large carnivore conservation and in traditional agricultural policies, which have been made in the absence of large carnivores, and needs many stakeholders to take part in the constructive search for the most acceptable solution.

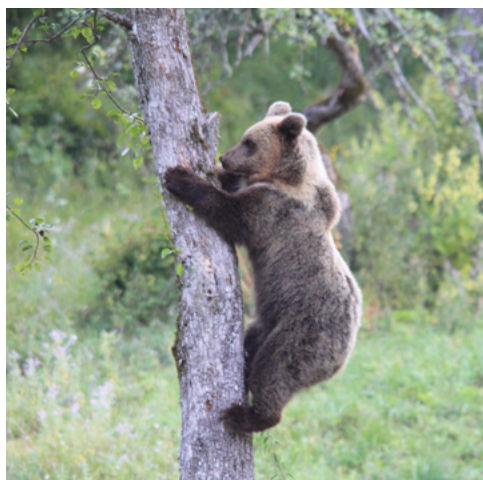


Livestock guarding dogs have proved an effective measure in helping to reduce bear attacks on livestock.

How people perceive human-bear conflicts?

People's readiness to accept bears is one of the main factors shaping the outlook of long-term conservation of bears in Europe. To better understand how rural residents of our project area perceive bears, human-bear conflicts and potential solutions, we've interviewed 2306 randomly selected inhabitants of those areas. Our results indicate that younger generations, males, dog owners, and those knowledgeable about bear biology were more tolerant of conflicts with bears.

Respondents in all four countries acknowledged the effectiveness of damage prevention and education in dealing with human-bear conflicts, while effectiveness of "culling" and "supplemental feeding" was perceived differently in different countries. Livestock owners were less inclined to supporting mitigation measures as an effective solution, however they were still supportive overall. Familiarity with bear biology proved to be important in predicting support for mitigation measures.



Check the final report of the action for more information on how people feel about bears:



Dejana Majstorović, fashion designer and academic restorer

Populiin teddy bear, which was created in 2015, is the product of my favourite sources of inspiration: old artistic techniques, traditional materials and crafts, a combination of tradition and modern design, and of course the main source of my inspiration-nature. The Populiin teddy bear gave me an opportunity to connect inspiration with deeper meaning; I decided to try to increase awareness and draw attention to coexistence between humans and wildlife, specifically addressing the bears. Thus, my bear became "Bear friendly" and is bravely performing the task of ambassador for his role models - real bears.

Bear-related ecotourism – Discover Dinarics

Carefully planned bear-related tourism can provide direct benefits to local communities and provides a means for achieving higher local acceptance. *Discover Dinarics* web portal, established within the project, promotes nature guided trips in Slovenia and Croatia that follow the *guidelines for responsible bear tourism* and emphasise bear-friendly practices, giving the visitor opportunity to experience unique stories of human-bear coexistence. The portal presents bear-friendly ambassadors; more than 70 products and services have been awarded with "Bear friendly" label to date.

The highlights of the Discover Dinarics nature guided trips and some of the bear-friendly ambassadors were presented to journalists and tourism agents on the Discover Dinarics study tour. We are planning to further promote and support bear-friendly practices in the region.



Dr. Steve Banner,
Director, Wildlife
& Wilderness, UK

The invite from the Biotechnical Faculty of the University of Ljubljana to attend the Discover Dinarics Study tour in September came as a pleasant surprise. As a biologist, turned tour operator, it was of great interest to move from a Monday morning at the University discussing current bear populations and their dynamics, to tasting "bear friendly honey" and discovering the bears themselves later that same evening. An extremely informative walk and the opportunity to look at accommodation options both in Slovenia and northern Croatia showed that the fundamentals for sustainable bear watching programmes are well in hand. We look forward to introducing clients to the bears and the forests of the Dinaric Alps in the near future.

Responsible wildlife watching

Learn about coexistence with wildlife

Wildlife friendly practices

Support local

Support nature conservation

LIFE DINALP BEAR
LIFE13 NAT/SI/000550

With the contribution of the LIFE financial instrument of the European Union.

www.dinalpbear.eu

www.discoverdinarics.org

Discover Dinarics portal: supporting responsible nature guided trips and bear-friendly practices.

International photographic contest and traveling exhibition

Between March and April 2017, FINDING BEARINGS, an international conservation and coexistence photo contest, was organized. Amateur and professional photographers presented their visions of coexistence with Europe's largest carnivore – brown bear. Thirty-four European photographers entered the contest with 86 photos. At the award ceremony event at Slovenian Museum of Natural History, photographers of the four winning photos were awarded with packages of “bear friendly” products. The certified products were also served as part of the catering for the event visitors. The photographer of the winning photo, from Poland, was also awarded with a three-day study tour *Discover Dinarics* in September (see page 11).

We expect that the photo exhibition will have a positive effect on what people think about bears. By drawing attention to this charismatic species, we raise awareness about the value of bears for people and nature.

We invite you to visit our traveling exhibition “Life with bears” until June 2019. Check out for its current location on the [project website](#).



Informative project materials about bears for the visitors of the exhibition.



Photography exhibition set up in the lobby of the Ministry of Environment and Spatial Planning, Slovenia.



Christine Sonvilla, nature conservation photographer from Austria

The reason I've ventured into wildlife photography and have spent a large portion of the past two and a half years photographing brown bears in Slovenia is related to my firm belief that intriguing photos facilitate the spreading of sound information about big predators. A gripping photo remains in the viewers mind and may contribute to raising environmental consciousness. In addition, being a nature conservation photographer from Austria, where hardly any bears live – except for a handful of bears roaming the border between Austria, Italy and Slovenia – I see it as my duty to spread the message about options of coexistence especially in my home country. And I do so by working on photos that tell the whole story. A bear walking through a Slovenian village at night, without causing any harm, is a strong image that will stay with many Austrians and might contribute to shaping the country's perception on brown bears and big predators in general.

Networking excursion to the Italian Apennines

International project team got to know two National Parks in Italy last autumn in much detail: “*Gran Sasso e Monti della Laga*” and “*Abruzzo, Lazio e Molise*” National Park. We were guests of expert and scientific teams of both parks; they have considerable experience with large carnivore conservation, research, management, and LIFE projects implementation.

In the beautiful mountainous landscape of the Apennines, we learned about their experience and local issues. We were interested in getting to know the challenges they face in large carnivores' management, conservation practice, and stakeholders' participation process. We visited farmers who suffered some large carnivore attacks on sheep and cattle, and who were displeased with the agricultural and spatial planning politics. Some of them adhered to the Parks' initiatives to subject their pastures to prevention measures and carnivores-adapted livestock management.

In addition, we widened our knowledge about the conservation status of the Apennine population of brown bear (*Ursus arctos marsicanus*), discussed its monitoring methods, human dimension challenges, and listened to farmers and park rangers about the challenges and opportunities that come with coexistence with a strictly protected and critically endangered large carnivore.



Livestock guarding dog, used by livestock breeders in the “Gran Sasso e Monti della Laga” National Park for protection against depredation by large carnivores.



Field excursion to meet farmers and park rangers and discuss their coexistence challenges.

Seth Wilson, conservation biologist from Montana, USA

For the past twenty years, I have been working on large carnivore research and conservation. During 2015-2016, I had the great fortune to work on LIFE DINALP BEAR project as a technical advisor. It was my pleasure to work with an amazing group of managers, scientists, stakeholders from Slovenia, Croatia, Italy, and Austria on one of the most cutting-edge brown bear projects currently underway in Europe. This project offers an emerging global model for brown bear conservation, population-level management, and trans-boundary partnerships that meaningfully involve local communities and the general public. I am thrilled to be back in Slovenia for another year to provide strategic communication support and scientific expertise to help conserve Eurasian lynx and brown bears.



How do we capture bears in Trentino?

In Trentino, bears are captured with a tube (Culvert) trap. A special team of qualified rangers and a veterinarian prepare the capture site and activate the trap. The trap is completely safe for the bears. When a bear enters the trap and pulls the wire, the doors are triggered and closed. That is when a radio signal alerts the “capture team”, which reaches the site in very short time. The bear is first narcotized with the injection rifle, then removed from the trap, measured (weight, limbs and body length, age, sex, etc.), radio-collared and released. The veterinarian constantly monitors the bear’s status during the operation protocol. Since the project began, 6 bears (1 male and 5 females) have been captured.

The radio-collar’s locations provide us with the data on bear movements in real-time. In this way, we are able to prevent conflict situations. For example, if a collared bear wanders near a flock of sheep, the “Bear emergency team” prevents livestock depredation with dissuasion measures.

Besides tracking bears’ movements with the radio-collars, we can discover additional biological facts. For example, a young male bear “M18” has shown great ability to move for long distances. This event underlines the necessity to manage the bear population on a large scale, therefore managing bear populations in cooperation with other regions and countries.

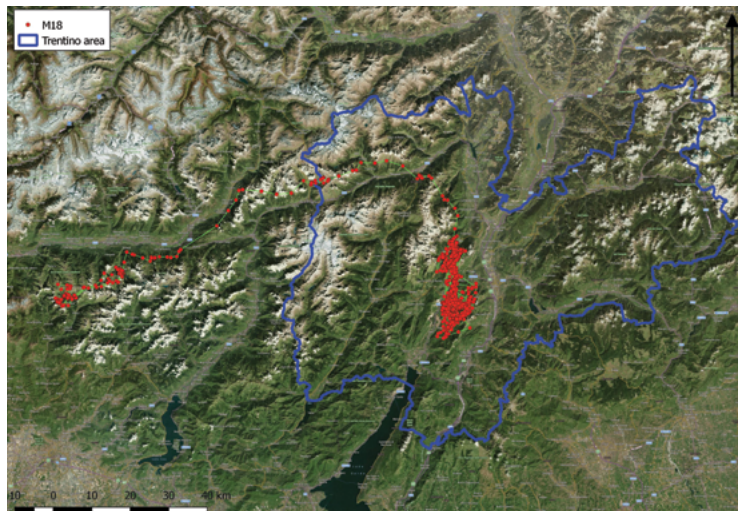
Long-distance movement of the bear, called “M18”, in Northern Italy.



A bear in front of the activated Culvert trap.



A narcotized and radio-collared bear, that beforehand entered in the Culvert trap.



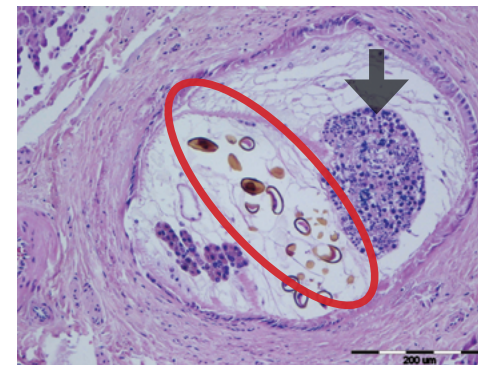
Dead bears as a source of information

Hunted bears are an important source of useful information for scientific research and brown bear management. When a brown bear has been hunted in the Republic of Croatia, the hunting right owners are obliged to fill in an official form for bear removal documentation and also two compulsory samples: a piece of muscle preserved in ethanol for genetic research, and a tooth (first premolar) for age determination.

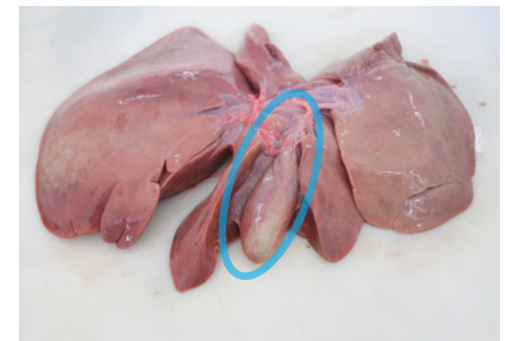
In cooperation with Ministry of Agriculture of the Republic of Croatia, Directorate for Forestry, Hunting and Wood Industry, and the Faculty of Veterinary Medicine of the University of Zagreb, comprehensive collecting of samples was organized in order to monitor health and reproductive status of the Croatian brown bear population. This is also how samples for parasitological research were obtained. Through this we found fluke *Dicrocoelium dendriticum* (60% of examined bears, N = 136) that tends to infest the gallbladder, bile ducts and liver, predominantly in domestic ruminants, especially sheep. The genetic analysis of fluke *Dicrocoelium* indicate that this strain of parasite could be typical for bears.



Dicrocoelium mainly infests ruminants (especially sheep), but can also be found in bears.



Bile duct occlusion with adult fluke. Intersection shows parasite’s uterus with embryonated eggs (red ellipse) and its productive testicle (black arrow). H&E staining, 200x.



Bear liver and gallbladder. Location of infestation of adult parasite *Dicrocoelium* is marked.

Bears in Austria in 2017

The preliminary genetic results in this area proved there were no more than two bears in Carinthia in 2017. However, these bears caused quite a few headlines--one bear destroyed beehives over a longer period, and the other was killed in a traffic accident.

In the Sattnitz, a small mountain range between Klagenfurt and the Drava River, a bear destroyed beehives from the middle of May to the beginning of August. At least 16 incidents with beehives and additional cases with killed sheep and damages at fish ponds are known. It is likely these damages were all caused by the same bear. At some of these places hairs were found and subsequently genetically analysed. It was the so-far-unknown bear, "Ktn-12". From August on, the bear was active south of the Drava and maybe moved into Slovenia in October.

On October 30th, a bear was killed in Feistritz an der Gail by a vehicle. The bear weighed about 200 kg. The necropsy revealed a series of rib fractures and injuries of inner organs as cause of death. An X-ray examination did not show any indications of former bone fractures or other injuries. Based on the genetic results, we know this bear was "Ktn-09", probably the brother of the bear "Rudolf", whose paw remains were found on the Italian side of the border in 2016.



Educating youth through workshops and roleplay

Understanding the value of nature and wildlife and the importance of their conservation is a valuable lesson best learned in childhood. That's why we conduct bear workshops in which secondary and high-school students and scouts actively learn about bear anatomy, behaviour, ecology, and human-bear interactions through practical activities. They use models of foot prints, real skulls and fur, and engage in role-play (e.g., biologist, hunter, ministry representative), which can develop pro-environmental attitudes. For this reason, we adapted role-playing game Play decide, through which we talk in a simple and effective way about controversial issues, such as bear management. In this way, students and scouts learn that successful bear conservation requires more than just a knowledge transfer, but rather also dialog and compromises among different interests.

We also developed educational school kits, which are used by teachers in their biology–science lessons and by scouting organizations within their activities, thus providing an up-to-date education about bears. We have conducted 62 workshops in Slovenia and Croatia to date. We are thrilled to experience such a high interest among teachers, as they are an important factor in shaping children's values and attitudes toward wildlife.



Outdoor workshop with scouts.



Workshop with pupils in Croatia.



Educational "bear kit" for schools and scouting organizations.



Aleš Sedmak, livestock guarding dogs breeder and sheep breeder from Juršče in Pivka basin, Slovenia

On our family farm, we have been using livestock guarding dogs for protecting our herd for almost two decades. The dogs are indispensable part of our farm, and they have a crucial role both in summer, when the herd is grazing on pastures, and in winter, when the animals are in the stall. Our farm is located in the core area of large carnivore presence, therefore we cannot imagine farming without the help of our dogs.

Within the LIFE DINALP BEAR project, we established an interesting collaboration that encourages the connection between dog breeders and sheep breeders who received our pups from the first "project litter". Through this close collaboration and guidance, we, as dog breeders, are able to assure that our pups will become effective livestock guardians. I think the promotion of herd protection against large carnivores is a very important part of project activities.

Coordinating beneficiary



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