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Large Carnivores in the Dinarides: Management, Monitoring, Threats and Conflicts

**Establishing a transnational exchange platform for the
management of large carnivores in the Dinaric region
– Background Report –**



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Cover picture: Brown bear in the Dinaric Region (© D. Huber).

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Summary

The Dinaric Region in the Western Balkans is one of the most biologically diverse regions in Europe. It is also home to the three large carnivore species: bear, wolf and lynx (Balkan and Eurasian lynx), shared between EU and non-EU member states.

Given the extensive ranges of these species, transnational coordination for their management is desirable to enable a long-term basis for their conservation. To date, only few trans-boundary initiatives on the project topic exist between the governments concerned.

For this reason, an Advisory Assistance project aims to establish a transnational exchange platform for the management of large carnivores with representations from eight countries in the Dinaric Region: Albania, Bosnia and Herzegovina, Croatia, Kosovo^{*1}, Montenegro, North Macedonia, Serbia and Slovenia. Over the course of several platform meetings, the national administrations will work together with other relevant stakeholders from agriculture, science, hunting and nature conservation on jointly developing guiding principles for future cooperation. A platform secretariat will ensure impartial steering of the project activities.

This background report assesses the situation regarding the current status of large carnivores, their management and monitoring, threats and conflicts in the Dinaric Region. It gives an overview of the situation in each country and compares this with previous evaluations.

Zusammenfassung

Die dinarische Region auf dem Westbalkan ist eine der biologisch vielfältigsten Regionen Europas. Sie bietet auch den drei großen Beutegreifern Bär, Wolf und Luchs (Eurasischer und Balkan-Luchs) eine Heimat, die damit in weiten Teilen von EU- und Nicht-EU-Mitgliedsstaaten ansässig sind.

Angesichts der weitläufigen Verbreitungsgebiete dieser Arten ist eine transnationale Koordination für ihr Management wünschenswert, um so langfristig eine Basis für den Erhalt dieser Arten zu ermöglichen. Zwischen den betroffenen Regierungen existieren bislang nur wenige grenzübergreifende Initiativen zum Projektthema. Aus diesem Grund wurde ein Beratungshilfeprojekt gegründet um eine internationale Plattform für das Management von großen Beutegreifern mit Vertretungen aus acht Ländern der dinarischen Region aufzustellen: Albanien, Bosnien und Herzegowina, Kroatien, Kosovo*, Montenegro, Nord-Mazedonien, Serbien und Slowenien. Gemeinsam werden die nationalen Verwaltungen mit anderen relevanten Interessenvertretungen aus der Landwirtschaft, der Wissenschaft, dem Jagdwesen sowie Naturschutz auf mehreren Plattform-Treffen an Leitprinzipien für die zukünftige Zusammenarbeit arbeiten. Ein Projekt-Sekretariat wird die unparteiische Steuerung des Vorhabens gewährleisten.

Dieser Hintergrundbericht bewertet die Situation in Bezug auf den derzeitigen Status der Großraubtiere, ihr Monitoring und das Management und die Bedrohungen, Gefährdungen und Konflikte in der Region. Zum Projektabschluss werden die Partner zudem verschiedene finanzielle und rechtliche Modelle für die langfristige Fortführung der Dinarischen Plattform für große Beutegreifer diskutieren und evaluieren. Der vorliegende Bericht gibt einen Überblick über die Situation der Großraubtiere in den einzelnen Ländern und vergleicht diese mit früheren Erhebungen.

¹ All references in this document to Kosovo*, whether the territory, institutions or population, in this text shall be understood to be without prejudice to positions on status, and in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

1 Background

The Dinarides in the Western Balkans is one of the most biologically diverse regions in Europe and home to the three large carnivore species: bear, wolf and lynx. Given the extensive ranges of these species, transnational coordination for their management is desirable to enable a long-term basis for their conservation. To date, few transboundary initiatives on the large carnivore management exist in the region, however, it is clear that there is a strong demand for more active involvement on this topic.

In 2018, the EU Platform on Coexistence between People and Large Carnivores² - a grouping of organisations representing different interests concerned with large carnivore conservation and management - jointly organised a workshop with partners in Budva, Montenegro³. At the end of the workshop, participants agreed on a joint statement⁴ calling for the establishment of a transnational exchange platform for the management of large carnivores in the Dinarides (Box 1). They also listed the main objectives for exchange on large carnivores. This builds on the years of work of experts in the region to establish a transnational exchange/dialogue. It shows clearly the interest of state representatives, scientists, NGOs and stakeholder groups in a participative approach between countries.

Box 1: Budva Agreement

The participants identified the following objectives as a priority for the first discussions of the platform:

1. Coordinate and exchange information on management practices, policies and approaches across the region, including national and regional management plans, with the aim of achieving population-level objectives;
2. Support for international networking and exchange of experience between key stakeholders and authorities;
3. Capacity-building for management tasks relating to large carnivores;
4. Increased cross-border collaboration on monitoring such as standardised methods and protocols;
5. Establishing further cross-border projects to support the above;
6. Fundraising and finding concrete sources of finance to support activities and concrete actions needed for the future platform.

For this to be successful, neutral facilitation and human and financial capacity will be needed to support the establishment of the platform and in setting up guiding principles for future cooperation. In order to realise these objectives, the participants invite and encourage the managing authorities in Albania, Bulgaria, Bosnia and Herzegovina, Croatia, North Macedonia, Greece, Kosovo*, Montenegro, Serbia and Slovenia to build on the conclusions reached at this workshop and, following the model of the EU platform, to consider establishing a regional platform on large carnivores to take these discussions further.

² European Commission Website: EU Platform on Coexistence between People and Large Carnivores: http://ec.europa.eu/environment/nature/conservation/species/carnivores/coexistence_platform.htm

³ European Commission Website: EU Platform on Coexistence between People and Large Carnivores: subpage events http://ec.europa.eu/environment/nature/conservation/species/carnivores/events_sub_workshop_Budva.htm

⁴ European Commission Website: Budva Statement: http://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/181106Budva_LCP_Workshop%20statement-EN.pdf

1.1 Objective and planned actions

The project was established with the main objective to provide the human and financial capacity to establish a transnational exchange platform and set up guiding principles for future cooperation together with the national administrations in the region (Albania, Bosnia and Herzegovina, Croatia, Kosovo*, Montenegro, North Macedonia, Serbia, Slovenia).

It takes steps to help establish management and exchange processes in order to:

- Increase the understanding of EU policy goals and practices regarding large carnivore management and better transposition of EU Environmental Acquis;
- Increase the capacity of managing authorities to start to develop cross-border management processes and monitoring related to large carnivore populations;
- Increase the capacity of stakeholders from relevant sectors to be involved in such activities with the aim to reduce conflict related to large carnivore presence.

The project can be seen as a starter fund in this regard. The work, financed by the German Federal Ministry for the Environment (BMU) through the German Advisory Assistance Programme (Beratungshilfeprogramm)⁵ is planned over the course of one year and further financing will be needed for its long-term continuation. The project is managed by adelphi, a German environmental policy research institute and consultancy in collaboration with Carnivora Magna - Institute for research, conservation and management of large carnivores, a Croatian NGO. Adelphi also manages the Secretariat of the EU Platform on Coexistence between People and Large Carnivores⁶. Carnivora Magna members are specialists in large carnivore management in the region.

1.2 Purpose of this report

This report aims to provide background information to support the platform establishment. In particular, an overview of the current situation regarding large carnivore management in the region and comparison between different countries' approaches. This should help to identify the main themes for the platform's work and the potential for joint approaches for large carnivore management in the Dinarides.

⁵ UBA Website: Beratungshilfeprogramme: <https://www.umweltbundesamt.de/en/topics/sustainability-strategies-international/cooperation-eecca-centraleastern-european-states/federal-environment-ministrys-advisory-assistance>

⁶ European Commission Website: EU Platform on Coexistence between People and Large Carnivores : http://ec.europa.eu/environment/nature/conservation/species/carnivores/coexistence_platform.htm

2 Introduction to the region

2.1 Large Carnivores in the Dinarides

The Dinarides are a mountain range along the Adriatic Sea connected to the Pindos Mountains in the south-east of the Balkans. Thanks to their location at the dividing line between several biogeographical regions (Mediterranean, Alpine and Continental) and their characteristic ecological, climatic and geomorphological conditions, they are one of the most bio-diverse regions in Europe.

Large carnivores (hereafter LCs) are among the charismatic and characteristic species in the area. Three species: brown bear (*Ursus arctos*), grey wolf (*Canis lupus*) and Eurasian lynx (*Lynx lynx*) including its rare subspecies (*Lynx lynx balcanicus*) are present in the region. The region includes the following countries involved in this project: Albania, Bosnia and Herzegovina, Croatia, Kosovo*, Montenegro, North Macedonia, Serbia and Slovenia. All hold LC populations but none are big enough to form their own viable population. According to the latest assessments of the regional Red List of the World Conservation Union (IUCN) (2012-2016), there are roughly 4000 wolves (Dinaric-Balkan population), about 4000 bears (Dinaric Pindos population), 120-130 lynx (Dinaric lynx population) and only 50 individuals of the Balkan lynx (the smallest and most threatened native subpopulation of the Eurasian lynx)⁷. LC populations do not follow country boundaries (see fig. 1-3).

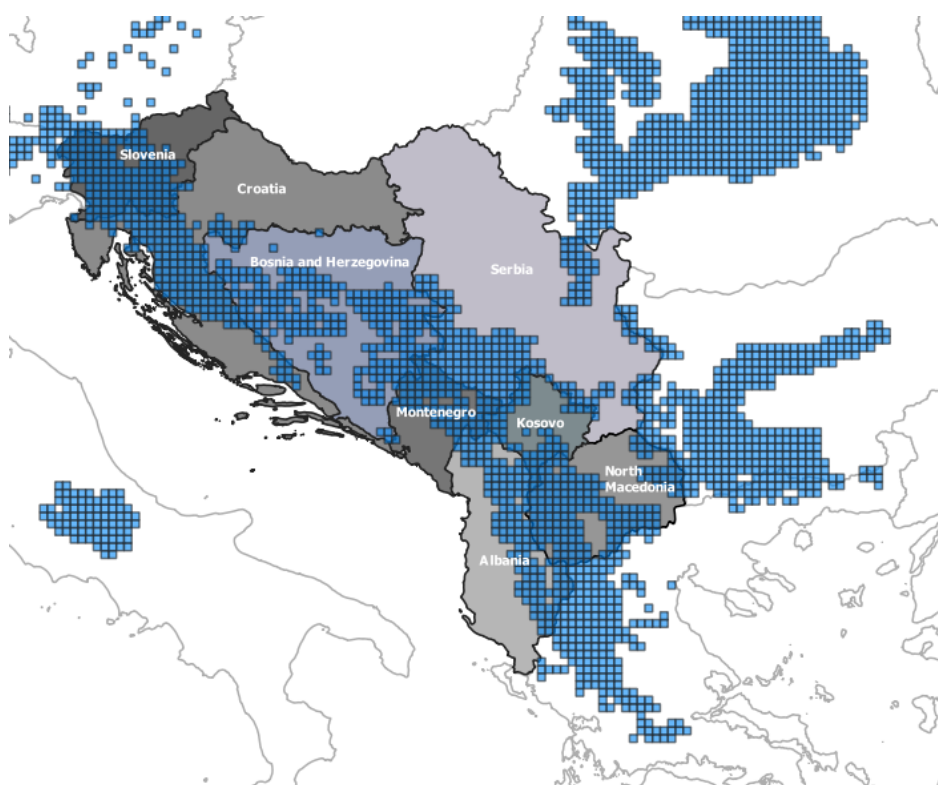


Figure 1: Bear distribution across the Dinarides (2012-16). Presence mapped in 10x10 km ETRS89 LAEA Europe grid scale (Kaczensky et al. 2021)⁸.

⁷ Large Carnivore Initiative for Europe (LCIE) website. Species Specialist Group for the IUCN: <https://www.lcie.org/Large-carnivores>

⁸ Kaczensky, Petra et al. (2021), Distribution of large carnivores in Europe 2012 - 2016: Distribution maps for Brown bear, Eurasian lynx, Grey wolf, and Wolverine, Dryad, Dataset, <https://doi.org/10.5061/dryad.pc866t1p3>

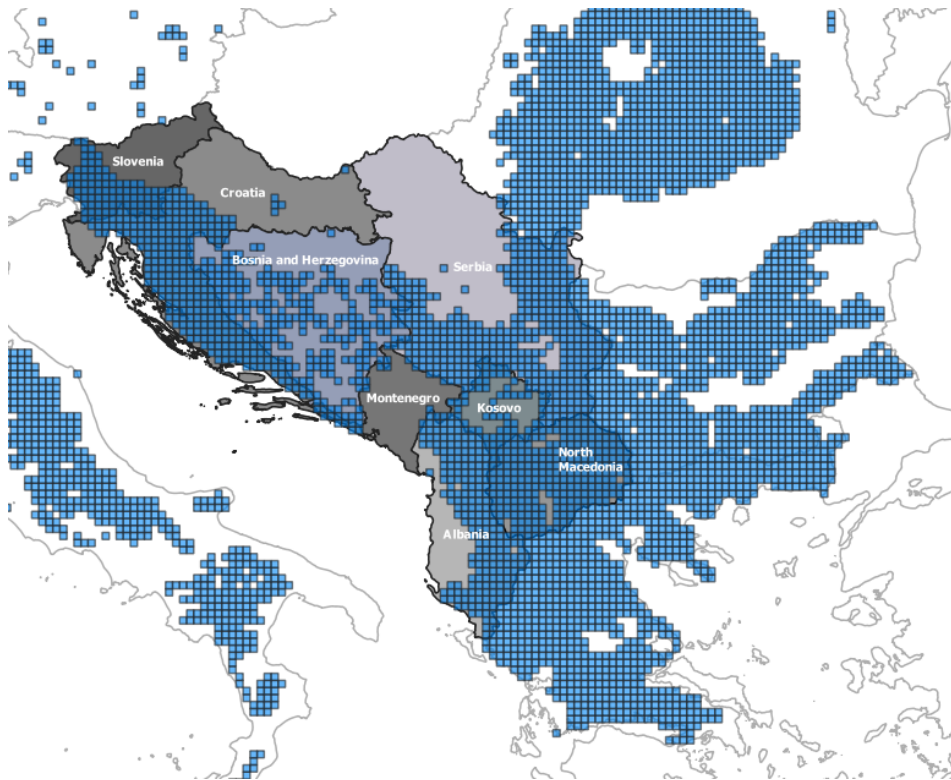


Figure 2: Wolf distribution across the Dinarides (2012-16)⁸.

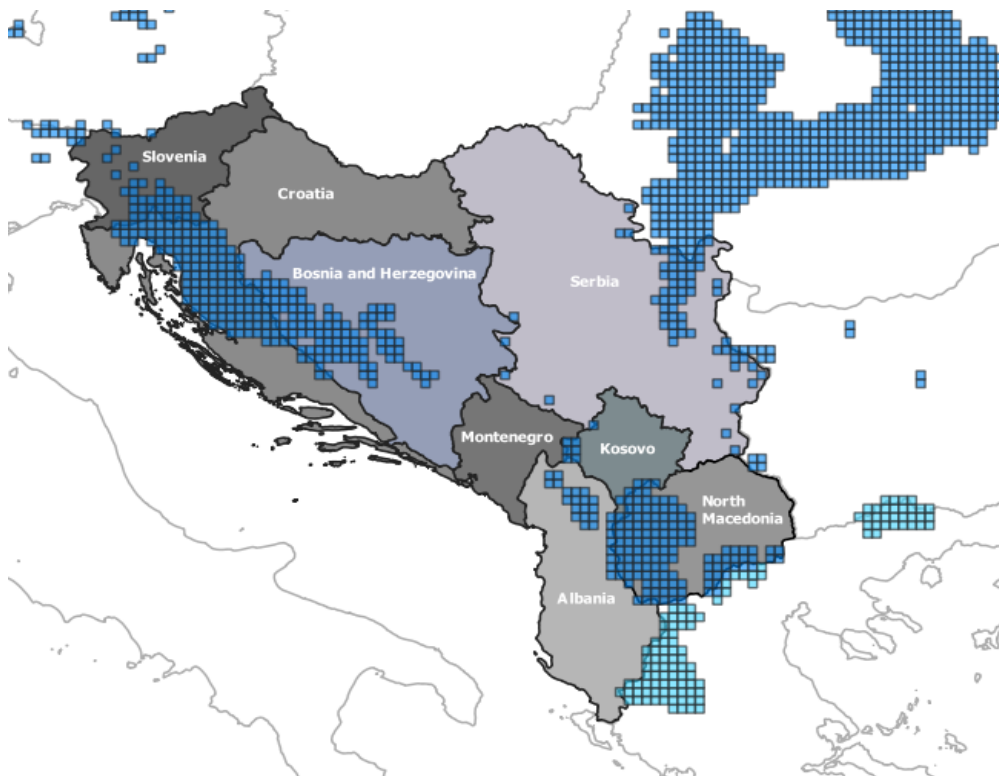


Figure 3: Lynx distribution across the Dinarides (2012-16)⁸. Blue represents permanent presence and turquoise sporadic presence.

In addition to the eight countries above, the above-mentioned wolf population also ranges into Greece and Bulgaria while the bear population reaches Greece. While not official partners in the project, Greece and Bulgaria will be invited to take part in meetings and involved in the platform processes where possible.

As in Western Europe, LC populations were persecuted directly until the mid-twentieth century in much of the Dinarides. However, in the case of the Dinarides, bear and wolf populations never became extinct. Bear populations reached their lowest levels after the Second World War and suffered further in some countries during the conflict that led to the break-up of Yugoslavia in the early 1990s.

However, populations have seen some recovery in recent years. In many countries, wolves were hunted with a bounty and persecuted as a pest-species. Only recently have they been afforded protection in parts of the region. The fact that they survived at all is mostly thanks to their own adaptability, reproductive potential and the abundance of suitable habitat and prey in much of the region.

The Dinaric lynx was driven to extinction in the first years of the 20th century. A small remnant population, today a separate sub-species known as the Balkan lynx survived but is still regarded as critically endangered. It has a severely reduced population and range and intensive efforts are in place to save this isolated population. In the west of the region, where extinction was complete, a reintroduction programme which started in 1973 has brought in individuals from the Slovakian population. After initial growth, the population decreased and remained low until recent years when additional efforts have been made to increase the genetic diversity of the small population.

2.2 Institutional framework and the driver of EU membership

The involved countries have no overarching legal framework within which to organise cross-border nature management. They include a mixture of EU and non-EU member states. There is no Dinaric-Balkan convention following the example of the Alpine or Carpathian convention. Large-scale cross-border initiatives have remained challenging following the Yugoslavian wars in the 1990s. Even within individual countries, in particular in Bosnia and Herzegovina, the approaches to LC management in the different regions may vary.

All of the involved countries are either already EU members, accession countries or potential candidates. The prospect of EU membership therefore provides an important common framework in the area.

In order to become members, countries must demonstrate that they comply with the Copenhagen Criteria relating to stable institutions, human rights and the law⁹. In the case of the countries of the Western Balkans, the 'Stabilisation and Association Process', set out additional conditions for membership mostly relating to regional cooperation and good neighbourly relations. Cross-border collaboration is therefore of high importance.

Contractual relations between candidates and the EU take the form of stabilisation and association agreements (SAAs). The current status of discussions is summarised in Table 1.

⁹ European Council (1993) Copenhagen criteria: https://ec.europa.eu/neighbourhood-enlargement/enlargement-policy/conditions-membership_en

Table 1: EU membership status.

Country	EU membership status	Further information
Albania	Candidate country (negotiations not yet started)	Applied for EU membership April 2009 Candidate status June 2014 Commission recommended opening negotiations in 2016 - the Council agreed March 2020 Commission framework July 2020
Bosnia and Herzegovina	Potential candidate	Applied for EU membership February 2016 Commission opinion with 14 priorities May 2019 One priority is the proper functioning of the Stabilisation and Association Parliamentary Committee (SAPC), the parliamentary dimension of the SAA - adopted by the Bosnia and Herzegovina Parliament in June 2021
Croatia	EU member state	Joined the EU on 1 July 2013
Kosovo*	Potential candidate	Unilaterally declared its independence from Serbia in February 2008 Five EU Member States (Cyprus, Greece, Romania, Slovakia and Spain) and two countries in the region (Serbia and Bosnia and Herzegovina) have not recognised Kosovo's independence. SAA entered into force on 1 April 2016 Membership linked to success or otherwise of EU-facilitated high-level dialogue between Kosovo* and Serbia
Montenegro	Candidate country (negotiating, 2025 possible entry)	Applied for EU membership December 2008 Candidate status December 2010 Accession negotiations opened in June 2012 All 33 screened negotiating chapters have been opened, only 3 provisionally closed
North Macedonia	Candidate country (negotiations not yet started)	Applied for EU membership March 2004 Granted EU candidate status in December 2005 Accession negotiations hampered due to dispute with Greece over the name 'Macedonia'. Resolved through the 'Prespa Agreement' in force February 2019 Council decided to open accession negotiations March 2020 Commission presented the draft negotiating framework July 2020
Serbia	Candidate country (negotiating, 2025 possible entry)	Applied for EU membership December 2009 Candidate status in March 2012 Accession negotiations formally opened January 2014 First two chapters, including the one on normalisation of relations with Kosovo*, opened in December 2015 To date, 18 out of 35 negotiating chapters opened, two of which have been provisionally closed Membership linked to success or otherwise of EU-facilitated high-level dialogue between Kosovo* and Serbia
Slovenia	EU member state	Joined the EU on 1 May 2004

As part of the accession process, countries need to demonstrate their ability to comply with EU legislation (the *acquis communautaire*) by transposing the relevant directives and regulations into national law. Accession negotiations take place around 35 chapters¹⁰ covering the *acquis*. Chapter 27 covers the environment, including protecting species under the Habitats Directive and establishing the Natura 2000 network of protected areas.

¹⁰ European Commission Website: Neighbourhood and Enlargement Policy: https://ec.europa.eu/neighbourhood-enlargement/enlargement-policy/conditions-membership/chapters-acquis_en

The EU provides financial assistance for putting this framework in place. The EU frameworks remain therefore very relevant, no matter the stage of accession, and understanding and implementing environmental acquis is a common challenge faced by all countries.

Box 2: EU Habitats Directive

The 1992 Habitats Directive (European Council 1992), implements the Bern convention (see Box 3) in the European Union (EU), adding stronger enforcement and reporting mechanisms.

A key concept of the Directive is that all the species and habitats listed must be maintained in or restored to favourable conservation status (FCS). The types of action required and/or permitted to achieve FCS vary depending on species or habitat. Annex II lists the species which require the designation of special areas of conservation (SACs) to reach FCS, Annex IV lists strictly protected species (it is prohibited to deliberately capture, kill or disturb these species or their refuge areas/habitat) and Annex V lists species which can be exploited but only if this is compatible with maintaining them in FCS.

Bear, wolf and lynx are protected under Annex II for most EU countries including Croatia and Slovenia (with bear and wolf considered priority species). The bear is protected under annex IV in all EU countries and wolf and lynx in most EU countries including Slovenia and Croatia.

Strict protection under Annex IV does not completely preclude removal of individuals from the population. Derogations under article 16, permit lethal management under particular circumstances (for example for protecting other fauna and flora or for preventing serious damages e.g. to crops or livestock or for public safety). Slovenia and Croatia use derogations in their management of bear and wolf.

The first guidance document on the strict protection of animal species of Community interest under the Habitats Directive was published in 2007. Its aim was to provide a better understanding of the provisions for species protection and of the specific terms used. In October 2021, a revised Guidance document on the strict protection of animal species of Community interest under the Habitats Directive was issued¹¹. This document focuses on the obligations arising from Articles 12 and 16 of the Habitats Directive. These establish a system of strict protection for the animal species listed in Annex IV (a) to the Directive, while allowing for a derogation from these provisions under defined conditions. The document is mainly based on relevant Court of Justice of the European Union (CJEU) judgments and examples of species protection systems in place in various Member States. Annex III provides an example, in the case of the wolf, of how the guidance document can be applied.

International conventions

All involved countries, with the exception of Kosovo*, are also signatories to two international conventions which lay out certain rules regarding the protection of LCs, the Bern Convention and CITES. More information on the international legal framework is included in Box 3.

¹¹ European Commission Website: Habitats Directive Guidance
[https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=PL_COM:C\(2021\)7301](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=PL_COM:C(2021)7301)

Box 3: Bern Convention and CITES

The 1979 Convention on the Conservation of European Wildlife and Natural Habitats (the **Bern Convention**¹² is a binding international legal instrument, covering the European continent and parts of Africa, which lists habitats and species to be protected by the convention signatories. Species included in Appendix II are strictly protected (it is prohibited to deliberately capture, kill or disturb these species or their refuge areas/habitat). Species included in Appendix III are protected (they can be hunted but hunting should be regulated in order to keep the populations out of danger, e.g. by measures such as closed hunting seasons and temporary or local bans to allow population recovery). Bear and wolf are strictly protected under Appendix II of the Bern Convention. Lynx is under Appendix III, however the Balkan lynx subspecies is Appendix II. Signatories could make reservations to not consider particular species as protected under the convention. North Macedonia has a reservation to appendix II in place for wolf. Slovenia for bear and wolf though since they are under Annex IV of the Habitats Directive, this has little meaning in practice. Kosovo* is not a signatory of the Convention.

CITES¹³ (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) entered into force in 1975. The convention regulates the use and trade of endangered species globally. For LC, CITES is particularly relevant for trophy hunting as it controls the permissions to remove hunted animals from the country in which they are killed. CITES includes species lists under three appendices depending on whether no trade is permitted (appendix 1), trade is strictly controlled with a permit (appendix 2) or trade is controlled with a permit but under a wider range of circumstances (appendix 3). Wolf, bear and lynx are included in appendix 2 for European countries.

Signatories can make reservations to not consider particular species as protected under the convention. North Macedonia has a reservation in place for wolf since 2000. Kosovo* is not a signatory of the Convention.

The range of approaches practiced in the different countries to implement the above-mentioned directives and treaties have resulted in a patchwork of different approaches to LC management across the Dinarides as further described in the results and discussion.

2.3 Learning from EU experiences about coexistence with large carnivores

LCs are potentially conflictual species throughout their range. As charismatic species, they can provide benefits, such as attracting tourists (including hunters in some countries) as well as playing their role in ecosystem management (ecological services, as well as socio-economic and cultural services)¹⁴. However, their presence is linked to costs that fall on small, very specific sectors of society. The biological needs of LC mean that they are likely to come into conflict with rural populations, in particular, livestock breeders, beekeepers, farmers and potentially hunters. Society has made a choice through protecting LCs to encourage their conservation and also their return to certain areas where they had become extinct.

¹² Council of Europe (1979) Treaty No.104 Bern Convention Convention on the Conservation of European Wildlife and Natural Habitats: <https://www.coe.int/en/web/bern-convention>

¹³ CITES (1973) Convention on International Trade in Endangered Species of Wild Fauna and Flora: <https://cites.org/eng>

¹⁴ Tišma, S., Jelinčić, D.A., Tolić, I., Solić, A. i Malić Limari, S. (2021). Tko se boji vuka još? Socio-ekonomski i kulturološki učinci obitavanja vuka u Hrvatskoj. *Socijalna ekologija*, 30 (1), 117-130. <https://doi.org/10.17234/SocEkol.30.1.6> (*Socijalna ekologija* : journal for environmental thought and sociological research = *Socijalna ekologija* : Zeitschrift für Umweltgedanken und soziologische Forschung, Vol. 30 No. 1, 2021

There is therefore a responsibility to **manage and coordinate** the conservation of LCs together with the stakeholders affected, normally through a **coordinated management plan**, developed together with stakeholders. This can only be done when accurate and credible **monitoring of LC populations and LC impacts** such as depredation is put in place.

Compensation for damages caused by LC and **financial support for protection measures** are regarded as one of the first steps to reduce conflict. Most EU countries are gradually moving towards a system where they pay for compensation for damages to livestock, beehives or agriculture through state funds and for putting in place prevention measures (fencing, livestock guarding dogs, shepherding, see fig. 4) through either state funds or the European Agricultural Fund for Rural Development, EAFRD (the Rural Development pillar of the Common Agricultural Policy)¹⁵. This is likely to continue under the new CAP (from 2023) with the addition of potential funding through the eco-schemes (direct payments)¹⁶. It is clear that compensation and prevention measures are desirable in order to be fair to farmers, nonetheless, such schemes must be designed and rolled out carefully, to avoid increasing conflict¹⁷.



Figure 4: Livestock protection measures (fencing and dog, Picture Irena Kavčič).

¹⁵ Marsden, K and T. Hovardas EU Rural Development Policy and the management of conflictual species: The case of large carnivores in: Biological Conservation 243: DOI: 10.1016/j.biocon.2020.108464

¹⁶ EU LC Platform Briefing note: Common Agricultural Policy (CAP) reform and large carnivore coexistence measures: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/EU_Platform_CAP_and_large_carnivores_July21.pdf

¹⁷ Boitani, L., Ciucci, P., and Raganella-Pelliccioni, E. (2010). Ex-post compensation payments for wolf predation on livestock in Italy: a tool for conservation? Wildlife Research 37: 722-730: https://www.kora.ch/malme/05_library/5_1_publications/B/Boitani_et_al_2010_Compensation_payments_for_wolf_predation_on_livestock_in_Italy.pdf

It is clear from EU comparisons that the highest compensation and prevention payments do not necessarily result in the lowest level of conflict and other factors need to be considered¹⁸.

Conflicts are also caused by **direct interactions between people and LCs**, especially bears i.e. people coming into direct contact and potentially being injured or even killed by bears. This can be addressed mainly by education of people on responsible behaviour in bear habitat, by reducing contact through **waste management** (reducing bear access to rubbish); **traffic management** (green bridges, fences and signs to reduce accidents); trying to regulate incursions into bear habitat (sport and hunting access and monitoring the impacts of supplementary feeding for hunting or bear-watching purposes); and improving connectivity of bear **habitat** (infrastructure planning).

Additionally, the means to record and deal with incidents is important. Certain countries have started to put **LC Emergency or Intervention Teams (ITs)** for all three species or for each species separately in place to deal with incidents and potentially translocate bears developing difficult behaviours (see **Fehler! Verweisquelle konnte nicht gefunden werden.**). Importantly such teams should also record what in the human or bear/wolf/lynx behaviour might have led them to trouble, helping to change practices and avoid future incidents.



Figure 5. Bear Intervention Teams are in place in certain EU countries including Croatia (Picture: Djuro Huber).

Lethal management is practiced in certain European countries. In many countries, problematic individuals (bears or wolves) that have successfully circumvented prevention measures, can be removed from the population through derogations. Derogations are sometimes also used for wider population control e.g. precautionary removals of a certain number of individuals from the population.

¹⁸ Marsden, K. (2018) Preventing damage by large carnivores: A comparative overview of the use of the European Agricultural Fund for Rural Development to protect livestock in the Alpine countries: https://www.adelphi.de/en/system/files/mediathek/bilder/26022019_WISO-EAFRD-report-adelphi_FINAL.pdf

In a few EU countries¹⁹, hunting is permitted where wolves are included in Annex V of the Habitats Directive.

Conflicts around LCs are related to economic interests but can also go deeper. They may reflect various **socio-cultural visions** of the future of rural areas where conflicts between different groups of people may be projected onto LCs²⁰. A range of means can help to support coexistence, as highlighted by the EU Platform case studies²¹ and in the EU Commission's recent species guidance²². Involving stakeholders in discussions around LC management, e.g. through the **establishment of stakeholder platforms**, is seen as an important step to avoid conflicts becoming too entrenched.

In addition to bringing EU experiences to the Dinarides, this project will also aim to transfer Dinaric experiences to EU countries. Many western or central EU countries, such as Germany, lost their LC populations, and for this reason conflicts are particularly high, when they return. The Dinaric experience of continuous coexistence can provide valuable lessons.

¹⁹ Dinaric-Pindos bears are hunted or listed as game in Slovenia, Croatia, Bosnia and Herzegovina, and Montenegro, but not in Serbia, Kosovo, North Macedonia, Albania, or Greece from Huber et al (2021) The status of hunting of brown bears in Europe: is it good or bad for bears? Unpublished oral presentation in Bear Specialist Group session

²⁰ e.g. Linnell, J. (2013) From conflict to coexistence? Insights from multidisciplinary research into the relationships between people, large carnivores and institutions: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_4_conflict_coexistence.pdf

²¹ European Commission Website: case studies for coexistence: https://ec.europa.eu/environment/nature/conservation/species/carnivores/case_studies.htm

²² European Commission (2021) Guidance document on the strict protection of animal species of Community interest under the Habitats Directive: [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=PL_COM:C\(2021\)7301&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=PL_COM:C(2021)7301&from=EN)

3 Information collection method

To gain a good overview of the existing situation, the project team developed an interview template to gather information on LC governance and management in the Dinarides. The template was based on reviewing existing literature and expert feedback, particularly from the project Advisory Board. The interview template (Annex 1) was used to carry out 46 interviews with experts from government, civil society and academia in the countries involved (see Annex 2 for the interviewee list). Interviewees were identified through the platform secretariat contacts in the region, project partners and feedback from the advisory board and interviewees themselves.

The interviews were structured around the range of topics listed below, which contribute to the success or otherwise of cooperation around LC management:

For each country the topics assessed were:

- Background to the country (area, population and land use, institutional structure)
- Managing authorities relevant to LC management
- International and EU law application
- National and regional legislation
- LC status and trends and distribution
- LC management plans and monitoring methods
- Main threats to the population
 - Main conflicts associated with LC presence
 - Livestock protection and compensation measures
 - Hunting status
 - Existing cross-border initiatives

Interviews were generally carried out by online video or by telephone. Interviewees were informed how the data would be used and that their responses would remain anonymous on the individual level though the list of interviewees would be published. The series of questions were posed and the answers noted, in most cases in the native language of the interviewee and in some cases in English. The responses were translated into English and provided to the rest of the team for analysis. The responses were used to produce the overviews for each country listed below (country fiches) as well as the comparison tables and descriptions in the discussion.

The interviews had the dual purpose of information collection and scoping interest in taking part in the platform meetings. It was therefore important that the full range of interviewees were reached in each country as far as possible. For this reason, in selecting the interviewees, the team aimed for a balance between state actors, conservation interests, academics, hunting and agricultural actors.

Clearly, the interviewees also have their own opinions on LC management. Care was therefore taken in the analysis to distinguish between opinions, official positions, and scientific evidence. Suitable qualifiers are included below where facts are disputed or uncertain.

4 Results

The results build upon two main previous reviews of management in the region, carried out at roughly 10-year intervals. A first assessment of management approaches, was carried out under the Bern convention in 2002²³. The Large Carnivore Initiative for Europe (LCIE) has also carried out Europe-wide population surveys using expert questionnaires (summarised by Kaczensky et al. 2012)²⁴. This information is drawn on in the country fiches and descriptions below (see Annex 3). Annex 4 provides a comparison of evolution between these overviews. It can be seen that while there has been a development towards the stricter protection of LC species over time, **many of the problems identified in 2002 and again in 2012 persist in 2021**.

These are described in condensed form below and can be examined in more detail for the individual countries in the country fiches (Annex 3).

4.1 Population status

Table 2 gives an overview of the estimated populations in each country based on interview responses (official figures or expert judgement). As described below, few countries have accurate monitoring systems in place and most figures are unverified estimates. Nonetheless, summing the figures results in similar numbers to the LCIE estimates provided earlier in this report (roughly 4000 wolves (Dinaric-Balkan population), about 4000 bears (Dinaric Pindos population), 120-130 lynx (Dinaric lynx population) and only 50 individuals of the Balkan lynx (Kaczensky et al. 2021⁸). Populations of course vary between countries depending on their sizes, landscapes and management choices. Double counting between countries cannot be ruled out.

Table 2: Population status and trend.

Figures given in 2021 (* = estimate not verified, for lynx () = subpopulation Balkan lynx, “-“ = no data).

Country	Bear Estimate	Bear Trend	Wolf Estimate	Wolf Trend	Lynx Estimate	Lynx Trend
Albania	*180-200	Stable nationally	*200-250	Stable	(5-10)	Stable with tendency decreasing
Bosnia and Herzegovina	*1000-1200	Slightly increasing	400-600	Stable or declining	*80-90	-
Croatia	846-1072	stable	163	decreasing or stable	85-90	stable or increasing
Kosovo*	*80-100	-	*100	-	*(6)	-
Montenegro	*423	-	*592	-	*(0)	-
North Macedonia	*333-381	Stable or increasing	*400-1100	Slight declining-	(32)	Stable-
Serbia	*100	Increasing	*800-900	stable or increasing slightly	*40-60	Stable
Slovenia	700-900	Increasing	104-129	Increasing	29	-

²³ Convention on the Conservation of European Wildlife and Natura Habitats Standing Committee 22 Meeting (2002) Large Carnivore Action Plans for Dinaric - Pindus range <https://cupdf.com/document/ap-dinara-pindus-range-lc-large-carnivore-action-plans-f-or-dinara-pindus.html>

²⁴ Petra Kaczensky, Guillaume Chapron, Manuela von Arx, Djuro Huber, Henrik Andrén, and John Linnell (Editors) (2012) Status, management and distribution of large carnivores – bear, lynx, wolf & wolverine – in Europe part 1: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part1_statusofcineurope.pdf and part 2: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part2_species_country_reports.pdf

The largest populations of bears are to be found in Bosnia and Herzegovina, Croatia and Slovenia whereas other countries have relatively small populations. For wolves on the other hand, the largest estimates are in Serbia and North Macedonia. The lynx populations are low across the region.

4.2 Legislation and Hunting status

The interviews and comparisons with earlier overviews show that there has been a gradual evolution towards **protecting LC species** to fulfil the Bern Convention requirements (or Habitats Directive in the case of Slovenia and Croatia). In North Macedonia, the wolf is considered a game species and hunting is even encouraged with bounties, attracting foreign hunters (see table 3). In Bosnia and Herzegovina and Montenegro, wolf is also hunted. Bear can be hunted in season in the Republic of Srpska but not in the Federation of Bosnia and Herzegovina. In Montenegro, the bear is theoretically a game species with restrictions (ban for female bears with cubs, closed season for bears up to two years) but in practice has not been hunted for twenty years. Derogations are in place to allow a certain quota of bear or wolf to be removed from the population in most countries including the EU member states Croatia and Slovenia.

Table 3: Hunting across the Dinarides.

Country	Bear	Wolf	Lynx
Albania	No. Only derogations for problematic animals.	No. Only derogations for problematic animals.	No
Federation of Bosnia and Herzegovina	No. Only derogations for problematic animals.	Yes. Male wolf: 1 January- 31 December (no closed season) Female wolf and cubs: 1 July - 28/29 February	No
Republic of Srpska	Hunted. Season: 1 October -15 May	Yes. Male wolf: 1 January- 31 December (no closed season) Female wolf and cubs: 1 July - 28/29 February	No
Croatia	No. However, an annual quota of 16% of the population size is set under derogation and includes precautionary removals, traffic kills and intervention removals.	No	No
Kosovo*	No	No	No
Montenegro	Game species but zero quota.	Yes. Season: 1 October - 28/29 February	No
North Macedonia	No	Yes. Season: 1 January- 31 December (no closed season)	No
Serbia	No. Only derogations for problem animals	Yes (except in the Autonomous Province of Vojvodina), recommended quota up to a maximum of 30% of the population. Season: 1 July – 31 March	No
Slovenia	No. Though a proportion of the population can be removed under derogation	No. Only derogations for problem animals	No

4.3 Monitoring

One particular concern for the setting of quotas for hunting or derogations is the **lack of accurate population and distribution monitoring** in most countries (see table 4). Slovenia and Croatia use a range of monitoring methods including genetic analysis, which are generally considered to give an accurate overview and fulfil article 17 reporting requirements for the Habitats Directive (though concerns are still voiced by some stakeholders regarding the accuracy of all estimates especially for wolf).

In all other countries, population figures are estimates based largely on observations from hunters, in some cases including telemetry and camera trapping. In most cases, the methods used are not considered by experts to give scientifically sound figures. In the worst cases (generally for wolf, where hunting interest is less and observations and recognition of individuals are more difficult), the obtained figures are largely guess-work (since fewer figures are submitted by hunters). As described below, cross-border monitoring (with the exception of Balkan lynx) is extremely rare. This means there is also a risk of double-counting between countries and that the figures between countries are not comparable. Finally, interviewees in almost all countries highlighted a lack of scientific knowledge, trained personnel and financing which acts as a barrier to introducing monitoring schemes.

Table 4: Monitoring across the Dinarides.

Country	Bear	Wolf	Lynx
Albania	Estimates based on camera traps, expert opinion and extrapolation. Some initial genetic monitoring for one small region in the south-east of the country	Estimates based on camera traps, expert opinion and extrapolation.	Survey by tracks monitoring, capture – mark-release – recapture, extensive and intensive camera-trapping surveys
Bosnia and Herzegovina	Estimates based on game counting methods, in some areas, other methods like e.g. genetic monitoring	Estimates based on game counting methods	Estimates based on game counting methods
Croatia	Monitoring scheme involving: genetic counting based on scat samples, recording all mortality cases and damages, camera traps, hunters counting of individuals on feeding sites within the hunting grounds. No monitoring on LC prey	Monitoring scheme involving: Genetic sampling (incomplete) and damages (spatial and temporal occurrences of wolf attacks on domestic animals), telemetry, camera traps, collection of all wolf presence signs using SCALP categories	Monitoring scheme involving: Camera traps, genetic sampling
Kosovo*	Estimates based on data from hunting ground managers	Estimates based on data from hunting ground managers	Estimates based on data from hunting ground managers, photo traps
Montenegro	Estimation/survey by Hunting Associations and expert services in Protected Areas	Estimation/survey by Hunting Associations and expert services in Protected Areas	
North Macedonia	Estimates based on camera traps and further extrapolation, genetic study (2008)	Estimates based on camera traps	Monitoring through Balkan Lynx Recovery Programme, opportunistic surveys
Serbia	Periodically through projects (camera trapping, telemetry, genetic count (only locally, in Tara NP))	Estimates based on game counting methods such as telemetry survey, photo traps. Some tissue genetic sampling and analysis.	Periodically through projects camera traps
Slovenia	Monitoring scheme involving: genetic count, census, monitoring, population modelling, count at feeding sites	Monitoring scheme involving: genetic count, analysis of population size and genetic parentage, howling method	Monitoring scheme involving: camera traps, genetic samples

4.4 Management plans

Linked to the above, many countries lack **management plans**. Croatia and Slovenia have plans in place (though these are currently being updated) which are also to some extent coordinated with one another (see table 5).

Serbia and Albania have developed bear management plans, though they have not yet been implemented. Republic of Srpska has a recent draft. In other countries, plans are lacking and the lack of monitoring capacity means that they are unlikely to be developed in the near future. In all the countries where it is present, the Balkan lynx provides an exception due to the cross-border *Balkan Lynx Recovery Programme*²⁵ which has coordinated monitoring, management planning and stakeholder engagement.

Table 5: Management plans in the Dinarides.

Country	Bear	Wolf	Lynx
Albania	Action plan (2007), no management plan	No	Action plan (2007), no management plan (Eurasian lynx). Balkan lynx implemented
Bosnia and Herzegovina	Draft (Republik of Srpska)	No	No
Croatia	Yes. Last updated in 2019. Management plan implemented, action plan is renewed every year.	Yes. Current management plan to be renewed	Yes. Current management plan to be renewed
Kosovo*	No	No	No
Montenegro	No	No	No
North Macedonia	No	No	Management plan for Balkan lynx only in one National Park (Mavrovo)
Serbia	No Draft management plan exists	No Draft management plan exists	No Draft management plan exists
Slovenia	Yes. Current strategies/plans to be renewed	Yes. Current strategies/plans to be renewed	Yes. Management strategy implemented, current action plan to be renewed

Stakeholder engagement is not well developed in all but the EU member states. Hunting organisations tend to be best integrated in LC management, and governments are reliant on them to provide population figures. Farming organisations, are less well organised and divided amongst themselves, making it more difficult to find spokespeople to represent their interests. Only in Slovenia can the farming union and agricultural chamber be considered relatively active as well as the Montenegro Beekeeping Association. Although NGOs working on nature conservation are present in most countries, many are small and lack capacity. Nonetheless, cross-border initiatives have largely been initiated with NGOs and scientists sometimes with international support.

For example, WWF Adria has worked on larger scale collaborations and the Park Dinarides network bring protected areas across the region together. Organisations such as the Macedonian Ecological Society (MES), Protection and Preservation of Natural Environment in Albania (PPNEA), Environmentally Responsible Action Group (ERA) in Kosovo*, Center for

²⁵ PPNEA website: Protection and Preservation of Natural Environment in Albania (PPNEA): Balkan Lynx Recovery Programme: <https://ppnea.org/balkan-lynx-recovery-program/>

Environment (from Bosnia and Herzegovina, Republic of Srpska) and Center for Protection and Research of birds of Montenegro (CZIP) are active in cross-border and international work. The TAEIX funded Bear in Mind project²⁶, specifically aims to improve stakeholder engagement in Montenegro and Bosnia and Herzegovina.

4.5 Main threats to the large carnivore populations

In addition to lack of scientific evidence and coordinated monitoring, a range of **threats to LC species** are present in the region though again, impact monitoring is often lacking so the following is based on expert opinion (see Table 6).

Table 6: Main threats.

Country	Bear	Wolf	Lynx
Albania	poaching, capture	poaching (little data)	habitat degradation
Bosnia and Herzegovina	poaching, habitat degradation, infrastructure, disturbance, problem bear	persecution, poaching	poaching
Croatia	male/ female ratio, problem bears (habituated), infrastructure, disturbance, tourism	poaching and persecution, public acceptance, lack of natural prey (locally, south of HR), habitat degradation (including abandonment), bold wolves (linked to carcass disposal), hybridisation	genetics / inbreeding
Kosovo*	disturbance (forest management), poaching, waste management	poaching, disturbance, tourism	poaching, disturbance, tourism
Montenegro	poaching, disturbance, habitat degradation, tourism	poaching, prey competition (hunting conflict), habitat degradation	not applicable
North Macedonia	poaching, habitat degradation, traps	poaching, hunting	competition for prey, inbreeding, persecution / poaching, habitat degradation
Serbia	habitat degradation, infrastructure, prey accessibility, poaching	habitat degradation, prey accessibility, hybridisation	genetics / inbreeding
Slovenia	public acceptance, mediatisation, hunting, habitat degradation and connectivity	public acceptance, mediatisation, bold wolf, habitat degradation, traffic accidents	genetics / inbreeding, poaching, traffic accidents

In those countries where hunting of certain LC species is allowed, it is considered a threat by some, believing that the impacts are not well enough measured. More broadly, even where hunting is well-regulated, poaching is a significant issue in some of the countries concerned either in the form of shooting or poisoning or trapping in an attempt to reduce the population in certain locations. This affects all species. In Albania, experts highlight the impacts of the practice of capturing bear cubs for private use and killing their mothers (see fig. 6). The public image of LC and associated support of poaching is clearly related to the conflicts described below. Additional threats for all species include loss of habitat to infrastructure developments.

²⁶ Bear in Mind project: <http://bearinmind.me/about-us/>

In all countries, large-scale infrastructure planning could pose a serious threat over the coming years²⁷ as well as disturbance, often from increased tourism development. Additionally, poor waste management can result in increased contact between humans and bears and to bears potentially developing problematic behaviour (becoming food conditioned) and thus leading to their removal. Supplementary feeding by hunters can also affect bear behaviour and lead to having more cubs, though hunters also argue that it keeps bears away from villages and agricultural land. A lack of natural prey was also identified as a contributing factor to wolves developing a reliance on livestock depredation in parts of Croatia and in North Macedonia. Hybridisation of wolves with dogs is considered a threat in Croatia, Slovenia and Serbia but was not researched in other countries. For lynx, inbreeding is considered as the most serious threat as the populations remain small and isolated.



Figure 6. Abandoned young bear being fed by a member of the bear intervention team (Picture: Slaven Reljić).

²⁷ Over €580 million in extra resources for further EU-supported infrastructure development in the Western Balkans region is planned, WBIF - https://ec.europa.eu/neighbourhood-enlargement/news/eu-starts-implementing-economic-and-investment-plan-western-balkans-2020-12-17_en; Transport - <https://wbif.eu/sectors/transport>; EU financial plan for the Western Balkans - €30 billion over seven years, <https://www.euractiv.com/section/enlargement/opinion/integrity-compliance-in-western-balkans-infrastructure-projects/>; Connectivity and Infrastructure Investment in the Western Balkans, https://wbif.eu/storage/app/media/Library/6.%20Connectivity%20Agenda/brochure_wb_connectivity_agenda_en.pdf, https://www.eib.org/attachments/efs/infrastructure_investment_in_the_western_balkans_en.pdf; Draft spatial plan of Serbia from 2021 to 2035 - a road infrastructure map: https://www.mgsi.gov.rs/sites/default/files/03aREF_PPRS_saobracaj.jpg, and the full text of the plan: <https://www.mgsi.gov.rs/sites/default/files/PPRS%20Nact.pdf>

4.6 Main conflicts

In terms of the **commonly identified conflicts**, the wolf remains the most conflictual species and is associated with the most negative viewpoints (see Table 7). This is almost universally due to livestock depredation and in fewer cases, hunting dog depredation. Fear of wolves was only mentioned as an issue by a few interviewees in Bosnia and Herzegovina and Slovenia. Some respondents highlighted that livestock breeders are used to wolves and already implement protection measures. For example, in Albania, conflict connected with livestock depredation is considered relatively low because shepherds are present with the flocks.

The bear is a marginally less conflictual species in the region however depredation of bee hives and livestock is a source of tension. Problem bear behaviour (feeding on waste, entering villages, etc) is an issue in some locations but this appears to be geographically limited. Only in Croatia and Slovenia were problem bears considered to be a serious cause of conflict. Lynx is much less conflictual (also due to the low population numbers) but there is some competition with hunters for prey and very occasional depredation of domestic animals.

Table 7: Conflicts related to LC presence.

Countries	Bear	Wolf	Lynx
Albania	damages	damages, hunting conflict	little conflict
Bosnia and Herzegovina	damages, fear	damages, hunting conflict, fear of bold wolves	little conflict
Croatia	Trouble with habituated bears	damages, fear, hunting conflict	hunting conflict
Kosovo*	damages	damages	little conflict
Montenegro	damages, competition for forest products	damages	little conflict
North Macedonia	damages, fear	damages	little conflict
Serbia	damages, fear	damages, hunting conflict, fear	little conflict
Slovenia	damages, fear	damages	hunting conflict, damages (minimal)

4.7 Livestock protection and compensation

In terms of the **responses to reduce conflict**, in many countries compensation for damages is theoretically in place (see fig. 7), paid either by hunting associations (in the case where LC are hunted) or by the ministries of agriculture, environment, local authorities or protected area administrators (see table 8).

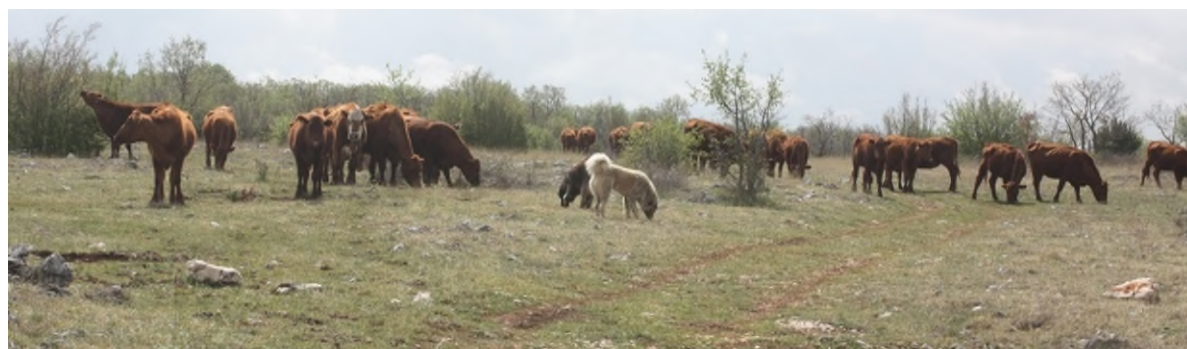


Figure 7: Livestock guarding (Picture: Djuro Huber).

Table 8: Compensation and protection.

Country	Compensation and prevention rules	Compensation and prevention payments (where known)
Albania	Livestock guarding dogs, shepherds, fences, enclosure at night as prevention measures used but not financed by state.	No payments
Bosnia and Herzegovina	RS: Compensation in place (100% costs), with prevention measures as pre-condition for bear and lynx, no compensation for wolf. Cost shared among Ministry of Agriculture, hunting ground manager and municipality. FB&H: Compensation in place, with protection measures as pre-condition	Compensation recorded by ministry of agriculture but not publicly available
Croatia	Compensation: in place, with prevention measures as a pre-condition Bear: compensation paid by hunting right holders Wolf: compensation paid by the relevant environmental authority All damages are compensated in practice (with 1 year) Prevention measures can be financed under the EAFRD (Measure 4.4).	Compensation 2018 Spend: 1.658.948,00 HRK (221,193 EUR), for 1218 cases Prevention Average 900,000€ per year planned for the measure (6.5m€ for the 2014-20 funding period) but includes a range of other actions
Kosovo*	Compensation scheme exists, but is not applied	Not implemented
Montenegro	Compensation in place, with prevention measures as a pre-condition. Commission assesses rate of compensation.	Compensation rare in practice
North Macedonia	Compensation in place for bear but not for lynx or wolf	Compensation Average 600,000€ per year (2013-2018) ²⁸
Serbia	Compensation in place, prevention measures as pre-condition. Commission assesses rate of compensation	Compensation rare in practice
Slovenia	Compensation in place, prevention measures as pre-condition. Prevention financed under National Funds, EAFRD, LIFE projects (LIFE Slowolf, LIFE DINALP BEAR)	Compensation Bear: average 86,500€ per year (865,000 € between 2010-19) Wolf: average 172,000€ per year (1.72m€ between 2010-19) Prevention 2019 237,428€ divided into: - Electric fences 130,798 € - Livestock guarding dogs 88,608 € - Using shepherds 18,022 €

In Slovenia and Croatia, functioning compensation systems are in place and support is also available to put in place protection measures (which must be in place to receive compensation, see fig. 7). In Bosnia and Herzegovina and North Macedonia compensation is in place for bear damages but not for wolf damages. In Kosovo* compensation exists for damages caused by wolf but not bear (though rarely paid) and in Montenegro for both species. In Albania, compensation schemes do not exist (but as mentioned above, shepherds are more used to living with LC than in other areas).

²⁸ Prism news site (2018) Bear sued, the state pays: <https://prizma.mk/mechkite-tuzheni-drzhavata-plaka/>

Some countries are also taking steps to put in place intervention teams (ITs) to react swiftly in the case of bear-related incidents. Croatia, Slovenia have functioning teams in place and the Republic of Srpska is setting up a team. However, in some countries, the resources to carry out the task are lacking, for example, in Montenegro, a lack of a suitable vehicle for attending incidents was a problem as well as financing and trained personnel.

4.8 Existing cross-border initiatives

Finally, interviewees also provided information on **existing cross-border projects** (see table 9). In Croatia and Slovenia, there are very good, long-lasting collaborations established between experts and NGOs. These actors are also actively engaged with their respective governments and governmental exchange has been promoted in the framework of projects such as the Interreg Project Carnivora Dinarica.

Croatia and Slovenia also collaborate with other EU countries, particularly with Alpine countries such as Italy and Austria through high profile, co-financed LIFE projects managed by the Slovenian Forest Service (LIFE DINALP Bear and LIFELYNX) and large-scale cross-border partnerships managed by NGOs (LIFE EUROLARGE CARNIVORES, LIFE SWiPE). The long-running Balkan Lynx Recovery Programme has been instrumental in bringing experts together across borders (Albania, Kosovo* and North Macedonia) with the specific purpose of saving the Balkan lynx. Between the other countries, collaboration is largely based on individual contacts and is easier or more difficult depending on existing relations.

NGOs from Croatia, Montenegro and Republic of Srpska collaborate well including on the Bear in Mind Project. However, the situation in Bosnia and Herzegovina demands particular attention because of the regionalisation of the country²⁹. Each entity is responsible for LC management and while an inter-entity body for Environment exists, interviewees described inter-ministerial collaboration as being difficult. This also makes it more complicated for other countries to collaborate with Bosnia and Herzegovina on a national level. Clearly the specific political relationships between countries also make a difference.

Table 9: Projects and programmes in the region.

Name	Dates	Countries involved	Description	Website
Balkan Lynx Recovery Programme	2006-on-going	AL, MZ, KO, CH, DE	Programme aiming to save the critically endangered Balkan lynx from extinction. The vision is “the long-term existence of a viable Balkan lynx population in its historic distribution range in harmony with and supported by local communities”.	https://ppnea.org/balkan-lynx-recovery-program/
Life Dinalp bear	07.2014-06.2019	SI, HR, AT, IT	Improve population monitoring, decrease conflict and improve coexistence, promote natural expansion of bear into the Alps	https://dinalpbear.eu/home-page-1/
Life lynx	07.2017-03.2024	SI, HR, IT, RO, SK	rescuing the Dinaric-SE Alpine lynx population from extinction and to preserve it in the long term through reintroductions, stakeholder engagement, monitoring	https://www.life-lynx.eu/

²⁹ Bosnia and Herzegovina (B&H) is regionalised, divided into entities: The Federation of Bosnia and Herzegovina (FB&H with 16 cantons), Republic of Srpska (RS), and the Brčko district.

Name	Dates	Countries involved	Description	Website
LIFE EURO-LARGECARNIVORES	09.2017-02.2022	DE, AT, CH, FI, FR, DE, HU, IT, PL, RO, ES, HR, SLO, NO	Improve communication and cross-border collaboration around Large Carnivores. WWF Adria coordinated several activities in the region.	https://www.eurolargecarnivores.eu/en/
Brown Bear Protection in the Dinarides	01.2018-12.2020	B&H ³¹ , ME	Develop monitoring of bear and a bear management plan cross border between the countries involved.	https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/181106Budva_15_BBPD_LC%20Aleksandar%20Perovic.pdf
Interreg Carnivora Dinarica	09.2018-08.2021	SI, HR	Establishment of inter-institutional cooperation, harmonization of wolf and lynx populations research, joint analysis of habitat connectivity, joint evaluation of ecosystem services from large carnivores as well as testing and implementing livestock protection measures.	https://www.carnivoradinarica.eu/en/large-carnivores/wolf/biology-ecology-and-behaviour/
Bear in Mind	11.2019-05.2022	B&H, ME	Project to empower and develop capacities of Protected Area administrations and environmental NGOs in Montenegro and Bosnia and Herzegovina and to improve the level of participation in policy-making processes.	http://bearinmind.me/about-us/
Interreg Adria DINALPCONNECT	3.2020-8.2022	SI, HR, AL, B&H, GR, IT	Strengthen transnational and sectoral cooperation to improve Ecological Connectivity throughout Dinaric Mountains, connecting them with the Alps. Transboundary linkages made between Natura 2000 areas and Protected Areas, focusing on priority species and habitats.	https://dinalpconnect.adriainterreg.eu/
LIFE SWiPE	09.2020 - 08.2023	B&H, BG, HR, IT, PL, RO, SK, RS, ES, UA	Discourage, and ultimately reduce, wildlife crime including poaching of LCs by improving compliance with EU environmental law and increasing the number of offences successfully prosecuted	https://www.wwf.adria.org/what_we_do/all_initiatives/life_swipe/

In addition to the Budva agreement (see introduction), a number of other **regional initiatives** in the past have aimed to establish regional-level collaboration (see table 10).

None of these have specifically targeted large carnivores but some of the aims are complementary. The project team is compiling a database³⁰ of such existing cross-border projects and initiatives to build upon over the course of the platform work.

Table 10: Initiatives in the region

Name	Dates	Countries involved	Description	Website
Dinaric Arc Initiative	2008-onwards	AL, B&H, HR, ME, SE, SI	Broad framework of collaboration bringing together partners active in the region with a varied portfolio of projects and initiatives aimed at securing the long-term conservation and sustainable development of this part of Europe.	https://www.panda.org/discover/our_focus/biodiversity/protected_areas/pa4lp/dinaric_arc/
Dinaric Alp Resolution	03.2011	AL, ME, HR, KO, MZ, SI (B&H planned to sign)	Resolution adopted by the representatives of the Dinaric countries for the sustainable development of the Dinaric mountain range. Initiative by Slovenia at the Dinaric Alps Conference which was held concurrently with the 11th Alpine Conference.	https://www.alp-conv.org/fileadmin/user_upload/Organization/Partners/Dinaric_Arc_Resolution.pdf
Budva Agreement	11.2018	AL, B&H, HR, KO, ME, MZ, SRB, SI, BG, GR	Agreement reached at the EU LC Platform regional workshop to work together to establish a Dinaric Platform for large carnivore conservation and management.	https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/181106Budva_LCP_Workshop%20statement-EN.pdf

³⁰ See project team database here: <https://docs.google.com/spreadsheets/d/1vXH0BW6H1oYX-ceh90d6yIXRuQ87y1fS5/edit#gid=1209534236>

5 Discussion, next steps and outlook

The above overview shows a clear need for more capacity-building and exchange around LC monitoring and management. Slovenia and Croatia have generally (with some exceptions) well developed management planning and monitoring, to some extent due to the incentive of having to comply with the EU Habitats Directive requirements, though Annex 4 shows that even prior to this, monitoring was in place driven by the reporting requirements for the Bern and CITES Conventions. The fact that management plans have been developed in several countries but got stuck at the authorisation or implementation stage, suggests that the desire exists to coordinate the approach to LC conservation and management but that certain barriers such as relevant skills, clarities about competencies, concerns that costs will be too high and lack of political will, have been difficult to overcome.

This report gives a snapshot view on which to base further discussions within the framework of the platform. The interviews provide a valuable source of information which can be supplemented and verified through group discussions.

The following topics might be addressed in more detail in the different formats included in the project.

Table 11: Next steps for the platform topics.

Topic	Issue	Ways to address
Accurate cross border monitoring	Accurate monitoring by the standards of the Habitats Directive, only exists in Slovenia and Croatia. Co-ordination across borders is rare. Capacity is lacking in terms of resources and personnel in many countries and a significant effort is needed to support monitoring systems and encourage collaboration.	One of the main topics for the platform could be to compare and discuss monitoring schemes and build up to an agreed understanding of the need for monitoring where it does not exist and alignment in techniques and processes where it does. There is potential to learn from Croatia and Slovenia building on LIFE projects which supported monitoring development. If the need for monitoring is acknowledged, there is potential to develop joint projects between countries and establish peer-to-peer learning and agree on minimum monitoring standards ³¹ . A significant challenge is the need for co-financing for most funding schemes.
Establishing trans-national management planning	Management planning is lacking in many countries. Capacity and ideas for how to establish management planning processes, and their implementation, is not in place.	This would again be a key theme for platform meetings. Examples could be sought from the countries involved and from other EU countries. ³²
Consultation and engagement of stakeholders	Stakeholders are often not engaged in planning processes (where these exist). This may lead to disillusionment with the processes and a lack of belief in the government's way of organising management.	Management planning should be carried out with the involvement of stakeholders. Much can be learned from the EU platforms, many of which have also only been established in recent years. Examples could be presented at the platform meetings and discussed in more detail with civil society representatives.

³¹ e.g. joint monitoring standards for Poland and Germany: Reinhardt I., Kluth G., Nowak S., Myslajek R.W. (2015): Standards for the monitoring of the Central European wolf population in Germany and Poland. BfN-Skripten 398. free copy available at www.bfn.de/skripten

³² e.g. via a review of management: Reinhardt I., Kluth G., Nowak S., Myslajek R.W. (2013): A review of wolf management in Poland and Germany with recommendations for future transboundary collaboration. BfN-Skripten 356. Deutschland / Bundesamt für Naturschutz. Bonn.

Topic	Issue	Ways to address
Compensation and protection schemes	There is a general acceptance that compensation and prevention measures are desirable but there are significant issues with the functioning of schemes.	The reasons for these problems could be explored in more depth with the administrators and representatives of livestock interests. Prevention measures (guarding dogs, shepherds, fencing) and how these can be supported is also an important topic of coexistence discussion. The use of the EU RD programme could be further examined as well as the potential use of the EU pre-accession assistance for rural development (IPARD)
Reducing interactions with problem bears	Problem bears remain an issue in many countries but solutions have also been tested.	A range of measures from Intervention Teams to traffic management to waste management have been tested in the EU and in some of the involved countries. These could be presented and discussed with participants with the potential for replicating actions in different countries.
Broad-scale coordination and exchange on transnational management	While examples of bilateral or trilateral coordination exists, there is no framework encompassing all the region and for this reason, approaches to LC management vary significantly.	This is the key purpose of establishing the platform. A number of models exist from other regions on collaboration on LCs (e.g. the EU Platform) or collaboration on a regional level (e.g. the Alpine or Carpathian conventions). A range of different options could be discussed with platform members to try to find a means of collaborating on a longer-lasting level.

This report was presented at the first meeting of the potential platform members which took place 16-17 November 2021 in Slovenia.

Annexes

Annex 1: Interview template

Establishing a transnational exchange platform for the management of large carnivores in the Dinarides

Instructions to the interviewer

During the interview:

- Introduce project and describe use of data (see below)
- Cross-check information collected through document review with interviewees
- Ask only questions relevant to the person being interviewed

Reporting:

Template per interviewee (can be in national language)

One template per country in English (can also highlight any disagreements or differences in opinion)

Introducing the project:

- Project aim is to establish an exchange process (platform) on LC management in the Dinaric Region (Albania, Bosnia & Herzegovina, Croatia, Kosovo*, Montenegro, North Macedonia, Serbia, Slovenia) between governments, administrators and stakeholders
- Includes organisation of 2 main meetings and organising exchange in between the meetings
- Process supported by two organisations adelphi and Carnivora Magna plus an advisory council of experts across the region
- Process is funded by the German Federal Environment Ministry's Advisory Assistance Programme (AAP) for environmental protection in the countries of Central and Eastern Europe, the Caucasus and Central Asia

Interview aim:

- To gather background information on LC management to support the establishment of the platform and help to define its purpose
- To scope potential participants in the platform
- Data will be used to prepare the comprehensive overview report on status of Dinaric populations of large carnivores (8 countries)

Interview process:

- Will ask questions about LC management in your country / region
- The interview should take between 45 minutes to 1 hour.
- The interview will be confidential with regard to who says what but not with regard to the information provided (semi-anonymous)
- Notes will be taken during the interview and used to write a report afterwards which will be made available to all participants and potentially published online

Interview template:

1. Background info (before interview)

- a. Country size
- b. Population (human)
- c. GDP / economic situation
- d. EU Membership Status
- e. Land mix (% agricultural (arable, permanent crops, permanent pasture), forest, other)
- f. EU Habitats Directive Annexes for LC
- g. Bern convention reservations (wolf, bear and Balkan lynx strictly protected in ap. 2, European lynx protected., ap. 3)
- h. CITES Convention / CITES Regulation Appendices for LC (ap 1 no trade, ap 2 trade strictly controlled with permit, ap 3 trade with permit)

2. Interview topics

a. Introductions

- i. Name of interviewee
- ii. Position, organisation, responsibilities

b. Background

- i. Describe the governance structure for the management of LC e.g. centralised vs. Regional management
- ii. Which managing authorities are in charge of LC management (conservation, agriculture, hunting)
- iii. What are the main laws covering LC management (and how they are implemented)? (Check HD where relevant and Bern Convention implementation in national law); CITES

c. Large carnivore status

- i. What are the most recent population estimates (individuals) for bears, wolves, lynx
- ii. How are LC populations surveyed and who carries out the surveys?
- iii. Do you think the population estimates are accurate?
- iv. How often surveys are done?
- v. Do you have information on how the population has changed over the last 10 years?
- vi. (What about the last 50 years?)
- vii. Please provide a map showing distribution if possible

d. LC management

- i. What are the main threats to the different LC species?
- ii. (i.e. poaching, regular hunting, infrastructure, disturbance, inbreeding, other?)
- iii. What are the main conflicts regarding LCs
- iv. (i.e. livestock / honey depredation, direct conflicts with people, competition with hunters, other)
- v. Can you name the stakeholder groups most involved in discussions on LC related management
- vi. How are bear/LC incidents with people dealt with?
- vii. Are incidents recorded?
- viii. Do emergency teams exist?
- ix. Is compensation in place for livestock depredated by LC?
- x. Is depredation recorded?
- xi. Who is paying for it? How much is paid, is it published?
- xii. Is having prevention measures in place a pre-condition to receiving compensation
- xiii. Is prevention financed for putting in place livestock protection measures (fences, dogs, shelters, shepherding)?
- xiv. What other types of financial support are available for LC management?
- xv. Is hunting of LC allowed?
- xvi. Under what circumstances can LC be killed?
- xvii. Are measures in place to reduce road accidents related to LC?
- xviii. Is waste managed to reduce access by bears?

e. Cooperations

- i. Are LC management measures carried out with neighbouring countries?
- ii. Ongoing projects?
- iii. Which countries / authorities easy / difficult to work with?

f. Further information

- i. Please list any important reports/ websites for LC information
- ii. Please provide any contacts for interviews / platform meetings (relevant stakeholders)
- iii. Interest for cooperation in Dinaric LC Platform - are you willing to take part in meetings (where relevant)?

Annex 2: Interview list

Annex 2 Table 1: Albania.

Interviewee	Institution	Position	Date of interview
Klodiana Marika	Ministry of Tourism and Environment	Director of Department of Development Programmes on Environment	06.09.2021
Zamir Dedej	National Agency of Protected Areas	General Director	24.6.2021
Aleksandar Trajce	Protection and Preservation of Natural Environment in Albania, PPNEA	Executive Director	26.7.2021
Ferdinand Bego	University of Tirana, Faculty of Natural Sciences, Research Centre for Flora and Fauna	Tech Focal Point	24.8.2021
Enton Mele	National Council of the Albanian Hunters Federation	Head of the Council	6.9. 2021

Annex 2 Table 2: Bosnia and Herzegovina.

Interviewee	Institution	Position	Date of interview
Dejan Radošević	The Republic Institute for the Protection of Cultural, Historical and Natural Heritage	Head of Biodiversity Section	1.8.2021
Zlata Grabovac	Federal Ministry of Environment and Tourism/ (FB&H)	Ministry, Assistant NFP to CBD	18.8.2021
Haris Hadžihajdarević	Una National park, Bosnia and Herzegovina	Associated legal expert-office of director of	5.7.2021
Vedad Škapur	Faculty of Agriculture and Food Sciences, University of Sarajevo	PhD	31.8.2021
Željko Sekulić	Sutjeska National Park, (RS)	Expert manager responsible for hunting	12.09.2021.
Zineta Mujaković	Ministry of Environment and Tourism (FB&H)	Head of Department, biodiversity and nature protection	2.9.2021.
Vanda Medić	Ministry of Foreign Trade and Economic Relations	CITES focal point	17.8.2021
Dragana Šnjegota	Faculty of Natural Sciences and Mathematics, University of Banja Luka	Assistant professor	6.9.2021
Bojan Paprica	Lumber /forestry ground "Maglic", Foča, RS	Head of Unit for hunting, and Head of Intervention team in RS	5.9.2021
Željka Stojčić	Ministry of Spatial Planning, Civil Engineering and Ecology, RS	Senior Official for Nature Protection	9.9.2021

Annex 2 Table 3: Croatia

Interviewee	Institution	Position	Date of interview
Jasna Jeremić	Institute for Environment and Nature (within Ministry of Economy and Sustainable Development)	Senior Specialist Expert	28.7.2021
Tomislav Žuglić	Ministry of Agriculture	Head of Service for hunting grounds and game management	10.9.2021
Magda Sindičić	University of Zagreb Faculty of Veterinary Medicine	Associate professor	21.7.2021
Zrinka Domazetović	Ministry of Economy and Sustainable Development		15.9.2021
Tajana Radić	Croatian Chamber of Agriculture,	Head of policy, innovation and international relationship	1.9. 2021
Josip Kusak	University of Zagreb Faculty of Veterinary Medicine	Professor of Zoology, member of National Committee for the Management of Large carnivores in Croatia	10.7.2021

Annex 2 Table 4: Kosovo*.

Interviewee	Institution	Position	Date of interview
Ismail Hetemaj	Ministry of Environment, Spatial Planning and Infrastructure	Head of Nature Protection Division	1.7.2021
Tahir Ahmeti	Ministry of Agriculture, Forestry and Rural Development	Director of Forestry Department	28.7.2021
Bardh Sanaja	Environmentally Responsible Action Group (ERA)	Project manager	27.7.2021

Annex 2 Table 5: Montenegro.

Interviewee	Institution	Position	Date of interview
Aleksandar Perović	Center for Protection and Research of Birds in Montenegro (CZIP)	Head of programme for Large Carnivores	29.7.2021
Milić Čurović	Biotech. Faculty, University of Montenegro – Hunting subject	President of Advisory committee for LC	6.9.2021.
Miloš Janković	Ministry of Agriculture, Forestry and Water Management	Head of the Hunting Department, Directorate for Forestry, Hunting and Wood Industry	7.9.2021
Tamara Brajović	Ministry of Ecology, Spatial Planning and Urbanism,	Director of Nature Directorate	24.8.2021

Annex 2 Table 6: North Macedonia.

Interviewee	Institution	Position	Date of interview
Ana Čolović Lesoska	Eko-svest (and WWF Adria)	Executive Director (and Policy Officer)	3.9.2021
Dime Melovski	Macedonian Ecological Society	Programme manager for wildlife conservation	27.8.2021.
Vlatko Trpeski	Ministry of Environment and Physical Planning	Head of Department for Nature Administration for Environment	23.8.2021
Vlatko Aleksovski, and Lidija Fajdiga	Hunting Federation of Macedonia		27.8.2021

Annex 2 Table 7: Serbia.

Interviewee	Institution	Position	Date of interview
Duško Čirović	Faculty of Biology, University of Belgrade	Associated Professor	1.9.2021
Snežana Prokić, and Jelena Dučić	Ministry of Environmental Protection	Head of department for ecological network and appropriate assessment, BDV Task Force	10.9.2021
Miodrag Strnad	Ministry of Agriculture, forestry and water management -	Expert Advisor in Forest planning department and sustainable hunting development	8.9.2021
Milan Paunović	Natural History Museum	Senior curator for mammals	24.7.2021
Vladan Bjedović	State institute for Nature Protection	Expert Associate	28.9.2021

Annex 2 Table 8: Slovenia.

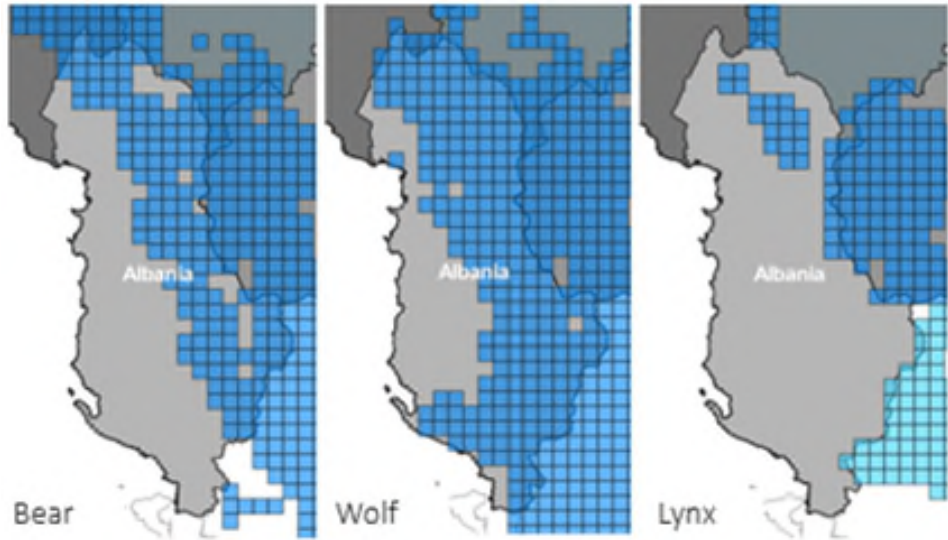
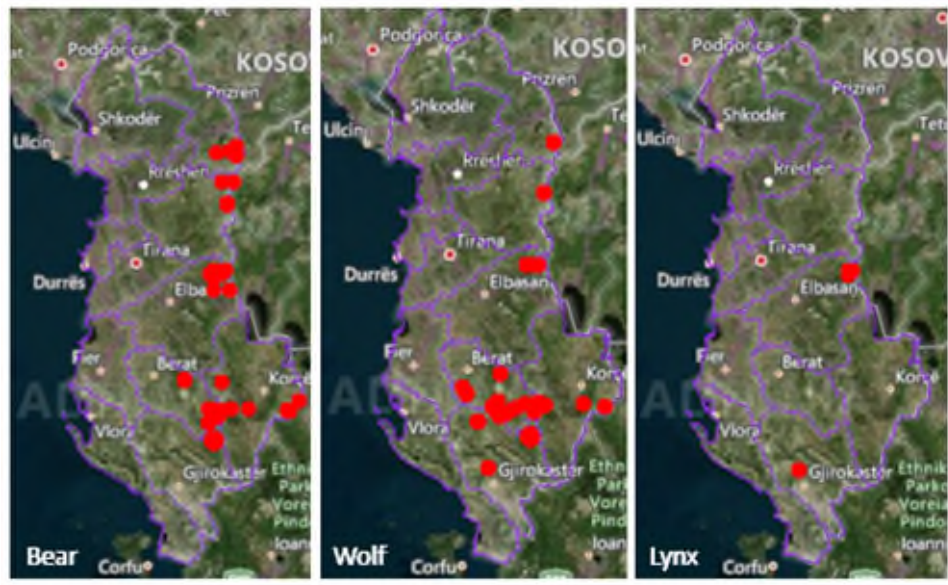
Interviewee	Institution	Position	Date of interview
Rok Černe	Slovenian Forest Service (SFS)	Head of LC Project management unit	8.9.2021
Nevenka Lukić Rojsek	NGO Alpe-Adria-Green, NGO ANIMA (animal welfare society), WWF Adria	NGO representative in Slovenian stakeholders group for the LC management	1.7.2021.
Mateja Blažić; Maja Humar,	Ministry of Environment and Spatial Planning	Head of Nature Conservation Division; Expert Associate	8.9.2021
Miha Krofel	University of Ljubljana, Biotechnical Faculty, Department for Forestry	Wildlife researcher and assistant professor	17.9.2021
Aleksandra Majić Skrbineš	University of Ljubljana, Biotehniška Fakulteta (PhD underway)	LC expert on human dimension	7.9.2021.
Mihael Koprivnikar	Chamber of agriculture and forestry of Slovenia	Head of Forestry Department	20.9.2021
Boris Grabrijan	Kolpa Regional Park,	Director of the Kolpa Park, Deputy Director of the AGRI Chamber	20.9.2021

Annex 3: Country fiches

The fiches below give an overview of the situation regarding LC management and the institutional arrangements around management in the nine countries involved in the project: Albania, Bosnia and Herzegovina, Croatia, Kosovo, Montenegro, North Macedonia, Serbia, Slovenia.

Annex 3 Table 1: Albania.

Country	Albania
Introduction	Land area of 28,748km² and population of 3.1 million. Land use is divided between forest (42.8%), agricultural land (28.8%) and other forms (28.2%). Agricultural land is divided between permanent pasture (17.4%) and arable (22.3%).
Institutional structure	The Republic of Albania is an EU Candidate country and parliamentary constitutional republic. The legislature is the <i>Kuvendi i Shqipërisë</i> (parliament), whose 140 deputies are elected every four years. The head of state is the president, elected by parliament for a five-year term. The government, which is responsible to parliament, is led by the prime minister. The territory of the Republic of Albania is divided into 12 counties, which are further sub-divided into 61 municipalities. Each of them is responsible for geographical, economic, social and cultural purposes inside the counties.
Relevant managing authorities	Management of large carnivores is centralised at the national level (ministry and agency level). The Ministry of Tourism and Environment is the responsible institution for fauna management and protection in Albania, mainly through the two specialised agencies: The National Agency for Protected Areas (NAPA) and the National Environment Agency (NEA). The NEA is legally responsible for monitoring but the capacity lies with NAPA. Both NEA AND NAPA have regional administrations on the local level based on the county level administration, 4 REAs and 12 Regional Administration for Protected Areas (RAPAs). There is a new National Agency of Forestry, dealing with forest management. About 20% of the national territory is managed by NAPA, whereas the rest is managed by local authorities and the Ministry of Agriculture and Rural Development.
International and EU law	The country is a member of the United Nations, NATO, the OSCE, the Council of Europe, CEFTA, the Regional Cooperation Council, the Black Sea Economic Cooperation and the Organization of Islamic Cooperation. Albania has also been a candidate country for accession to the European Union since June 24, 2014. It is also a member of the World Trade Organization and the World Bank. Albania has also signed the following conventions: Bern Convention, Bonn Convention and CBD convention.
National / regional legislation	According to the constitution of the Republic of Albania, the state is responsible for the preservation of nature and a healthy environment. Every citizen is in turn obliged to protect nature. Private property is assigned not only a social and economic function as well as an ecological one. On the basis of the constitution, the Environmental Protection Act (EPA) was enacted. This basic framework law regulates the protection of land, water and air, plant and animal life, and the use of natural resources. A variety of environmental regulations have been enacted based on the EPA. The main relevant laws are as follows: • Law No. 10006 (2008) on wild fauna protection. Amended in 2019 with the Law no 46/2019. • Law No. 10253 (2010) on hunting and protection of wildlife. (Under the revision/amendment process...) • Law No. 9598 (2006) on biodiversity protection. Amended in 2020 with Law no. 41/2020. • Law No. 9867 on rules and procedures governing international trade of endangered species of wild fauna and flora. (CITES) • Species protection: ○ Bear: strictly protected (protected since 1953) ○ Wolf: protected species (since 1994) ○ Balkan lynx: strictly protected (protected since 1969)

Country	Albania
LC-Status and trends	• Bear: ca. 180-200 individuals (estimate), stable nationally • Wolf: ca. 200-250 individuals (estimate), stable • Balkan lynx: 5-10 individuals (monitoring) - Protection and Preservation of Natural Environment in Albania (PPNEA) monitoring, stable with tendency decreasing The bear and wolf populations in Albania show a stable trend whereas lynx populations show a tendency to decrease.
LC Distribution	 Figure 8: Bear, wolf and lynx occurrence in Albania⁸  Figure 9: Wolf, bear and lynx in Albania according to the BioNNA system³³
Management plans	• <i>Bear National Action Plan 2007</i>³⁴ • No action plan for wolves • <i>Balkan Lynx National Action Plan developed in 2007, Range strategy and Action Plan in 2009 (B. lynx project, but never adopted)</i>³⁵

³³ BioNNA: the Biodiversity National Network of Albania: http://www.bionna.al/WebGIS_DotSpatial.aspx

³⁴ Bear National Action Plan (2007) https://www.researchgate.net/publication/269095578_Plani_i_Veprimi_per_Arjun_e_Murme_Ursus_arctos_ne_Shqiperi

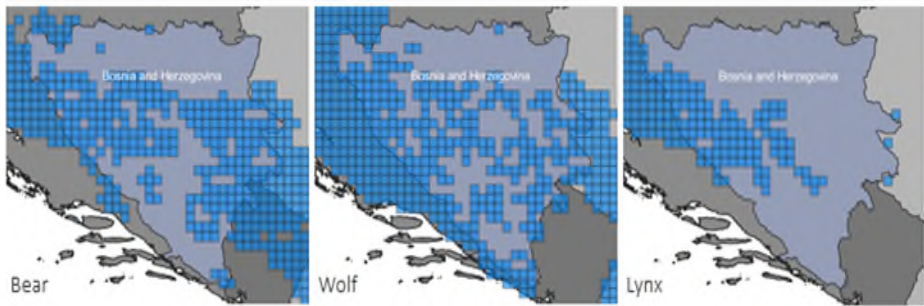
³⁵ Balkan Lynx National Action Plan (2007) https://www.researchgate.net/publication/269095655_Plan_Veprimi_per_Rregebullin_Lynx_lynx_ne_Shqiperi

Country	Albania
LC monitoring methods	• Bear and wolf data are estimates. Methods are not scientifically verified. Only camera traps are used annually to capture the number of occurrences (traps surveyed and verified by NAPA). These findings are supplemented by an expert opinion and extrapolation, but there is no scientifically verified monitoring protocol • Balkan Lynx – accurate regular annual or biannual monitoring. Survey by tracks monitoring and faeces analysis; capture – mark-release – recapture technique is mostly done by NGOs/PPNEA (cooperate with NAPA and RAPAs). • Hunters are not involved in the monitoring, but they share killing f.i. via social networks.
Main threats to the population	• Bear: Poaching is still a major threat. Also traps: Bear cubs are taken from the wild for commercial purposes (5 cases in 2021 only) • Wolf: less interest/studied, except livestock depredation – less info • Lynx: habitat degradation • Generally, infrastructure (highway, railways, hydropower, wind power etc.) and new planned infrastructure for transport and energy is a big threat, ecological connectivity is neglected and if taken in consideration it only represents a local impact
Main conflicts	• Bear: started damaging corn. Noise-producing instruments and electric fences are not successful defences from bears. A main problem is the lack of law enforcement from authorities (example of bear was killed August 2021) • Wolf: livestock depredation. Shepherds are impacted. Conflict with hunters around hunting dogs rather than competition for the prey. • Lynx: no conflict detected, people tend to tolerate them.
Main interested stakeholders	• Hunters • Livestock breeders, shepherds, farmers (mix) • NGOs: PPNEA, ECO Albania, INCA, ASPBM, NGO Albanian Wildlife rescue team (backed by 4Paws) • Ministry of Agriculture (feeding programme for LC) • Ministry of Tourism and Environment, National Agency of Protected Areas, Regional Administrations of Protected Areas, National Agency of Environment
Direct conflict with humans / incidents	No attacks, no serious incidents for years. However, no measures are in place to deal with problematic bears. Database under N2000 developed (by BiONNA³⁶), includes historical data (filled till 2019). This database could be used for sharing information. The NGO 4paws is engaged with bears in captivity, less with problematic bears, - could possibly play a role of IT together with PPNEA. Currently, there is no rescue centre in Albania yet.
Livestock protection and compensation measures	There is a reference on compensation in the Law on Wild fauna protection (Ministry of Agriculture responsible), but no implementation system and no accurate database/no publicly available records available. The Ministry of Agriculture is the responsible institution. Livestock owners use prevention measures: livestock guarding dogs, shepherds, fences, enclosure during night – which keeps conflict low.
Other financing	There is a lack of data, only NGO projects are known.
Hunting status	Active hunting ban (started 7 years ago but expires in 2021). All 3 LC are protected and should not be hunted regardless. There is an exception for wolves if they cause extensive damage. The Ministry of Tourism and Environment can allow killing. According to the law, problematic bears that cause systemic or periodic problems to communities and farmers can be killed. Farmers need to arrange it with local hunters.
Existing cross-border initiatives	NGOs are active on transboundary projects, with North Macedonia, Montenegro, some with Greece (Arcturus). Sometimes RAPAs are involved.
Working together	There seems to be a rather good working relationship for NGOs.

³⁶ BioNNA: the Biodiversity National Network of Albania: https://www.researchgate.net/publication/323734738_BioNNA_the_Biodiversity_National_Network_of_Albania

Annex 3 Table 2: Bosnia and Herzegovina (B&H)

Country	Bosnia and Herzegovina (B&H)
Introduction	Land area of 51,197 km ² and population of 3,824,782. Land use is evenly divided between forest (42.8% and agricultural land 42.2%). Agricultural land is fairly evenly divided between permanent pasture and arable.
Institutional structure	B&H is regionalised, divided into 2 entities: The Federation of Bosnia and Herzegovina (FB&H) and Republic of Srpska (RS). The Brčko district was created from land from both entities and belongs to both. Regions are divided into cantons and municipalities. Presidency rotates between 3 incumbents representing the 3 main ethnic groups (Bosnian, Serbia and Croatia). B&H is a potential candidate of the EU
Relevant managing authorities	According to the Bosnia and Herzegovina Constitution, environmental and hunting laws are under the jurisdiction of the entities (Federation of Bosnia and Herzegovina and Republic of Srpska) and Brcko District. This fact complicates the conservation and management of large carnivores. Bear, wolf and lynx also have different statuses in these two entities. The State government takes care of the ratification of conventions and reporting. The ministries responsible are the Ministries for Agriculture, Forestry and Water Management on entity level and Brcko District, along with Ministries for environmental issues. The Inter-entity body for Environment is responsible for joint env issues and law harmonization, meeting annually according to need (8 members, 4 RS + 4 FB&H) – 3-4 times, coordinating law implementation. For FB&H: Conservation: Federal Ministry of Environment and Tourism Agriculture and Hunting: Ministry of Agriculture, Water-Management and Forestry Ministries on cantonal level
International and EU law	Provisions of the Habitats Directive (HD) transposed into relevant regulations. However, no by-laws have been adopted to ensure management is occurring. The Bern Convention has been ratified without reservations but it is unclear how the data for reporting are collected and which institutions are obliged to submit them. The Cites Convention has been ratified. An administrative and scientific body, in accordance with the provisions of the Convention is planned – currently tasks are carried out by the competent authorities.
National / regional legislation	The main relevant laws for the Federation B&H are as follows: • Law for Nature Conservation (“Official Gazette of Federation B&H”, No. 66/13) • Law on Fund for Environment Protection (“Official Gazette of Federation B&H”, No. 33/03) • Law on Hunting (Official Gazette of F B&H, No. 4/06, 8/10, 81/14) • Law on Veterinary of B&H (Official Herald of B&H, No. 34/02) • Law on Veterinary of the Federation B&H (Official Gazette of F B&H, No. 45/00) • Law on Hunting (Official Gazette of the Brčko District of B&H, No. 02/10) • Law on Nature Protection (“Official Gazette of the Brčko District of B&H”, number: 24/04, 1/05, 19/07 and 9/09) The main relevant laws for the Republic of Srpska are: • Law on Hunting (“Official Gazette of the Republic of Srpska”, No. 60/09, 50/13), • Law on Nature Protection (“Official Gazette of the Republic of Srpska, No. 20/14), NEW legislation is drafted (2020) – bear is not game species • Law on Hunting (Official Gazette of the Brčko District of B&H, No. 02/10) • Law on Nature Protection (“Official Gazette of the Brčko District of B&H”, number: 24/04, 1/05, 19/07 and 9/09)
LC-Status and trends	Estimates for all of B&H (FB&H + RS): • Bear: 1000-1200. Protected. Slightly increasing. • Wolf: 400-600 / no estimate. Not protected. Stable or declining (estimate) • Lynx: 80-90. Protected (reintroduced 1973). No information about trends.

Country	Bosnia and Herzegovina (B&H)
LC Distribution	 Figure 10: Bear, wolf and lynx occurrence in Bosnia and Herzegovina⁸
Management plans	For FB&H: • No. Regulations in the Federation of B&H did not provide for the development of management plans for certain species, including LC • FMOAWMF should prepare it according to Hunting Law For RS: • No. Draft Management Plan for brown bear in spring 2020; mapping should be done in 2021 • Hunting grounds have annual and 10 year plans
LC monitoring methods	Collected based on game counting methods within hunting associations, in accordance with hunting regulations. The results of the census are entered in the Annual Management Plans and 10-year hunting regulations Accuracy questioned by interviewees. Bear is likely to be more accurate, wolf and lynx less. In certain areas (projects, national parks), monitoring methods are more accurate e.g. trials with genetic monitoring (see for example BioBosnia³⁷ and Šnjegota et al (2017)³⁸)
Main threats to the population	• Bear: poaching, inadequate forest structure, lack of spatial planning (infrastructure), low rate of designation of protected areas, Small surface of declared protected areas, disturbance and direct conflict with people • Wolf: poaching and poisoning, hunting, lack of monitoring • Lynx: poaching is a serious threat, lack of monitoring
Main conflicts	• Bear: Beehive and orchards damages and some livestock and competition with hunters. Reported attacks on human infrastructure, fear. • Wolf: attacks on livestock (including cattle), some conflict with hunting dogs, fear.
Main interested stakeholders	• Government ministries (agriculture, forestry and water) • Bear – trophy hunting (cca 1500€-3000KM), so hunters have an interest (Hunting Federations) • Environmental inspections – lacking investment • Veterinarians and biologists - interest in conservation • Foresters, NGOs for nature conservation • NVO – related to large carnivores, Center for Environment (CZZS) • Volunteers involved in monitoring
Direct conflict with humans / incidents	RS: Intervention team (IT) established under the project Protection of brown bears in Dinarides Protocol on procedure in the case of an incident and the contact FB&H: no IT, cantonal ministries record incidents (should be confirmed by inspectors) Traffic signs and fences are implemented in some areas, planned green infrastructure. Waste is not specifically managed for bears.

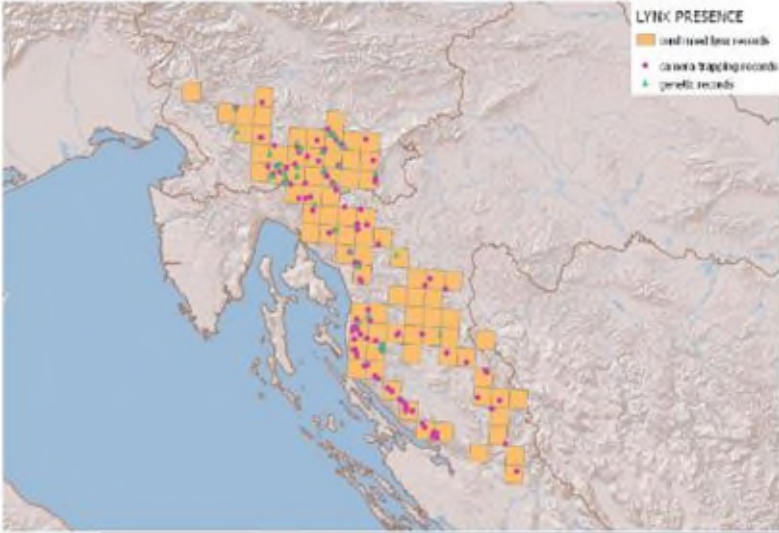
³⁷ BioBosnia Conservation in Action website: <https://wolvesinbosnia.weebly.com/>

³⁸ Šnjegota, D., Stefanović, M., Veličković, N. et al. Genetic characterization of grey wolves (*Canis lupus* L. 1758) from Bosnia and Herzegovina: implications for conservation. *Conserv Genet* **19**, 755–760 (2018). <https://doi.org/10.1007/s10592-017-1042-7>

Country	Bosnia and Herzegovina (B&H)
Livestock protection and compensation measures	RS: Compensation is in place for livestock, depredated by bears. Prevention measures in place are a pre-condition to receiving compensation. Damages by lynx (however rare) are compensated as well. Prevention measures are not specifically financed (could be covered by other agricultural activities) Prevention measures only checked in the case of damages (lack of regulations therefore subjective assessment) There is no compensation scheme for damages caused by wolves. FB&H: Prevention and compensation of game damage is defined in the Law on Hunting for protected species. Depredation is recorded by cantonal inspection in Federation of B&H and users of hunting grounds. Compensation is paid by the Ministry of Agriculture and Forestry. Prevention measures are not a precondition as of now. Protection measures should be in place (dog, shepherd)
Other financing	RS: Funds from the fee paid for use of forests, in accordance with the Law on Forests. FB&H: Fund for environment conservation of FB&H
Hunting status	• Bear: can be hunted in season in RS (1 October to 15 May) and is permanently protected from hunting (FB&H). A permit may be issued for derogation outside the hunting season, if an individual bear causes damage. • Wolf: males no closed season, female wolf and cubs, hunting season 1 July - 28/29 February (FB&H and RS) • Lynx: permanently protected from hunting
Existing cross-border initiatives	Cooperation exists only through projects implementation ("Brown bear protection in Dinarides") Interreg Adrion DINALPCONNECT (for bear only, only pilot area) Taix (Capacity building, study), IPA Bear in Mind (B&H-CG). Fund for environment conservation FB&H, project "Wilderness and life of large carnivores of Una NP-Phase Wolf 2"
Working together	Cooperation with the competent ministries in B&H is perhaps the biggest challenge.

Annex 3 Table 3: Croatia.

Country	Croatia
Introduction	Land area of 56,594 km² and population of 4,058,165. Land use is divided between forest (34.4%), agricultural land (23.7%) and other forms (41.9%). Agricultural land is divided between permanent pasture (6.2%) and arable (16%).
Institutional structure	The Republic of Croatia is an EU Member State and a parliamentary, representative democratic republic, with the Prime Minister as the head of government. The President of the Republic (Croatian: Predsjednik Republike) is the head of state. In Croatia, citizens have an enforceable right to local self-government. The right to self-government is exercised locally in 426 municipalities (općine) and 124 cities (gradovi), and regionally in 20 counties (županije) and the city of Zagreb under state supervision.
Relevant managing authorities	The Ministry of Agriculture (MP), especially the Forestry and Hunting Department is responsible for the management of Brown Bears • The Brown bear National Committee is responsible for the management plan, a yearly action plan, monitoring and hunting quota upon derogation approval by Ministry of Economy and Sustainable Development (MoESD) etc. • MoESD is responsible for the managing of wolves and lynx: • Nature Protection Directorate acting as governing and administrative body (IT Committee, damage compensation, issuing a decision/permits, management plan adoption, all Habitat Directive derogation incl. for bears, etc.) • Institute for Environment and Nature acting as expert body (expert opinion or document

Country	Croatia
Relevant managing authorities	development, monitoring and inventory, management plans, action plans and various protocol development etc.) and • A working group on wolves exist too Regional management, beside the Nature and National Parks, are at the county level. In each county, Public Institutions for Protected Area Management are established and active in the implementation of LC monitoring, funding for AP of MP, members of IT in the PA territory.
International and EU law	As an EU Member State, Croatia needs to adhere to the EU Nature Directives. The Republic has also signed the Bern and Bonn Convention and is a member of the CBD.
National / regional legislation	• Nature Protection Law • Hunting Law (NN 99/2018, 32/19, 32/20) (https://narodne-novine.nn.hr/clanci/sluzbeni/dodatni/441255.pdf) • Habitats Directive – Annex 4 (all LC) , Bern Convention (no reservation) – in Nature Law • CITES Conv/CITES Regulation in Nature Protection Law
LC-Status and trends	• Bear: estimated 846-1072 • Wolf: 163 individuals³⁹ • Lynx: estimated minimum 85-90 (2019/20)⁴⁰
LC Distribution	 <i>Figure 11: Confirmed lynx distribution in the Dinaric-SE Alpine area in 2019-2020</i>  <i>Figure 12: Bear, wolf and lynx occurrence in Croatia⁸</i>

³⁹ Wolf population status: <http://www.haop.hr/hr/tematska-podrucja/prirodne-vrijednosti-stanje-i-ocuvanje/bioraznolikost/velike-zvijeri>

⁴⁰ Institute for Environment and Nature gather all available data, collected together by the LIFE LYNX project: <https://www.life-lynx.eu/about-the-project/> Also, lynx database of the Faculty of Veterinary Medicine University in Zagreb <http://lynx.vef.hr/info/hr/>

Country	Croatia
Management plans	Yes: • Brown Bear Management Plan⁴¹ • Wolf Management Plan⁴² • Lynx Management plan⁴³ New MP for wolf and lynx in the drafting process, based on expert study for both species. Expected in 2022.
LC monitoring methods	In general, the LC Surveys in Croatia are carried by experts and scientists from several Institutions, organisations and NGOs: • Faculty of Veterinary Medicine University in Zagreb, Karlovac University of Applied Sciences, Geonatura d.o.o., OIKON d.o.o., BIOM, Carnivora Magna, Croatian Forestry, Hunting associations, Public Institutions of the National and Nature Parks, County Public Institutions for governing protected parts of nature and Natura 2000, Institute for Environment protection and Nature (within the Ministry of Economy and Sustainable Development). • Reporting takes place in accordance with Article 17 of the EU HD Bear: • Genetic monitoring, damages, snow tracking, accurate data for the Brown bear population (due to DNA analysis) • Hunters are involved and obligated by the Ministry (due to the quota) to collect samples for bears. Additionally, they count the hunting feeding sites twice a year (not to tell about the population, only to observe the trend) Wolf: • Institute for Environment and Nature gather all available data and run the Working Group of experts for population estimation (within the Commission for monitoring the populations of large carnivores. Last genetic sampling was incomplete (not all distribution areas were covered) and performed in 2019 (next sampling is planned for 2022)).⁴⁴ Lynx: • Institute for Environment and Nature gathers all available data, now the LIFE LYNX project is active and performs the lynx re-population where individuals are monitored (till the 2024).⁴⁵ The lynx database of the Faculty of Veterinary Medicine University in Zagreb is also publicly available.⁴⁶
Main threats to the population	• Bear: potentially problematic ratio of male and female in quota (more male) in future; feeding at sites has impact on bear population, more cubs, habituation problem; human sources of food (waste disposal and intervention was approved); habitat fragmentation but mitigated by green bridges(also economic exploitation of forests), major infrastructure threats are wind farms and planned solar panels; disturbance in habitat by vehicles/quads, off-road bikes, ski slopes, golf, hotels; poaching • Wolf: poaching incl. poisoning; lack of natural prey (locally, south of HR); social acceptance is limited, not all stakeholders are involved in management and attitude on wolf is negative in some groups; succession of natural habitats; carcass disposal in nature attract wolves; habitat disturbance and fragmentation due to infrastructure; hybridisation and bold wolf • Lynx: inbreeding, but addressed in LIFE Lynx, poaching, availability of natural prey, habitat fragmentation due to infrastructure
Main conflicts	• Bear: little damage (rare on livestock more on bee hives), fear of "problem" bears (near or in settlements, garbage addiction) but intervention shooting is allowed in that case, based on approval of Ministry of Agriculture, based on expert opinion of Bear Committee

⁴¹ Bear Management Plan https://poljoprivreda.gov.hr/UserDocsImages/dokumenti/sume/gospodarenje_divljaci/Plan%20gospodarenja%20medvjedom%202019_final.pdf

⁴² Wolf Management Plan http://www.haop.hr/sites/default/files/uploads/dokumenti/03_prirodne/PUAPs/Plan_upravljanja_vukom_2010_2015.pdf

⁴³ Lynx Management Plan http://www.haop.hr/sites/default/files/uploads/dokumenti/03_prirodne/PUAPs/Plan_upravljanja_risom_2010_2015.pdf

⁴⁴ <http://www.haop.hr/hr/tematska-podrucja/prirodne-vrijednosti-stanje-i-ocuvanje/bioraznolikost/velike-zvijeri>

⁴⁵ <https://www.lifelynx.eu/about-the-project>

⁴⁶ <http://lynx.vef.hr/info/hr>

Country	Croatia
Main conflicts	• Wolf: with livestock owners due to livestock depredation, bold wolf conflicts with local communities; damages compensates quickly if applicable, yet there is no compensation for game predation, so hunters want a quota for hunting (claim no interest in wolf killing) • Lynx: depredation of "roe deer" – hunters might tolerate lynx more than wolf, but also illegal killing is present
Main interested stakeholders	• Hunting sector: hunting ground managers • Farmers: livestock owners, beekeepers • Experts on LC, hunting for prey, coordination of hunting ground managers Areas, National Agency of Environment • Local population in area • Local Consultative Groups: key opinion leaders (e.g. in tourism, school teachers, hairdressers, priests) • LIFE Lynx
Direct conflict with humans / incidents	• Wolf: no incidents on humans in last 15 years • Bear: Incidents are recorded by the Ministry of Agriculture - Intervention Team for bear recording incidents with problematic bear and follow the protocol • Lynx: almost no conflicts reported – f.i. 2 incidents in 10 years • Emergency/Intervention teams exist (2 teams, for bear by MP, and wolf & lynx by MINGOR) • Intervention shooting is really limited to justified cause
Livestock protection and compensation measures	• Compensation in place and recorded for all 3 LC • Prevention measures are a precondition for compensation, very detailed in Nature Protection Law: Ordinance on damages by strictly protected animals • Lynx cause almost no damages, wolves cause most damages • Bears cause some damages – 6€ per bear per year – but not all damages are reported because some get compensation in other ways, so numbers might be underestimated
Other financing	• Operativni program Konkurentnost i kohezija (OPKK) for monitoring, damages • Other: support for the Intervention team for LC (one for bear and other for W+L); support to prepare management plan (limited, but complete i.e. LIFE funding) • Bear management is financed always from projects, LIFE, etc. • Fund for Environmental Protection and Energy Efficiency (FEPEF): co-funding of LC related projects (LIFE) • Agri chamber organise specialised sectoral groups with users (20 farmers)
Hunting status	Generally, hunting is not allowed, but for: • Bears: a "quota" is approved by the EU HD derogation rules ○ it is calculated as a maximum of 16% of population and as pre-prevention for damages (includes other removals from the population) ○ In practice up to 150 bears can be removed from the population per year: hunted, traffic killed, intervention removals • Wolves: no quota since 2013 (according to EU HD)
Existing cross-border initiatives	• LIFE Lynx • To some degree, there is good cooperation among scientists/experts in Balkan area • Although several projects have developed transboundary management plans (bear and lynx), there seems to be a lack of cooperation between political/state level responsible for the plan development and adoption • There is transboundary bear management plan (LIFE DINALP Bear), yet there seems to be no real consultation on joint quotas, management measures; the Croatian annual action plan is published on the website • No cooperation for wolf and lynx, but planned under the Interreg Carnivora Dinarica project. • Efforts with B&H, but no official cooperation (only several times with Ministry in Republic of Srpska for the Brown Bear management workshops) • Problems seem to lie in Ministries and institutes of two entities which lack experts, official records in B&H, knowledge on population size, monitoring and as well as a management plan; official data exchange is also missing

Country	Croatia
Working together	• Montenegro: easy • North Macedonia & Kosovo: no capacity, willing to cooperate • Bosnia & Herzegovina: not simple, due to internal complex structure in B&H, lack of expert service in governmental institutions. • Slovenia: works when needed • Serbia: contact exists • Internal capacity in Croatia is limited by personnel not by knowledge

Annex 3 Table 4: Kosovo*.

Country	Kosovo
Introduction	Land area of 10,887 km² and population of 1,935,259 (2021). Land use is nearly evenly divided between agriculture and forest (52.8% and 41.7%). Agricultural land is fairly evenly divided between permanent pasture and arable.
Institutional structure	The Republic of Kosovo is a multi-party parliamentary representative democratic republic. A prime minister builds the head of government and is elected every 5 years by the parliament. The country is subdivided into seven districts, on the highest level of administrative division. 38 municipalities build the basic local administrative division in Kosovo. Kosovo is recognized by the EU as a potential candidate for accession. However, only 22 out of the 27 EU Member States currently recognise the Republic of Kosovo as an independent state.
Relevant managing authorities	The management of LC follows the centralised governance on the Ministry level. Data collection on LC and management is the responsibility of the Ministry of Environment, Spatial Planning and Infrastructure (MESPI) through the Kosovo Institute for Nature Protection (KINP). Further relevant authorities are the Ministry of Agriculture, Forestry and Rural Development (MAFRD), Division of Wildlife and Ecotourism (Department for Forestry). The Kosovo Forest Agency (Directorate for hunting), and Inspectorate within the Agency as well as the Kosovo Hunting Federation (Hunting Associations, hunting ground managers).
International and EU law	The Republic of Kosovo is neither a party of the Bern convention nor of the CITES convention. Kosovo is a member of the IUCN. The designation of Natura 2000 sites is still at a very early stage due to a lack of administrative capacity. The 2016-2020 action plan for biodiversity is only partially implemented. No progress was made in the area of nature protection.
National / regional legislation	• Law No.03/L-233 on Nature Protection • Administrative Instruction No.18/2012 for the proclamation of Wild species Protected and strictly protected: ◦ Brown bear is autochthonous wild species protected; ◦ <i>Canis Lupus</i> (Wolf) is autochthonous wild species strictly protected; ◦ Lynx lynx is autochthonous wild species strictly protected. • Law No. 02/L-53 on hunting regulates sustainable management, breeding, protection, hunting and use of wild fauna as natural wealth of general interest which enjoy special protection. (<i>trajna zaštita</i>) • Protection of integrity of ecosystem and ecological balance, adequate protection of wild animals, ensuring their welfare and conditions for economic utilization of resources, need for safety and ethical standards of hunters
LC-Status and trends	No official data. Estimations: • Bear: 80 - 100 individuals • Wolf: up to 100 individuals • Balkan Lynx: up to 6 individuals

Country	Kosovo
LC Distribution	 <i>Figure 13: Bear, wolf and lynx occurrence in Kosovo*⁸</i>
Management plans	No
LC monitoring methods	KINP is responsible for the monitoring and inventory in PAs – but due to low capacity monitoring is rarely done. NGO <i>ERA</i> uses photo traps for their Balkan lynx recovery project Ministry of Agriculture, Forestry and Rural Development – responsible for the hunted species, data for inventory comes from hunting ground managers Generally, the data does not seem to be accurate, it is an estimation for all 3 LC species.
Main threats to the population	Forest management disturbance – reducing habitat and noise from work in forest; poaching, enough prey but human disturbance due to the high density of human settlements; no waste management/garbage near villages and cities
Main conflicts	Damage to beehives or livestock depredation by bears. However, there is no official recording of damages by either MAFRD or the Hunting sector
Main interested stakeholders	• MESPI, KINP, Forestry Agency, MAFRD – Forestry Department • Municipalities – service for agriculture, forestry, hunting • NGO <i>ERA</i> and <i>FINCH</i>
Direct conflict with humans / incidents	No records of incidents. There is no IT. Hunters are supervised by MAFRD and MESPI, NGOs are active when an event occurs.
Livestock protection and compensation measures	Prevention is a condition for compensation. There is no compensation in practice, yet it is prescribed for strictly protected species (wolf, lynx) in legislation. It should be paid by the Ministry of Environment. There are no incentives for compensation measures.
Other financing	none
Hunting status	Hunting is not allowed for all 3 LC (no management plans also means no numbers on population)
Existing cross-border initiatives	No current projects on LC. Balkan lynx recovery programme (2020 ended after 10 yrs), North Macedonia, Albania, Kosovo and Montenegro
Working together	Easy cooperation with North Macedonia, Albania, Kosovo and Montenegro. It can be difficult with Serbia but not impossible.

Annex 3 Table 5: Montenegro.

Country	Montenegro
Introduction	Land area of 13,812 km² and population of 609,858 (2020). Land use is characterized by forestry and agriculture (40.4% and 38.2%). Agricultural land is mostly permanent pasture (24.1% and some arable land 12.9%).
Institutional structure	Montenegro is a parliamentary representative democratic republic. The Prime Minister of Montenegro is the head of government. The state Montenegro is divided into 24 municipalities. Montenegro is a candidate for accession to the European Union and expected to join the EU by 2025.
Relevant managing authorities	• Ministry of Agriculture, Forestry and Water Management, • Ministry of Ecology, Spatial Planning and Urbanism, • Environment Protection Agency of Montenegro • Hunting Federation through Hunting ground managers gather data from counting of LC

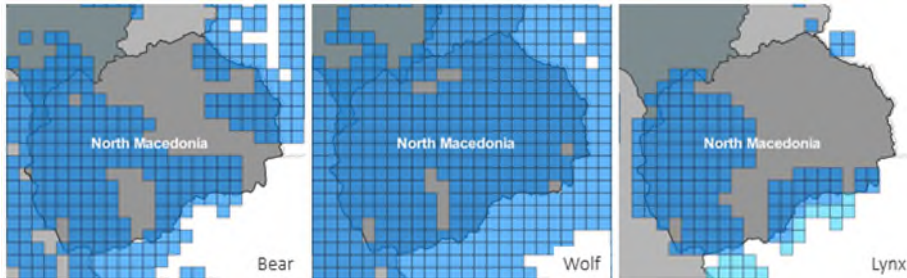
Country	Montenegro
International and EU law	Montenegro has joined the CBD. Mapping for Natura 2000 has continued. With regard to nature protection, Montenegro has partially aligned with the EU acquis. Further progress is needed to establish a comprehensive system of strict species protection.
National / regional legislation	• Law on Hunting (Official Gazette MNE, No. 52-08 & 48-15) • Law on Nature Protection (Official Gazette MNE, No.054/16 from 15.08.2016) • The Law on National Parks is from 2014 ("Official Gazette of Montenegro" No.28 / 14) • Ordinance on determining the number and the Hunting Development Program (2014-2024)
LC-Status and trends	• Bear: 423 official figure used from hunting statistics. Other expert evaluation: 250-280 individuals data for 2017/18 • Wolf: 592 individuals according to official data for 2019 • Balkan Lynx: extinct (unconfirmed) in last 8 years no presence on photo traps ○ last data – in October 2002, Kaludra near Berane illegally killed (male, 24 kg); solitary individual present in Rugova in Kosovo near border to Montenegro
LC Distribution	 Figure 14: Bear, wolf and lynx occurrence in Montenegro⁸
Management plans	No, not yet. The main task of the Council for the Development of Brown Bear and Wolf Management is to develop the Management plans for the brown bear and wolf. A draft is expected till the end of 2021. • The Council with its 11 members ○ prepares Management Plans for the cultivation, protection and use of carion bear (<i>Ursus arctos</i>) and wolf (<i>Canis lupus</i>); ○ prepares the revision of Management Plans for breeding, protection and use of brown bear (<i>Ursus arctos</i>) and wolf (<i>Canis lupus</i>); ○ prepares Action Plans for each individual year for the above species; ○ submits Reports on the implementation of Action Plans; ○ monitors the work of the Intervention Team; ○ participates in the implementation of plans with the competent state bodies, management and stakeholders
LC monitoring methods	• Population estimation/survey for bear and wolf done by Hunting Associations, collected by National Hunting Federation and shared with Ministry of Agriculture, Forestry and Water Management (central hunting database) and Environment Protection Agency of Montenegro; • in PAs: expert services, but they are assessing size and numbers (no field work, non-aligned methodology)
Main threats to the population	• Bear: poaching, habitat disturbance and fragmentation/deforestation, tourism is promoted in mountain areas and might bring infrastructure along • Wolf: poaching, prey availability (competition with hunters), habitat fragmentation
Main conflicts	• Bear: beehives, livestock, competition for non-timber forest picking (berries, mushrooms deep in forest) • Wolf: livestock depredation
Main interested stakeholders	• National Hunting Association, • Ministry of Agriculture, Forestry and Water Management, • Environment Protection Agency of Montenegro,

Country	Montenegro
Main interested stakeholders	• Ministry of Ecology, Spatial Planning and Urbanism • NGOs • Beekeeper federation • Individual farmers • National Parks
Direct conflict with humans / incidents	There have been sightings of both wolves and bears near or in cities. There is an intervention team established by the Ministry of Agriculture and Rural development, but it seems to not be fully functional, due to missing equipment e.g. a car
Livestock protection and compensation measures	• Secondary legislation prescribed prevention, if damage occurs, compensation from game damages is done by Hunting managing site or PA managing authority, Ministry for LC. • Depredation is recorded by the Ministry of Agriculture, Forestry and Water Management, National Hunting Association, Hunting Societies and Vet ambulance. • Payment is done by managing authority (not common in practice) • Prevention is condition for compensation
Other financing	No.
Hunting status	• Bear: no hunting, theoretically game species⁴⁷ but quota is 0 (following Bern Convention) • Wolf: can be hunted in season 1 October - 28/29 February
Existing cross-border initiatives	• Interreg DINALPCONNECT • BEAR in MIND, NGO CZIP • BEAR protection in Dinarides (EN)
Working together	Seems to be uncomplicated, except for some language barriers.

Annex 3 Table 6: North Macedonia.

Country	North Macedonia
Introduction	Land area of 25,713 km² and population of 2.13 million (2020). Land use is distributed mostly between agriculture and forestry (44.3% and 39.8%). Agricultural land is mostly permanent pasture (26.5% and some arable land 16.4%).
Institutional structure	The Republic of North Macedonia is a parliamentary democracy. The state is divided into eight regions for legal and statistical purposes as well as in 84 municipalities. The country has been a candidate for joining the European Union since 2005.
Relevant managing authorities	• Ministry of Environment and Physical Planning • Ministry of Agriculture, Forestry and Water Economy • Management Authority of Protected Areas • Agency for Food and Veterinary • Faculty for Veterinary • Hunting association
International and EU law	The Republic of Macedonia is a party of the Bern convention and of the CITES convention (the wolf is on the reserve list) and has signed the CBD. Macedonia has adopted the draft National reference list of the Habitats Directives and has identified potential N2000 sites.
National / regional legislation	National actions of monitoring, protection and conservation for LC was given in: 1. National Strategy for Nature Conservation with Action Plan (2017-2027), 2. National Strategy for Biodiversity with Action Plan (2018-2023), 3. Law on Nature Protection 4. Law on Hunting

⁴⁷ Hunting Association of Montenegro - Hunting Game of Montenegro: http://www.lovackisavez.me/mne/lovna_divljac.php

Country	North Macedonia
LC-Status and trends	Estimations⁴⁸: • Bear: 333 – 381 individuals • Wolf: in the range of 400 – 1100 individuals • Balkan Lynx : around 32 mature individuals
LC Distribution	 Figure 15: Bear, wolf and lynx occurrence in North Macedonia⁸
Management plans	There are no plans for bears and wolves, only for the Balkan lynx in the Mavrovo National Park ⁴⁹
LC monitoring methods	No permanent monitoring for all 3 LC. • Bear: Opportunistic survey through camera-traps. In 2021 a report for population size estimate will be published for Prespa region (North Macedonia, Albania and Greece). The number can serve for extrapolation in other areas of the country. A genetic study was done in 2008 in order to assess connectivity. • Wolf: opportunistic survey through camera-trapping for lynx monitoring. Hunting bans and damage caused by wolves are not documented. • Balkan lynx: 15-year monitoring for the Balkan lynx through the Balkan Lynx Recovery Programme⁵⁰. Main activities carried out in western parts of the country. The population estimates for the lynx are relatively accurate and the density estimates are carried out every 2-3 years in Mavrovo NP. Opportunistic surveys implemented every year in other areas (protected and unprotected).
Main threats to the population	• Bear: poaching, habitat fragmentation due to infrastructure, traps (for game species like deer) • Wolf: poaching, unfavourable legislation, bounty for killed wolves – attracts foreign hunters • Lynx: competition for prey and habitats (with feral dogs and hunters), small genetic pool – inbreeding, poaching, habitat loss – timber cutting outside of PAs
Main conflicts	• Bear: beehives and livestock, no waste management adapted for bear presence which attracts bears • Wolf: conflict with livestock breeders/owners • Lynx: no conflict other than hunters complaining about competition for prey
Main interested stakeholders	• Hunters (Hunting federation, including Ministry of Agriculture and Water Economy in which the hunting sector falls under) • There seems to be a lack of cooperation/communication between the two relevant ministries • NGOs: MES, Eko Svest
Direct conflict with humans / incidents	No records of human-bear incidents. One case of wolf-human attack: farmer tried to defend their livestock There is no intervention team in North Macedonia, only within the Mavrovo NP

⁴⁸ North Macedonian Government, Species Summary Page – National Red List: <http://redlist.moepp.gov.mk/species-summary-page/>

⁴⁹ Macedonian Ecological Society Website: Lynx Conservation Action Plan in Mavrovo National Park: <https://mes.org.mk/en/the-lynx-conservation-action-plan-in-mavrovo-np/>

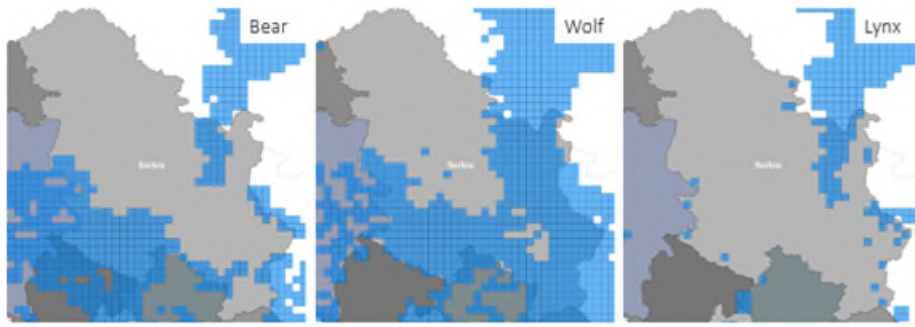
⁵⁰ Macedonian Ecological Society Website: Balkan Lynx Recovery Programme: <https://mes.org.mk/en/programa-za-zakrep-nyuvane-na-balkanskiot-ris-iv/>

Country	North Macedonia
Livestock protection and compensation measures	- Ministry of Agriculture and Water Economy is recording and assessing damages and list those who applied for damage compensation (budget of 3 million Euros / 5 years but it is not published) - A veterinarian has to verify that an incident was caused by a bear before the Ministry pays compensation - So far, the state is only paying for damages caused by bears. There were no damages paid for lynx or any other protected animal species. - Statistic Damage from bear⁵¹ - Prevention is not a precondition however it has to be confirmed that the damage was caused by a protected species.
Other financing	Only available through smaller projects i.e. sharri dog (šarplaninac) is planned for the Šar Planina National Park
Hunting status	- Bear: protected and no hunting is allowed - Wolf: can be hunted at any time of the year (no closed season)
Existing cross-border initiatives	- With GR and AL through the Prespa project, funded by Prespa - Ohrid Nature Trust. - NGO MES project on B. lynx with AL and KS through the Balkan Lynx Recovery Programme, Phase 6. - Feasibility study for establishment of center for care of injured and seized wild animals in the Republic of North Macedonia
Working together	In North Macedonia: Hunting federation and Ministry of Agriculture and Water Economy Abroad: none.

Annex 3 Table 7: Serbia.

Country	Serbia
Introduction	Land area of 77,474 km ² and population of 7 million (2020). Land use is mainly agriculture but also forestry (57.9% and 31.6%). Agricultural land is divided between permanent pasture (16.8%) and arable (37.7%).
Institutional structure	The Republic of Serbia is a parliamentary republic. The President of the Republic (Predsednik Republike), who is elected by popular vote to a five-year term, is the head of state. The government consists of the prime minister and cabinet ministers. Serbia is subdivided in 29 districts (first-level administrative divisions), 145 municipalities (second-level administrative divisions), two autonomous provinces (Kosovo and Vojvodina) as well as 29 cities, that have their own civic parliaments, executive branches and a mayor. The negotiations about the accession of Serbia to the European Union are currently ongoing. Negotiations are expected to be completed by the end of 2024.
Relevant managing authorities	Ministry of Agriculture, Forestry and Water Management, Directorate for Forests – for wolf as game species. Ministry of Environmental Protection, Serbia – bear and lynx, wolf (protected as game).
International and EU law	Serbia is so far neither a member of the EU nor of NATO. Serbia has signed the Convention on Biological Diversity and is a Party to the Berne Convention and the Bonn Convention. In general, a significant part of the provisions of the Habitats Directive have been transposed into regulations.

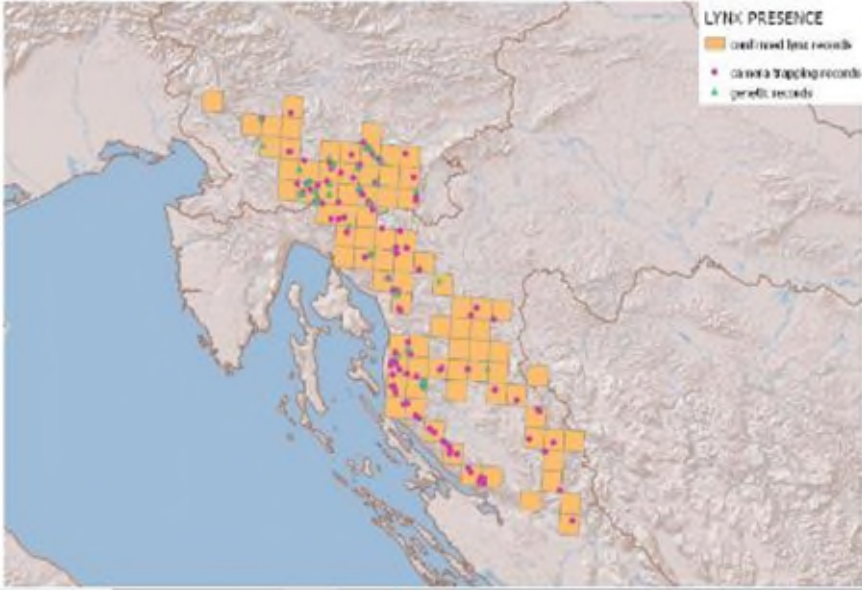
⁵¹ Prism news site (2018) Bear sued, the state pays: <https://prizma.mk/mechkite-tuzheni-drzhavata-plaka/>

Country	Serbia
National / regional legislation	• The Law on game and Hunting ("Official Gazette of the RS", No 18/10 and 95/18-other law); • Law on Nature Protection ("Official Gazette of RS", No. 36/09, 8/10, 91/2010-correction, 14/2016, 95/2018 - other law and 71/2021); • Rulebook on the proclamation and protection of strictly protected and protected wild species of plants, animals and fungi ("Official Gazette of RS", No. 5/2010, 47/2011, 32/2016 and 98/2016) • Law on Game and Hunting ("Official Gazette of RS", No. 18/2010 and 95/2018 - other law) • Rulebook on declaring protected game species protected by hunting grounds ("Official Gazette of RS", No. 9/2012, 31/2013, 55/015, 67/2015 and 75/2016) • Action plan for lynx conservation in Europe; • Law on Ratification of the Bern Convention ("Official Gazette of RS - International Agreements", No. 102/2007) with recommendations
LC-Status and trends	• Bear: ca. 100, increasing (expert assessment) • Wolf: ca. 800-900, stable or increasing slightly (expert assessment). Figures from hunting estimates: 1000-1400 • Lynx: ca. 40-60 (stable). Figures from hunting estimates: 1000-1400
LC Distribution	 Figure 16: Bear, wolf and lynx occurrence in Serbia⁸
Management plans	Not adopted, drafts are prepared and will be renewed. Expected for 2022. In accordance with Bern Convention and Action plan Draft Management Plans for Brown Bear and lynx have been prepared and will be approved by the Government.
LC monitoring methods	• Bear: periodically through projects by the Faculty of Biology and the Natural History Museum • Wolf: The Ministry of Agriculture keeps records of wolf monitoring. Monitoring is done by tissue analysis, genetic sampling, telemetric survey and photo traps at almost all hunting grounds and at feeding sites • Lynx: periodically through projects by the Natural History Museum The monitoring system is defined in the Nature Protection law (Art. 48 for PAs, hunting grounds and forestry). The Environmental Protection Agency of the Republic of Serbia is responsible for reporting (EIONET System) to the European Agency for Environment. Periodically financially supported by the Ministry of Environmental Planning and other institutions, public enterprise and organizations (e.g. JP Srbijašume, WWF) .
Main threats to the population	• Bear: habitat degradation, infrastructure, missing corridors, prey accessibility, poaching • Wolf: habitat degradation, fragmentation, prey accessibility, hybridisation • Lynx: genetic pool (Balkan lynx), data deficiency
Main conflicts	• Bear: damages to bee hives and orchards, livestock depredation, historical fear • Wolf: livestock depredation, game competition with hunters, historical fear • Lynx: no damages registered

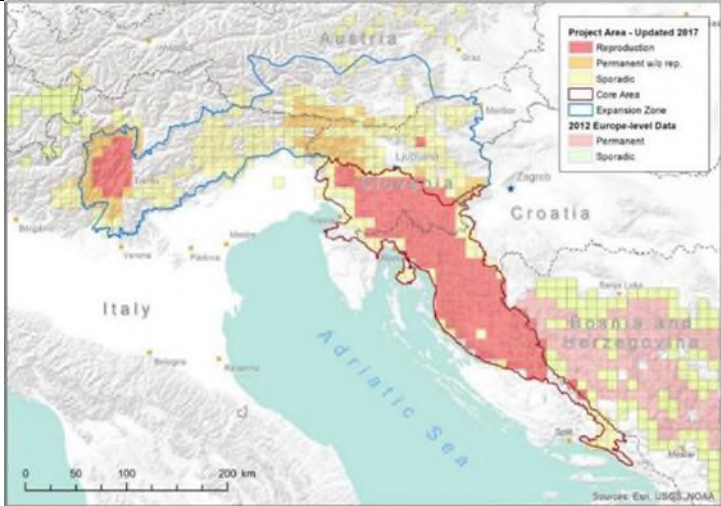
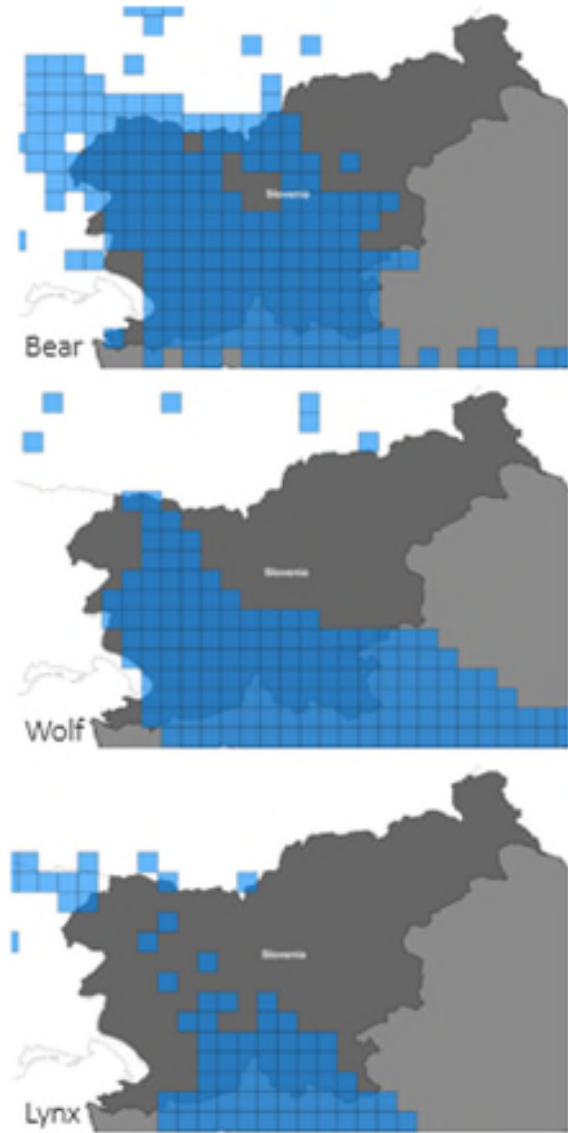
Country	Serbia
Main interested stakeholders	• Forestry and hunters (hunting associations, Hunting Federation of Serbia, 80,000 hunters in Serbia) • Scientific institutions • Farmers: not organised, individual farmers • PA managers: LC are integral part of PA management plan, together with hunting issues, but no data on LC and limited capacity for monitoring • Institute for Nature Protection • NGO: DZPPS, Orca, Falconry association
Direct conflict with humans / incidents	No attacks on humans. No Emergency teams, but planned for in the draft Management Plans.
Livestock protection and compensation measures	Compensation exists as prescribed by Law on Nature Protection only for strictly protected species, requests are mainly for compensation of damage by bears. Commission established by the Ministry of Environment: damage expert assess damage (owner responsible to find expert – vet or agri inspection, forest or hunting experts)
Other financing	Conservation projects. State paid for the preparation of management plans (but did not adopt them).
Hunting status	• Bear: only derogations for problem animals, no hunting • Wolf: quota on local level (hunting management unit) of 30% of estimated population. Usually hunted at bait. Season: 1 July – 31 March
Existing cross-border initiatives	Needed cooperation with Republic of Srpska (B&H) on bear. Existing exchange with Romania and Greece about Carpathian populations. Cooperation among researchers and experts. Projects: Monitoring of Dinara-Balkan wolf population
Working together	Easy to cooperate with HU and EU countries. Good cooperation with Bulgaria and Romania.

Annex 3 Table 8. Slovenia.

Country	Slovenia
Introduction	Land area of 20,273 km² and population of 2.1 million. Land use is divided between forest (62.3%) and agricultural land (22.8%). Agricultural land is divided between permanent pasture (13.1%) and arable (8.4%).
Institutional structure	Slovenia is an EU Member State and a parliamentary democracy republic with a multi-party system. The Slovenian Parliament consists of two chambers: The State Assembly (Državni zbor) and the State Council (Državni svet). The head of state is the president, who is directly elected by the population every five years. As part of the executive power, he is assisted by the Prime Minister and the Cabinet, both elected by the State Assembly. Slovenia is subdivided into 212 municipalities of which eleven have the status of urban municipalities. The municipalities are the only bodies of local autonomy in Slovenia and are headed by a mayor (župan) and a municipal council (občinski svet).
Relevant managing authorities	The ministries responsible are the Ministry for the Environment and Spatial Planning, the Environmental Protection Agency, the Ministry of Agriculture, Forestry and Food, the Slovenian Forest Service (SFS) (responsible for implementation of LC management, monitoring, reporting and annual proposal for activities), the Institute for Nature Protection (responsible for nature, PA, with exception for LC; in cooperation with SFS, INP need to approve reports by SFS), the Biotechnical Faculty (not legally delegated, but involved through tenders; experts are members of LC committees too), as well as the Hunting Federation of Slovenia.
International and EU law	As an EU Member State, Slovenia follows and implements the EU Nature Directives. Besides being an EU Member State, Slovenia is a member of the United Nations, the Eurozone, the Schengen Area, the OSCE, the Council of Europe, and NATO. Slovenia has also signed the following conventions: Bern Convention, Bonn Convention and CBD convention.

Country	Slovenia
National / regional legislation	According to the constitution of the Republic of Slovenia, the state is responsible for the preservation of nature and a healthy environment. Every citizen is in turn obliged to protect nature. Private property is assigned not only a social and economic function as well as an ecological one. On the basis of the constitution, the Environmental Protection Act (EPA) was enacted. This basic framework law regulates the protection of land, water and air, plant and animal life, and the use of natural resources. A variety of environmental regulations have been enacted based on the EPA. The main relevant laws are as follows: ● Strictly protected species under Nature Conservation Law: ○ Bear ○ Wolf ○ Lynx ● Hunting law (ZDLov-1 - Zakon o divjadi in lovstvu (Wild Game and Hunting Act), Official Gazette of the Republic of Slovenia, no. 16/04, 120/06 – Constitutional Court Decision, 17/08 and 46/14 - ZON-C) ○ Article 45 and 46
LC-Status and trends	● Bear: 700-900 increasing ● Wolf: 104-129⁵² (excluding transborder individuals) in Slovenia forming 14 packs, decreasing till 90', then protected, increasing till now ● Lynx: 10-20 numbers decreasing, slowly increasing due to re-population The bear and wolf populations in Slovenia are in a favourable conservation status, while the lynx is again threatened with extinction.
LC Distribution	 Figure 17: Confirmed lynx distribution in the Dinaric-SE Alpine area in 2019-2020

⁵² SLOWOLF project monitoring reports: https://www.volkovi.si/?page_id=1149

Country	Slovenia
	 <i>Figure 18: Bear distribution in LIFE DINALP BEAR project area – updated 2017 (status between 2012 and 2016)</i>⁵³  <i>Figure 19: Bear, wolf and lynx occurrence in Slovenia</i>⁸

Country	Slovenia
Management plans	Existing management plans were supposed to end in 2019. • Wolf management strategy 2020 (new in preparation, expected in 2022) ◦ New Draft action plan for wolf (LIFE WOLFALPS) - 2021, not publicly available yet (formally adopted AP for LIFE SLOWolf – valid till 2017, but still valid in absence of new ones) • Bear management strategy 2021-2030 (not adopted – LIFE Dinalpbear) ◦ Bear Action plan draft, not adopted - “old” documents are used until new ones are adopted • Lynx management Strategy (2016) adopted, Action plan Lynx (LIFE Lynx 2023) ◦ expected to be prepared by the end of Life project; previous action plan is in use
LC monitoring methods	Monitoring protocols for all three species (in line with strategic documents) Regular monitoring, using all available data (centralised data base at ZGS): • Bear: genetic count/census/monitoring LIFE DINALPBEAR + population modelling; annual counting at feeding sites to monitor trend • Wolf: annual genetic count, analyse size of population and genetic parentage analysis; howling annually • Lynx: camera traps, genetic samples to detect inbreeding/parentage
Main threats to the population	Generally: habitat fragmentation due to infrastructure projects • Bear: acceptance of local communities, trophy hunting, feeding sites have an impact on a whole population, bears have more cubs and earlier • Wolf: acceptance of livestock owners and hunters, poaching, fear of public, used for political debate/gains of support in local communities, potential decrease of public support for wolf conservation, traffic collision • Lynx: small population, inbreeding, poaching and traffic collision
Main conflicts	• Bear: Weekend houses/tourism; fear of bears; livestock damages / additional work connected to prevention measures; damage to beehives, crops, small livestock and orchards • Wolf: livestock and sometimes pet depredation • Lynx: predation of game, livestock damages (to lesser degree) ◦ Report for Slovenia, Croatia and Italy⁵⁴
Main interested stakeholders	• Farmers/livestock Chamber • Association of sheep and goat breeders • Environmental and animal welfare NGOs • Hunting Federation of SLO • Tourism/Eco-tourism providers, bear friendly associates • Individual opinion makers – mostly negative opinion on LC
Direct conflict with humans / incidents	Very rare, only few cases (e.g. a nature photographer, or a person picking mushrooms)
Livestock protection and compensation measures	A compensation system is in place and recorded for all 3 LC, prevention measures (like fences) are a precondition for right for compensation. Providing proof can be difficult, if it cannot be confirmed there will be no payment: A vet inspector is taking samples to verify it; 80% of amount is paid by state. SFS is recording damages, compensation by ARSO. Lynx make almost no damages
Other financing	Co-financing of LIFE project, monitoring, damage assessment, compensation
Hunting status	Not allowed (regular, recreational, trophy). Possibility of removal, derogation according Habitats Directive. Protocol was for IT to define circumstances, 112 / police contact IT
Existing cross-border initiatives	Yes, there are several ongoing projects that include LC management, mainly with neighbouring countries (e.g. LIFE Lynx, LIFE WolfAlps EU, Carnivora Dinarica). There are also several ongoing international research projects (including management questions).
Working together	Mostly done with Croatia, Italy and Austria

⁵³ LIFE DINALP BEAR Project: <https://dinalpbear.eu/home-page-1/>

⁵⁴ LIFELYNX in Slovenia, Croatia and Italy toward lynx and lynx conservation Assessment of public attitudes: <https://www.lifelynx.eu/wp-content/uploads/2017/12/A.7-final-report.pdf>

Annex 4: Country comparisons over time

Annex 4 Table 1: Albania.

Albania Topic	Bern convention review (COE) (Bear only) (2002) ⁵⁵	LCIE population review (2012) ⁵⁶	Interviewees carried out under this project (2021)
Population status	Bear: Stable, slightly increasing, strictly protected Wolf: Stable or increasing. Estimation in 2001: 900 – 1000, in 2002 1500 (probably overestimated). Lynx: highly threatened sub-population. Around 25 (down from 80 in the 1980s). Protected with limited hunting.	Bear: North, East and South forest areas, expert estimate 180-200 individuals, official 686. Strictly protected (vulnerable) Wolf: most of country. 200-250 individuals. Official estimate 2370 individuals. Lynx: 5-10, no reproductive population, critically endangered and strictly protected	Bear: ca. 180-200 individuals (estimate), stable nationally. Strictly protected (protected since 1953) Wolf: ca. 200-250 individuals (estimate), stable. Protected species (since 1994) Balkan lynx: 5-10 individuals (monitoring) - PPNEA monitoring, stable with tendency decreasing. Strictly protected (protected since 1969)
Monitoring	Bear: Lacking Lynx: census under project Wolf: lacking	New estimates based on camera trapping	Bear and wolf: data are estimates (camera traps, expert opinion, extrapolation, same for numbers reported by NAPA. No scientifically verified monitoring protocol Balkan Lynx: accurate regular annual or biannual monitoring by PPNEA (cooperate with NAPA and RAPAs)
Management plan and stakeholder engagement	Bear: No, NGOs becoming more active	Bear: Plan compiled in 2007 but not put into action Wolf: no Lynx: Balkan Lynx Recovery Programme	Bear: National Action Plan 2007 Wolf: no Lynx: Balkan Lynx National Action Plan developed in 2007, Range strategy and Action Plan in 2009 (B. Lynx recovery Programme, but never adopted):
Hunting	Bear: No legal hunting Wolf: hunting allowed Lynx: no hunting	No	All 3 LC are protected and should be not hunted. Current active hunting ban (started 7 years ago but expires in 2021). Exceptions for problem bears and wolves damaging livestock.

⁵⁵ Convention on the Conservation of European Wildlife and Natura Habitats Standing Committee 22 Meeting (2002) Large Carnivore Action Plans for Dinara - Pindus range <https://cupdf.com/document/ap-dinara-pindus-range-lc-large-carnivore-action-plans-f-or-dinara-pindus.html>

⁵⁶ Petra Kaczensky, Guillaume Chapron, Manuela von Arx, Djuro Huber, Henrik Andrén, and John Linnell (Editors) (2012) Status, management and distribution of large carnivores – bear, lynx, wolf & wolverine – in Europe part 1: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part1_statusofcineurope.pdf and part 2: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part2_species_country_reports.pdf

Albania Topic	Bern convention review (COE) (Bear only) (2002)⁵⁵	LCIE population review (2012)⁵⁶	Interviewees carried out under this project (2021)
Threats	Bear: Logging Wolf: little information on mortality Lynx: some poaching, lack of prey	Bear: persecution, captive bears as attraction Wolf: persecution and habitat destruction Lynx: persecution / poaching	Bear: poaching, bear cubs taken as attraction, infrastructure development Wolf: persecution (but less studied), infrastructure development Lynx: habitat degradation and infrastructure development
Conflicts	Bear: Few, license for problem bear removal (few requested) Wolf: livestock main prey source Lynx: little conflict	Bear: Widespread conflict due to damages on crops and fruit trees but public opinion positive Wolf: domestic/ shepherd/ hunting dog damages, livestock, public opinion negative. Lynx: little conflict. Public opinion positive	Bear: started damaging corn. A main problem is the lack of law enforcement from authorities for illegal killing Wolf: livestock depredation with shepherds. Conflict with hunters around hunting dogs. Lynx: no conflict detected, people tend to tolerate them.
Compensation scheme	Bear: No Wolf: No, protection measures are used (dogs)	No	No, protection measures are used.
Cross-border cooperation	Bear: With Greece Wolf: Balkanet	No info	Balkan lynx

Annex 4 Table 2: Bosnia and Herzegovina.

Bosnia and Herzegovina Topic	Bern convention review (COE) (Bear only) (2002)⁵⁷	LCIE population review (2012)⁵⁸	Interviewees carried out under this project (2021)
Population status	Bear: Protected by limiting hunting Wolf: Stable, 600-700 wolves, 2/3 country habitat, 48% forested, unprotected Lynx: Was extinct. Reintroduced lynx entering from Croatia. Not protected	Bear: Increasing, 550, range increasing Wolf: 650, increasing Lynx: 70 (may be overestimate), increasing	Bear: 1000-1200. Protected Wolf: 400-600 wolves. Not protected Lynx: 80-90 lynx. Protected

⁵⁷ Convention on the Conservation of European Wildlife and Natura Habitats Standing Committee 22 Meeting (2002) Large Carnivore Action Plans for Dinara - Pindus range <https://cupdf.com/document/ap-dinara-pindus-range-lc-large-carnivore-action-plans-f-or-dinara-pindus.html>

⁵⁸ Petra Kaczensky, Guillaume Chapron, Manuela von Arx, Djuro Huber, Henrik Andrén, and John Linnell (Editors) (2012) Status, management and distribution of large carnivores – bear, lynx, wolf & wolverine – in Europe part 1: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part1_statusoflaineurope.pdf and part 2: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part2_species_country_reports.pdf

Bosnia and Herzegovina Topic	Bern convention review (COE) (Bear only) (2002)⁵⁷	LCIE population review (2012)⁵⁸	Interviewees carried out under this project (2021)
Monitoring	Bear: No Wolf: No, though mortality measured Lynx: No	No info	Collected based on game counting methods within hunting associations, in accordance with hunting regulations. Accuracy questionable (likely most accurate for bear)
Management plan and stakeholder engagement	Bern convention not signed Bear: No Wolf: No Lynx: No	No info	Annual reports and hunting plan
Hunting	Bear: Limited season Wolf: yes Lynx: No rules	No info	Bear: no hunting in FB&H, limited season (1 October - 15 May) in RS Wolf: Yes, males no closed season, female wolf and cubs: 1 July - 28/29 February
Threats	Lynx: Very rare, shooting, prey availability	Bear: poor management structure, infrastructure Wolf: poor management structure	Bear: poaching, forest structure, infrastructure, low rate of designation of protected areas, disturbance Wolf: poaching and poisoning, hunting, lack of monitoring Lynx: poaching is a serious threat, lack of monitoring
Conflicts	Bear: Refuse is becoming a problem, artificial feeding is practiced, problem bears (pigs, beehives) common – can be removed with licence Wolf: large amount of damage to livestock Lynx: few	Bear: Livestock depredation	Bear: Beehive damages and some livestock and competition with hunters. Reported attacks on human infrastructure, fear. Wolf: attacks on livestock (including cattle), some conflict with hunting dogs, fear.
Compensation scheme	Bear: Yes, government pays 45%, municipality 25%, the rest by bear managers. Protection measures should be in place (hunting law) Wolf: No	No info	Bear: Yes Wolf: No
Cross-border cooperation	Bear: Few examples Wolf: on project level but not organised	No info	Yes, through individual projects. But challenging, even within B&H (between regions)

Annex 4 Table 3: Croatia.

Croatia Topic	Bern convention review (COE) (Bear only) (2002)⁵⁹	LCIE population review (2012)⁶⁰	Interviewees carried out under this project (2021)
Population status	Bear: Not protected Wolf: 130-170, protected since 1995 Lynx: recolonization from Slovenian reintroduction, protected	Bear: 1000 individuals Wolf: 168-219 individuals (50 packs), strictly protected since 1995 Lynx: 50, strictly protected, stable / decreasing	Bear: 846-1072 Wolf: 163 Lynx: estimated minimum 85-90 (2019/20) /
Monitoring	Some monitoring established. Counts at feeding sites.	Bear: Genetic monitoring in study areas, counts at feeding sites, mortality Wolf: telemetry, snow tracking, howling, photo traps, distribution of damages, expert opinion, mortality Lynx: telemetry tracking, genetics, snow tracking, photo traps, mortality, genetic survey	Monitoring carried out using a mixture of methods including genetic sampling in line with article 17 reporting. Range of scientific institutes charged with monitoring.
Management plan and stakeholder engagement	Bear and wolf not included in Appendix II but first steps to management plans established. Some stakeholder consultation.	Large carnivore committee Bear: action plan with aim to keep population 900-1000 Lynx: management plan	In place for all species. Next revision 2022
Hunting	Bear: Game species Wolf: No Lynx: No	Bear: game species (will change with EU accession) – hunting quote 100 (+40 interventions) Wolf: very limited quota Lynx: no	Bear: a “quota” is approved by the EU HD derogation rules. It is calculated as a maximum of 16% of population and as pre-prevention for damages also including other removals from the population. Wolf: no Lynx: no

⁵⁹ Convention on the Conservation of European Wildlife and Natura Habitats Standing Committee 22 Meeting (2002) Large Carnivore Action Plans for Dinara - Pindus range <https://cupdf.com/document/ap-dinara-pindus-range-lc-large-carnivore-action-plans-f-or-dinara-pindus.html>

⁶⁰ Petra Kaczensky, Guillaume Chapron, Manuela von Arx, Djuro Huber, Henrik Andrén, and John Linnell (Editors) (2012) Status, management and distribution of large carnivores – bear, lynx, wolf & wolverine – in Europe part 1: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part1_statusofcineurope.pdf and part 2: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part2_species_country_reports.pdf

Croatia Topic	Bern convention review (COE) (Bear only) (2002) ⁵⁹	LCIE population review (2012) ⁶⁰	Interviewees carried out under this project (2021)
Threats	Bear: Planned road building Wolf: lack of natural prey Lynx: lack of prey	Bear: Concerns about effects of change to strictly protected. Habituation to human food sources. Infrastructure e.g. windfarms. Wolf: acceptance low (poisoning), hybridization, infrastructure e.g. windfarms. Lynx: inbreeding, poaching, infrastructure e.g. windfarms.	Bear: ratio of male and female in quota (more male); artificial feeding (more cubs, habituation problem; human sources of food; habitat fragmentation; infrastructure threats; tourism development Wolf: poaching; lack of natural prey (locally, south of HR); social acceptance; natural habitats; carcass disposal in nature attract wolves; habitat disturbance and fragmentation due to infrastructure; hybridisation and bold wolf Lynx: inbreeding, poaching, availability of natural prey, habitat fragmentation due to infrastructure
Conflicts	Bear: Some refuse management. Artificial feeding carried out. Problem bears exist and can be removed Wolf: livestock depredation Lynx: few	Emergency teams for all species Bear: low, public opinion good. Damages compensated Wolf: livestock and game Lynx: low for livestock, mild for game	Bear: little damage, fear of "problem" bears Wolf: livestock depredation, bold wolf conflicts with local communities; competition for prey with hunters Lynx: depredation of "roe deer" (though more tolerated than wolf)
Compensation scheme	Bear: Some exist locally, not linked to protection measures Wolf: no, working on protection measures Lynx: no		Yes, for all species. Prevention measures a precondition for receiving compensation.
Cross-border cooperation	Bear: Yes Wolf: Some	Good cooperation with Slovenia	Good cooperation with Slovenia

Annex 4 Table 4: Kosovo*.

Kosovo Topic	Bern convention review (COE) (Bear only) (2002) ⁶¹	LCIE population review (2012) ⁶²	Interviewees carried out under this project (2021)
Population status	See Table 7	No info	Bear: 80 - 100 individuals (protected) Wolf: up to 100 individuals (strictly protected) Balkan Lynx: up to 6 individuals (strictly protected)
Monitoring			Hunting ground observations Phototrap observations for lynx Estimates for all species
Management plan and stakeholder engagement			No
Hunting			No
Threats			Disturbance (forest work and leisure), poaching, lack of waste management
Conflicts			Damage to beehives or livestock depredation by bears
Compensation scheme			Theoretically for wolf damages (but not functioning). Theoretically prevention measures are a condition for compensation)
Cross-border cooperation			North Macedonia, Albania, Kosovo and Montenegro cooperation exists Balkan lynx recovery programme

⁶¹ Convention on the Conservation of European Wildlife and Natura Habitats Standing Committee 22 Meeting (2002) Large Carnivore Action Plans for Dinara - Pindus range <https://cupdf.com/document/ap-dinara-pindus-range-lc-large-carnivore-action-plans-f-or-dinara-pindus.html>

⁶² Petra Kaczensky, Guillaume Chapron, Manuela von Arx, Djuro Huber, Henrik Andrén, and John Linnell (Editors) (2012) Status, management and distribution of large carnivores – bear, lynx, wolf & wolverine – in Europe part 1: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part1_statusoflaineurope.pdf and part 2: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part2_species_country_reports.pdf

Annex 4 Table 5: Montenegro.

Montenegro Topic	Bern convention review (COE) (Bear only) (2002) ⁶³	LCIE population review (2012) ⁶⁴	Interviewees carried out under this project (2021)
Population status	See Table 7	No info	Bear: 423 individuals; official data for 2017/18 Wolf : 592 individuals according to official data for 2019 Balkan Lynx: extinct (unconfirmed)
Monitoring			Population estimation/survey for bear and wolf done by Hunting Associations In protected areas carried out by government services. Accuracy questionable
Management plan and stakeholder engagement			No The Council for the Development of Brown Bear and Wolf Management (11 Members)
Hunting			Bear: no hunting, theoretically game species but quota is 0. Wolf: Hunting allowed. Season: 1 October - 28/29 February
Threats			Bear: poaching, habitat disturbance and fragmentation/deforestation, tourism in mountain areas Wolf: poaching, prey availability (competition with hunters), habitat fragmentation
Conflicts			Bear: beehives, livestock, competition for non-timber forest picking (berries, mushrooms deep in forest) Wolf: livestock depredation Some issues with problem bears and bold wolves. IT exists in theory.

⁶³ Convention on the Conservation of European Wildlife and Natura Habitats Standing Committee 22 Meeting (2002) Large Carnivore Action Plans for Dinara - Pindus range <https://cupdf.com/document/ap-dinara-pindus-range-lc-large-carnivore-action-plans-f-or-dinara-pindus.html>

⁶⁴ Petra Kaczensky, Guillaume Chapron, Manuela von Arx, Djuro Huber, Henrik Andrén, and John Linnell (Editors) (2012) Status, management and distribution of large carnivores – bear, lynx, wolf & wolverine – in Europe part 1: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part1_statusofcineurope.pdf and part 2: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part2_species_country_reports.pdf

Montenegro Topic	Bern convention review (COE) (Bear only) (2002) ⁶³	LCIE population review (2012) ⁶⁴	Interviewees carried out under this project (2021)
Compensation scheme			Compensation through hunting associations or protected area managers Protection measures in place In practice rarely applied
Cross-border cooperation			Some projects (DINAL-PCONNECT, BEAR in MIND, Bear in Dinarides

Annex 4 Table 6: North Macedonia.

North Macedonia Topic	Bern convention review (COE) (Bear only) (2002) ⁶⁵	LCIE population review (2012) ⁶⁶	Interviewees carried out under this project (2021)
Population status	Bear: Stable, protected Wolf: estimate 600-800 / 1000-1100. 2 populations divided by a highway, not protected Lynx: around 30 balkan lynx (decreased from 120 1974). Highly threatened, strictly protected.	Bear: 160-200, stable Wolf: 267, stable Lynx: Balkan lynx 23 (SCALP), 39 individuals (official), strictly protected, decreasing	Bear: 333 – 381 individuals Wolf : in the range of 400 – 1100 individuals Balkan Lynx : around 32 mature individuals
Monitoring	Bear: Mortality data Wolf: no Lynx: no	Bear and wolf: no Lynx: intensive study in Mavrovo national park – baseline survey, camera trapping, radio-telemetry study. Some indications in other areas	Bear and wolf: camera traps are used to gather information Lynx: accurate estimates in Mavrovo national park (survey every 2-3 years)
Management plan and stakeholder engagement	Bear: Planned. No stakeholder engagement Lynx: no	Lynx: Balkan lynx recovery programme	No Balkan lynx in the Mavrovo National Park
Hunting	Bear: No Wolf: Yes, bounties exist	Lynx: prohibited	Bear: no Wolf: yes (no closed season) Lynx: no

⁶⁵ Convention on the Conservation of European Wildlife and Natura Habitats Standing Committee 22 Meeting (2002) Large Carnivore Action Plans for Dinara - Pindus range <https://cupdf.com/document/ap-dinara-pindus-range-lc-large-carnivore-action-plans-f-or-dinara-pindus.html>

⁶⁶ Petra Kaczensky, Guillaume Chapron, Manuela von Arx, Djuro Huber, Henrik Andrén, and John Linnell (Editors) (2012) Status, management and distribution of large carnivores – bear, lynx, wolf & wolverine – in Europe part 1: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part1_statusofcineurope.pdf and part 2: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part2_species_country_reports.pdf

North Macedonia Topic	Bern convention review (COE) (Bear only) (2002) ⁶⁵	LCIE population review (2012) ⁶⁶	Interviewees carried out under this project (2021)
Threats	Bear: Poaching, infrastructure Wolf: persecution, natural prey lacking Lynx: deforestation, isolation	Bear: Poaching, low acceptance, poor management structure Wolf: lack of public acceptance Lynx: small population size, poaching, depletion of prey base and degradation of Habitats	Bear: poaching, habitat fragmentation due to infrastructure, traps (for game species like deer) Wolf: poaching, unfavourable legislation, bounty for killed wolves – attracts foreign hunters Lynx: competition for prey and habitats (with feral dogs and hunters), small genetic pool – inbreeding, poaching, habitat loss – timber cutting outside of PAs
Conflicts	Bear: Impacts on agriculture. Problem bears removed by hunters and park managers Wolf: livestock (though sheep are generally guarded by dogs)	Lynx: Some cases of livestock depredation, low awareness.	Bear: beehives and livestock, no waste management adapted for bear presence which attracts bears Wolf: conflict with livestock breeders/owners Lynx: no conflict other than hunters complaining about competition for prey
Compensation scheme	Bear: No Wolf: insurance exists Lynx: No	Yes for protected species but poorly implemented.	Bear: yes, needs to be confirmed that a bear has caused the damage but prevention measures not compulsory Wolf and lynx: no
Cross-border cooperation	No	Yes, for Balkan lynx.	With Greece and Albania – Prespa project Balkan lynx

Annex 4 Table 7: Serbia.

Serbia Topic	Bern convention review (COE) (Bear only) (2002)⁶⁷ Here the figures for the Former Yugoslav Federation include information on Montenegro and Kosovo*	LCIE population review (2012)⁶⁸	Interviewees carried out under this project (2021)
Population status	Bear: Decreasing Wolf: stable and increasing (Serbia and Kosovo 700, Montenegro 200-300) Lynx: Balkan lynx (Kosovo) completely protected, 15-30 individuals	Bear: 68 (2 populations), strictly protected Lynx: 50+/-10, stable, strictly protected Wolf: 800 +/-50, stable or slight increase	Bear: ca. 100 (expert assessment) Wolf: ca. 800-900 (expert assessment) Lynx: 40-60
Monitoring	Bear: Uncoordinated Wolf: mortality measured Lynx: proposed, not in place	Bear: genetic sampling, estimates, extrapolations, a little GPS-GSM telemetry Wolf: no official estimates, expert opinion Lynx: no official estimates, expert opinion based on camera trapping	Bear: periodically through projects by the Faculty of Biology and the Natural History Museum Wolf: The Ministry of Agriculture keeps records of wolf monitoring. Monitoring is done by tissue analysis, genetic sampling, telemetric survey and photo traps at almost all hunting grounds and at feeding sites Lynx: periodically through projects by the Natural History Museum
Management plan and stakeholder engagement	Bear: No plan, attempts to involve stakeholders Wolf: agreement to do plan with groups	Bear: prepared but not legal status Lynx: prepared but no legal status	Prepared for bear and lynx but not adopted.
Hunting	Bear: Yes, with closed seasons	Bear: limited Wolf: game species with closed season for females Lynx: limited	Bear: no hunting Wolf: (except in Vojvodina) quota up to a maximum of 30% of the population. Season: 1 July – 31 March Lynx: no hunting

⁶⁷ Convention on the Conservation of European Wildlife and Natura Habitats Standing Committee 22 Meeting (2002) Large Carnivore Action Plans for Dinara - Pindus range <https://cupdf.com/document/ap-dinara-pindus-range-lc-large-carnivore-action-plans-f-or-dinara-pindus.html>

⁶⁸ Petra Kaczensky, Guillaume Chapron, Manuela von Arx, Djuro Huber, Henrik Andrén, and John Linnell (Editors) (2012) Status, management and distribution of large carnivores – bear, lynx, wolf & wolverine – in Europe part 1: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part1_statusofcineurope.pdf and part 2: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part2_species_country_reports.pdf

Serbia Topic	Bern convention review (COE) (Bear only) (2002)⁶⁷ Here the figures for the Former Yugoslav Federation include information on Montenegro and Kosovo*	LCIE population review (2012)⁶⁸	Interviewees carried out under this project (2021)
Threats	Bear: Deforestation Wolf: natural prey limited, persecution Lynx: inbreeding	Bear: Poor management structure, lack of knowledge, Illegal killing, habitat loss due to clear cutting Wolf: Lack of knowledge, poor management structure, persecution of weak population parts in protected areas Lynx: Persecution, lack of knowledge, poor management structure	Bear: habitat degradation, infrastructure, missing corridors, prey accessibility, poaching Wolf: habitat degradation, fragmentation, prey accessibility, hybridisation Lynx: genetic pool (Balkan lynx), data deficiency
Conflicts	Bear: Forestry and livestock. Feeding sites are in place. Problem bears are removed Wolf: livestock but not monitored	Bear: livestock depredation, beehives, orchards Wolf: livestock and game Lynx: no depredation	Bear: damages to bee hives and orchards, livestock depredation, historical fear Wolf: livestock depredation, game competition with hunters, historical fear Lynx: no damages registered
Compensation scheme	Bear: Not functioning Wolf: No Lynx: not needed	Bear: paid, documented losses 50-100% value Wolf: responsibility of hunters (game species)	Compensation exists as prescribed by Law on Nature Protection only for strictly protected species, requests are mainly for compensation of damage by bears.
Cross-border cooperation	Bear: Little Lynx: Little		Cooperation among researchers and experts. Projects: Monitoring of Dinara-Balkan wolf population

Annex 4 Table 8: Slovenia.

Slovenia Topic	Bern convention review (COE) (Bear only) (2002)⁶⁹	LCIE population review (2012)⁷⁰	Interviewees carried out under this project (2021)
Population status	Bear: Increasing in numbers and range Wolf: Expanding, legally protected 1993 Lynx: reintroduction. Population slowed after. 50 individuals (hunters estimate 100)	Bear: 440 (after cull, before births), strictly protected Wolf: 32-43 individuals, increasing, protected Lynx: 15-25 (2 populations), strictly protected	Bear: 700-900 increasing Wolf: 86-110 (excluding transborder individuals) in Slovenia forming 14 packs, decreasing till 90', then protected, increasing till now Lynx: 10-20 numbers decreasing, slowly increasing due to re-population The bear and wolf populations in Slovenia are in a favourable conservation status, while the lynx is again threatened with extinction.
Monitoring	Bear: Carried out Wolf: Yes Lynx: following SCALP criteria	Bear: high-intensity non-invasive genetics CMR study in 2007 Wolf: observations, tracks, faeces, damages, litter findings and reconstruction of past mortality. In 2010 genetic CMR method was used and wolf howling Lynx: carried out using SCALP methodology	Bear: genetic count/census/monitoring LIFE DINAL-PBEAR + population modelling; annual counting at feeding sites to monitor trend Wolf: annual genetic count, analyse size of population and genetic parentage analysis; howling annually Lynx: camera traps, genetic samples to detect inbreeding/parentage
Management plan and stakeholder engagement	Bear: Yes. Game committee includes stakeholders Wolf: Management group exists, plan underway Lynx: developing plan and coordinating with Croatia. Stakeholder involvement and information	Bear: management strategy exists Wolf: Wolf Conservation Strategy and proposed Action plan Lynx: plan being developed to formalise agreed goals	Management plans for all LC species exist but are being updated (new versions developed through LIFE projects not yet in place).
Hunting	Bear: Allowed Lynx: quote of 5 (unrealised)	Bear: annual cull on derogation Wolf: culls on derogation Lynx: no	Bear: protected but cull on derogation Wolf: protected but cull on derogation Lynx: no

⁶⁹ Convention on the Conservation of European Wildlife and Natura Habitats Standing Committee 22 Meeting (2002) Large Carnivore Action Plans for Dinara - Pindus range <https://cupdf.com/document/ap-dinara-pindus-range-lc-large-carnivore-action-plans-f-or-dinara-pindus.html>

⁷⁰ Petra Kaczensky, Guillaume Chapron, Manuela von Arx, Djuro Huber, Henrik Andrén, and John Linnell (Editors) (2012) Status, management and distribution of large carnivores – bear, lynx, wolf & wolverine – in Europe part 1: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part1_statusoflcineurope.pdf and part 2: https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/task_1_part2_species_country_reports.pdf

Slovenia Topic	Bern convention review (COE) (Bear only) (2002)⁶⁹	LCIE population review (2012)⁷⁰	Interviewees carried out under this project (2021)
Threats	Bear: Road building (green bridges are being put in place) Lynx: poaching	Bear: Human acceptance, habitat fragmentation, vehicle collisions Wolf: Low acceptance due to conflicts with livestock, Persecution (illegal killing), Lack of capacity in management structures Lynx: Small population, low genetic variability, lack of acceptance	Bear: acceptance of local communities, trophy hunting, feeding sites have an impact on a whole population, bears have more cubs and earlier Wolf: acceptance of livestock owners and hunters, poaching, fear of public, used for political debate/gains of support in local communities, potential decrease of public support for wolf conservation, traffic collision Lynx: small population, inbreeding, poaching and traffic collision
Conflicts	Bear: Waste management an issue. Some problem bears. Wolf: Increasing damages to livestock Lynx: little conflict	Bear: agriculture, problem bears in cities, bear emergency team established Wolf: conflict with livestock breeders Lynx: little conflict	Bear: Weekend houses/tourism; fear of bears; livestock damages / additional work connected to prevention measures; damage to beehives, crops, small livestock and orchards Wolf: livestock and sometimes pet depredation Lynx: predation of game, livestock damages (to lesser degree)
Compensation scheme	Bear: Yes (not yet linked to protection measures) Wolf: Yes, damage inspection in place	Bear and wolf: exists, protection measures theoretically needed but not checked	In place, prevention measures must be used to receive compensation.
Cross-border cooperation	Scientific research and monitoring carried out	Intensive exchange with Croatia Collaboration with Austria and Italy	Cooperation with Croatia, Italy and Austria