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# IMPLEMENTATION OF MANAGEMENT OPTIONS FOR THE CONSERVATION OF BROWN BEAR IN THE ALPS

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**LARGE CARNIVORES, WILD UNGULATES AND SOCIETY WORKING  
GROUP (WISO) of the Alpine Convention**

*Mandate 2021–2022*



ALPENKONVENTION  
CONVENTION ALPINE  
ALPSKA KONVENCIJA  
CONVENZIONE DELLE ALPI

This report is the result of the WISO mandate under Slovenian Presidency.

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## Introduction

In 2017, as part of the LIFE DINALP BEAR project (LIFE13 NAT/SI/000550), Guidelines for Common Management of Brown Bear in the Alpine and Northern Dinaric Region (hereinafter: Guidelines, 2017) were developed and confirmed at the meeting of WISO in the mandate 2017–2018 as a document of high quality and significance for joint further steps towards a harmonized

Alpine-wide brown bear management. These guidelines include ten management actions for brown bear management. These actions differ between the Alpine and Dinaric management units (hereinafter: MU). In this report, we focus mainly on the management action in the Alpine MU, because WISO represents the Alpine Convention area.

At the beginning of 2022, a questionnaire was sent to the contracting parties of the Alpine Convention. The purpose was to find out which of the ten management options were implemented by the official authorities of those contracting parties.

The questionnaire consisted of 51 questions, of which 21 were close-ended and offered the respondents different answers in advance. The other 30 questions were open-ended to gather in-depth answers from the respondents regarding certain topics. One representative from each contracting party (Austria, France, Germany, Italy, Switzerland, Liechtenstein and Slovenia) was included in the study (total respondents included: N=7).

Based on the collected answers (the [questionnaire](#)), the following document summarizes the approaches in brown bear management by the included member state.

## Results of the survey

### 1. National legalisation

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All involved countries, which are members of the European Union, are obligated to follow European laws and ratifications of international conventions. Brown bear in the EU is a strictly protected species and is governed by different authority sectors. In addition to this background, management of this large carnivore is set in strategic documents. These documents provide a good background for bear management but the need for more regional and concrete guidelines has been recognised.

In Alpine MU's main objectives, concerning national legislation is to secure a.) legal background for long-term conservation and b.) coexistence of brown bears and humans, to remove obstacles for interventions and enable fast response when needed.

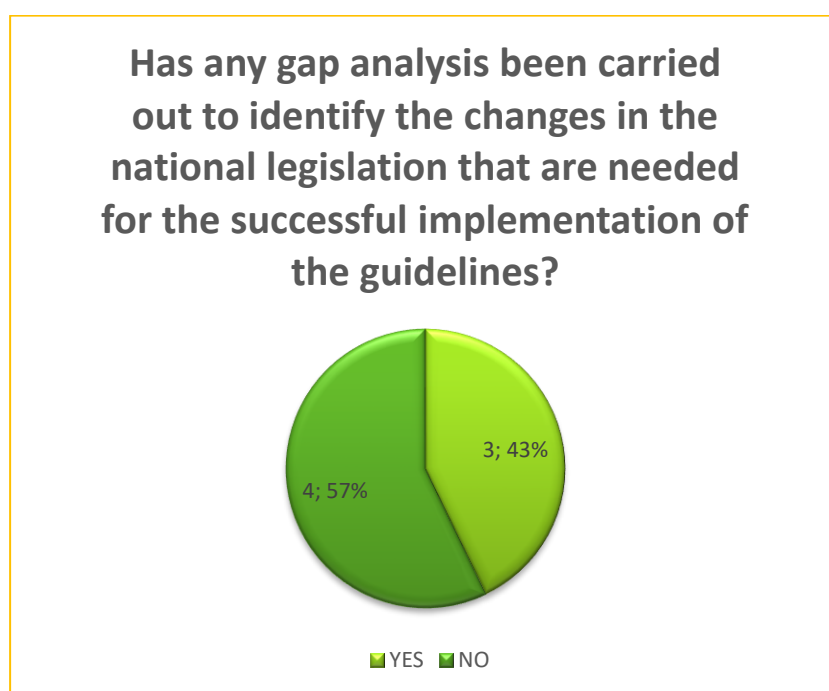


Figure 1; Answer to question 1.

Three of seven respondents answered affirmative to the question if there has been any gap analysis carried out. The other four respondents stated that until now, no such analysis has been conducted. More detailed answers are presented further.

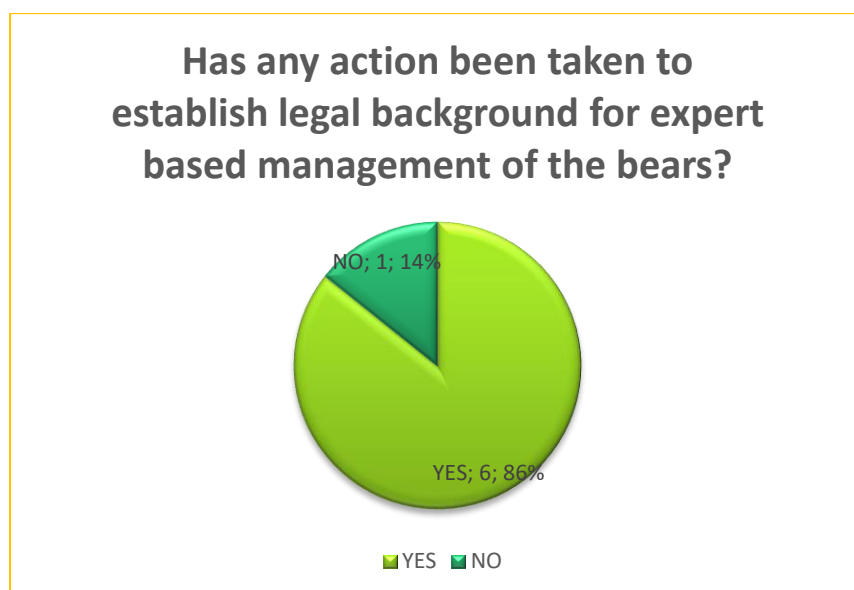


Figure 2; Answer to question 3.

The majority of the respondents (six out of seven) answered affirmative to the question if any action has been taken to establish a legal background for expert based management of the bears. More detailed answers are presented further.

Slovenia and Switzerland answered 'YES' to both questions.

Since the population of the brown bears in Switzerland consists mainly of male individuals, legal acts regarding the management of brown bears are gender-specific. In case of larger female presence in the future, the management scenarios would need to be revised and supplemented. Based on the Federal Council report from January 2021, the main identified problem is organic waste near settlements, which provide easily accessible food to bears. In the area, where conflict and damage occur, there is a possibility of additional optimization of the prevention practices.

In Slovenia, the National management strategy was prepared based on the Guidelines but not adopted by the Government. Legal background for livestock guarding dogs (LGD) was established. Bear management includes and enables the possibility of quick removal of conflict bears. Bear watching is regulated through the game management plans. As part of the LIFE Lynx project, police officers were further trained to effectively investigate and detect poaching cases.

Respondents from Liechtenstein, Italy, Austria and Germany stated that no gap analysis was carried out. Nevertheless, a legal background for expert based management of bears was established.

The national legislation of Liechtenstein includes basic management options (Table 1), which can be complemented in case of (frequent/regular) bear presence.

In Italy, the Autonomous Province of Trento has adopted management legal acts for brown bears based on Specific guidelines, according to which BIG (bear intervention group), the system of continuous education and training of damage inspectors has been established. New

regulation on damage prevention and damage compensation has been adopted, as well as EU state subsidy system.

In Germany, they are working on a bear intervention group and advising on protection measures.

Since no bear presence is currently recorded in the Alpine part of France, no activity has been carried out for this purpose. However, a National Action Plan has been adopted, which may be amended in regards to the possible presence of brown bears in Alps in the future.

In Austria, the management plan is drawn up as a set of recommendations. It is not used as a strategic document. State authorities decide when and which management issues need to be addressed. An operating system of damage inspectors has been established and is administered by each federal state. The hunting laws of Tirol (§ 52a) and Lower Austria (§ 100a) have been adopted to enable state administration to act in a case of conflict and bear presence on specific hunting grounds. Currently, there is no need for special programs dealing with prevention measures. The legal system for the implementation of measures is regulated. Persecution of poaching is the duty of the Federal and State Department for Environmental Crime Investigation.

	NATIONAL LEGISLATION
LI, IT, CH, FR	1. Ensure continuation and implementation of accepted strategic documents.
LI, IT, DE, CH, AU, FR	2. Ensure legal backgrounds for work of Bear intervention groups (BIG) and damage inspectors in the whole area.
LI, IT, DE, CH, SL, AU, FR	3. Ensure legal backgrounds for the protection of livestock and other human property.
IT	4. Ensure legal backgrounds for proper "bear proof" waste management.
LI, IT, CH, SL	5. Enable quick removal of conflict individuals.
CH, SL	6. Ensure legal background for bear watching in national/regional legislation.
LI, SL, AU, FR	7. Ensure proper legal backgrounds for an efficient response of police in poaching cases.

Table 1; Implemented activities in countries.



## 2. Population monitoring and research

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The objective of the population monitoring is to have sound data, to evaluate bear population status and dynamics overall the MUs, as well as a detailed record of all bear mortality and certain types of bear-human interactions. Monitoring also needs to have a temporal component, so that not only abundance but also population dynamics is regularly documented.

There are two different types of monitoring data, that ensure comprehensive, holistic monitoring:

- (1) Data on population status that includes all parameters required to assess population status at the population level (mortality, abundance and population expansion/connectivity, genetic status, health).
- (2) Data on human-bear interactions, since bears in this area live in a densely populated landscape with high anthropogenic influence, which makes humans the most influencing factor to bear conservation in this areas. Understanding human attitudes towards bears and the drivers shaping these are of foremost importance for human-bear coexistence, and ultimately for bear conservation (human-caused mortality, interventions by Bear Intervention Groups (BIG), damages done by bears, human attitudes towards bears).



Photo 3; Bear with the telemetry collar (Photo: Andrej Rot).

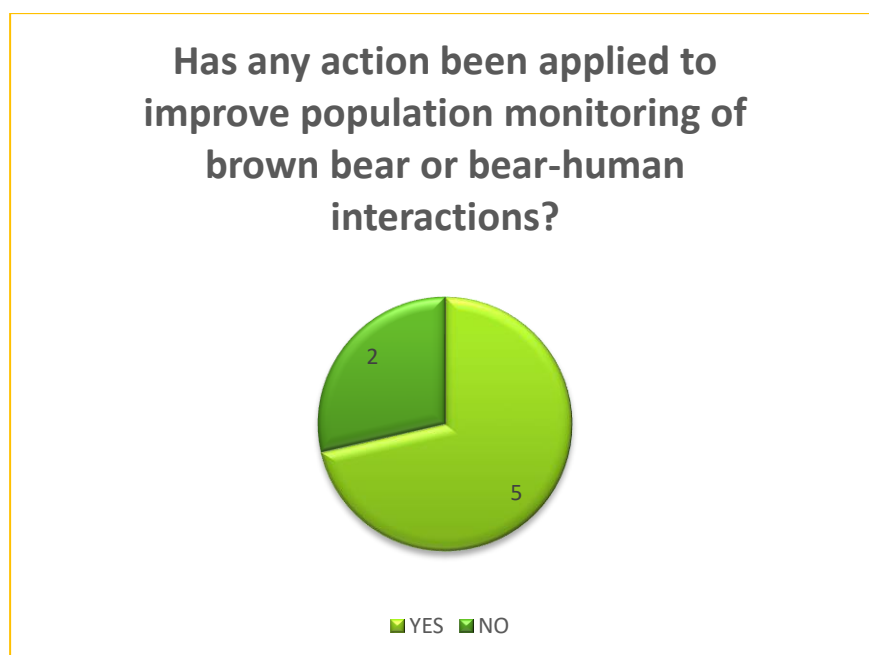


Figure 4; Answer to question 8.

Five out of seven respondents answered affirmative to the question on population monitoring. More detailed answers are presented further.

No action was applied in Liechtenstein and Germany.

The main reason for this is that there are no bears in Liechtenstein and France Alps, but France gathers data of the bear population in the Pyrenees. The same is true for Germany, where there are small bear numbers and therefore no political support.

In Italy, monitoring is carried out on a yearly base with intensive monitoring every second year. A sampling of non-invasive genetic material, monitoring of changes in distribution and monitoring of bear genetic status is regularly carried out. Regular specific autopsies are performed and a database has been set up in Trentino. A yearly report (mainly on monitoring) is published, discussed and communicated to the public through social channels ([grandicarnivori.provincia.tn.it](http://grandicarnivori.provincia.tn.it)).

In Slovenia, the next genetic monitoring (population size estimation, effective population size) is planned for 2023 (Dinaric MU every 8 years, Alps every 4 years). Distribution is monitored via questionnaires for hunters. Bear mortality and human-bear interactions are systematically monitored on regular basis.

Switzerland, has established national monitoring. There is regular communication and cooperation with neighbouring countries and communication to increase the acceptance of bears.

In Austria, non-invasive genetic samples are analysed to determine the sex, origin, distances travelled and length of stay of individual bears. Nation-wide collection of all reported bear signs is conducted by Österreichzentrum Bär Wolf Luchs. There are few mortality cases, but each case is carefully reviewed and analyzed by a wildlife veterinarian.

	POPULATION MONITORING
IT, SL, FR	1. Monitoring of abundance, sex and age structure in regular intervals where reproduction occurs (at least once per generation time – every 5 years).
IT, CH, AU, FR	2. Sampling of non-invasive genetic material that monitors (1) survival of individual bears, (2) origin of individual bears and dispersal distances, and (3) parentage analyses.
IT, CH, SL, AU, FR	3. Monitoring of changes in distribution.
IT, CH, SL, FR	4. Monitoring of bear genetic status.
IT, CH, SL, AU	5. Routine examination of all detected bear mortality not caused by severe trauma by a qualified wildlife veterinarian. Regular examinations of a sample of other bear mortality for specific pathogens.
IT, CH, SL, AU, FR	6. Monitoring of bear-human interactions.
SL	7. Standardized (across MU) structured questionnaire with questions about attitudes toward bears and bear management applied to a representative sample of the general public and the most important stakeholder groups.
IT	8. Organization of a regular population-level forum where monitoring activities are coordinated and discussed.

Table 2; Implemented activities in countries.

### 3. Research recommendations

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An important issue from the perspective of population-level management and conservation is to identify research priorities, and state research recommendations for the Alpine MU and the population as a whole. This would provide a foundation for applied researchers to prepare project applications for appropriate funding instruments, and a basis for the relevant management authorities in each MU to plan for and provide funding or (co)funding instruments.

The chapter covers the definition of research activities that contracting parties of the Alpine Convention consider necessary for bear management and conservation. Summarized answers from open-ended questions below.

In Liechtenstein, International collaboration was pointed out.

In Italy, the emphasis is on research into the factors that lead to problematic bear behavior.

In Germany, genetic analysis was planned in the Alps to compare individuals and their origins.

In Switzerland, national monitoring, communication, collaboration with neighbouring countries and communication with the purpose to increase acceptance is established.

In France, as there is no bear presence, there are no concerns regarding bear research activities required for bear management and conservation.

In Slovenia, optimization of monitoring and reducing its costs is planned. Activities are focused on finding new approaches/improvements of measures used to maintain positive attitudes towards bears and coexistence (damage prevention, prevention of approaching settlements) and finding out what the influence of bear presence on populations of wild ungulates (via e.g. predation of calves).

Due to the low number of bears in Austria, no in-depth applied research activities that go beyond regular monitoring of the occurrence and activities related to human-bear interactions are carried out.

#### 4. Stakeholder dialogue and involvement

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The main objectives of this chapter are as follows: to ensure stakeholders' commitment to long-term recovery and conservation of the brown bear population in coexistence with humans, to improve collaboration, dialogue, relationships, and trust amongst relevant stakeholder groups by integrating them into the process of planning and to integrate relevant stakeholders into the implementation of actions.

A stakeholder is a person, group or organization that has an interest or concern in bear management. Stakeholders can influence or are influenced by bear management decisions, objectives and policies. In brown bear management, a combination of all types of stakeholder involvement, wisely selected for the local context and management objectives, should be used. Concerns and identification of key stakeholder groups such as hunters, farmers, local communities and environmentalists provide regular input to the planning and implementation of the coordinated population-level management.

Not all stakeholders' influence is of the same importance. The urban public, for example, is entitled to fair consideration as a constituency for which bear populations are also managed, but they are not entitled to the same level of consideration as, say, the local (rural) public living within bear range who face the daily challenges and opportunities of coexisting with bears. Stakeholders may also differ depending on their country of origin. In brown bear management, a combination of all types of stakeholder involvement should be wisely selected- according to the local context and management objectives. When planning communication, it is important to carefully take into account stakeholders' characteristics, their expectations and even stakeholders' network dynamics.



Figure 5; Answer to question 14.

Five of seven respondents answered affirmative to the question on improving stakeholder dialogue and involvement. More detailed answers are presented further.

In Lichtenstein and Germany, no action was taken to improve stakeholder dialogue and involvement, mainly because of no bear presence and therefore no political priority.

In France, in the Pyrenees, regular forums to exchange experience and ideas among stakeholders are organised more often than every 3 years, active involvement in planning and implementation of management at the national level and involvement of the stakeholders in population monitoring.

In Italy, the main stakeholders are involved at least twice a year in regular meetings.

In Switzerland, cantons are involved in monitoring and implementing measures. Several meetings per year take place between the cantons and the Confederation to discuss the management of large carnivores.

In Slovenia, all stakeholders are involved in the preparation of national strategic documents. Agricultural organisations are regularly involved in projects focusing on damage prevention, hunters are systematically involved in monitoring activities.

In Austria, the Österreichszentrum Bär Wolf Luchs was established in 2019. The aim of this association of the administrations of the nine states and two national Ministries (agriculture, environment) is to further develop the management of large carnivores in Austria. Stakeholder organizations and University institutes take part in the discussions as additional members at general meetings twice a year and in specific working groups. Within the LIFE DINALP BEAR project, they conducted systematic bear monitoring was performed in southern Carinthia involving local hunters between 2017 and 2019. In 2020, the Österreichszentrum Bär Wolf Luchs and the Carinthian administration assisted by local hunters intensified the monitoring in an area of alpine pastures to determine whether more than one bear was causing problems.

STAKEHOLDER DIALOGUE AND INVOLVEMENT	
IT, AU, FR	1. Organization of regular (every 3 years) population-level stakeholder forums for the exchange of experience and ideas among stakeholders.
IT, CH, SL, AU	2. Yearly consultations with the key stakeholder organizations at the MU level.
AU	3. Authorities delegate representatives to coordinate work with stakeholders planned under (3.1.) and (3.2.).
CH, SL, AU, FR	4. Active involvement of the stakeholders in planning and implementation of the management at the national level.
IT, CH, SL, AU, FR	5. Active involvement of the stakeholders in population monitoring.

Table 3; Implemented activities in countries

## 5. Conflict management

Conflict management is one of the most important aspects of brown bear conservation and management. The presence of brown bears in the human-dominated landscape often leads to conflicts between humans and bears that decrease human acceptance of bears, low human acceptance of bears is considered one of the main threats to bears worldwide. Conflicts usually arise due to the damages that bears can cause to human property. Bears very rarely attack people, but this still happens and not just “problematic bears” are involved. Such events can cause fear among some people and the public in Alpine MU seems to be more sensitive to such issues, because of the lost tradition of coexistence with bears.

Bears are opportunistic omnivores and therefore can be easily attracted to anthropogenic food sources that often trigger food-conditioned behaviour. With proper protection of human property, it is possible to reduce the occurrence of conflict bears. There are several measures for preventing bears’ access to anthropogenic food sources, the most important being:

Prevention of bear’s access to human waste; bear-proof waste management, use of bear-resistant garbage cans and compost bins, ban of organic waste dumps (slaughter dumps accessible to bears) and also protection of crops and domestic animals, beehives with the use of electric fences, night enclosures, shepherds and livestock guarding dogs.

Damages caused by bears sometimes occur despite proper protection of human property. For such cases, a damage compensation system has to be established (regional or state authorities can pay damages).

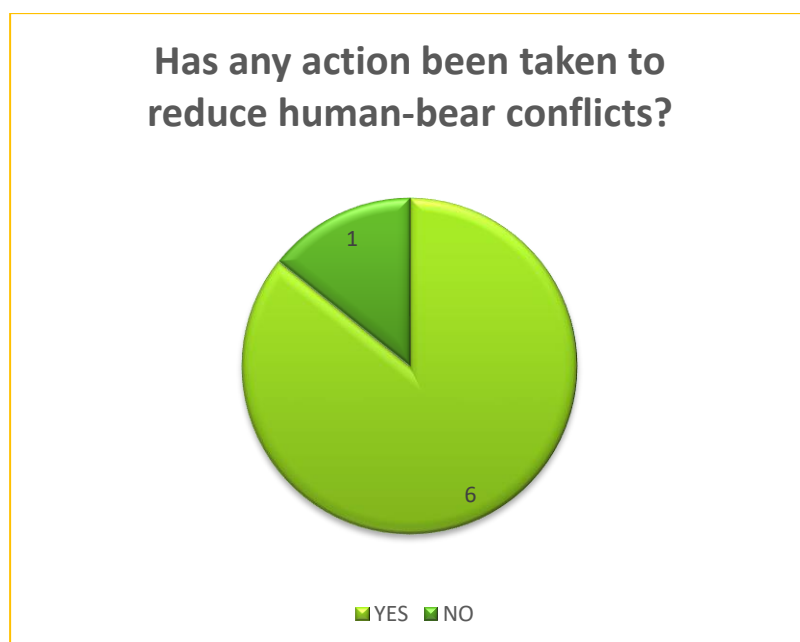


Figure 6; Answer to question 19.

Six of seven respondents answered affirmative to the question concerning reducing human-bear conflicts. More detailed answers are presented further.

In Lichtenstein, no action was applied to reduce human-bear conflict, due to the absence of bears.

In France, there are several options to consider in bear management (from the Pyrenees) to reduce conflicts, although their target species in French Alps is not bear, but wolf. It can be applied in case a bear appears.

In Italy, all of the listed options (Table 4) were taken into account, but it was still not enough to reduce conflicts at a satisfactory level.

In Switzerland, in 2008 and 2013, two conflict bears had to be shot because they lost their natural timidity and often visited inhabited villages. Some rare attacks on sheep and donkeys have occurred in recent years.

In Germany, advice is given to livestock keepers on prevention methods, such measures are paid for from public funds. Also, damages caused by bears, are compensated with public funds.

In Slovenia, all listed options (Table 4) are implemented in the public system (public service). Nevertheless, there are still some improvements that can be made.

In Austria, the information not to feed bears and how to behave if encountering a bear is spread on several websites (state administration and other organizations). Some beekeepers use electric fences to protect beehives. In addition, bear damages are compensated by state administrations.



	CONFLICT MANAGEMENT
IT, SL, AU	1. Active promotion of good practices and education for preventing bears from accessing anthropogenic food sources.
IT, SL, AU, FR	2. Active promotion of good practices to reduce the risk of attacks.
IT, CH, SL, FR, AU, FR	3. Applying damage prevention measures (LGDs, electric nets, bear-resistant compost/garbage bins etc.).
IT, DE, CH, SL, FR, AU, FR	4. Damage compensation for damages caused by bears despite reasonable use of protection measures.
IT, DE, CH, SL	5. Removal of bears.

Table 4; Implemented activities in countries.



Photo 7; Bear accesses the anthropogenic food source (Photo: Bojana Lavrič).



## 6. Removal of individuals

Removal of bears from the population is always done under strict conditions because they are a protected species. However, in some situations removal of bears is the only reasonable management decision to improve human safety and acceptance of bears among local people.

Bears, which are recommended for removal from the population in any situation, are those that represent a serious threat to people or property or other particularly problematic bears. If no action is taken immediately, these bears can cause a rapid drop in human acceptance of bears (locally or on a wider scale), therefore jeopardising the efforts for human-bear coexistence and long term conservation of the bear population.

Normally specially trained Bear Intervention Groups (BIGs) are responsible for the removal of dangerous and other problematic bears; the help of local hunters can also be used.



Figure 8; Answer to question 24.

Three out of seven respondents answered affirmative to the question on removing potentially dangerous bears and particularly problematic bears. More detailed answers are presented further.

In Italy, there were five bears removed between 2006 and 2020. Competent local authorities removed the bears.

In Switzerland, a bear was shot in 2008 and another one in 2013. Those two bears were systematically searching for food in the vicinity of the houses. The canton, in the agreement with the Confederation, authorized the shooting of the animal.

In Slovenia, in the year 2021, 128 bears were culled and 20 additional cases of bear mortality (mostly traffic collisions) were registered. The removal of the bears was carried out by hunters.

In Austria, there were no removals recently. In 1994, a problematic bear causing damage close to settlements was removed by order of a district commissioner in Upper Austria. More recently, no bear acted in a way posing a threat to people. Other requests to remove bears killing unprotected sheep were not approved by the relevant authorities.

## 7. Functional connectivity and habitat quality including food availability

The main objectives of this management action are to preserve bear habitat quality and its functional connectivity and to improve habitat connectivity where needed. Maintenance or preservation of the corridors implemented in the strategic document are expected to result in this chapter.

In the Alpine MU, the habitat connectivity needs to be improved in the Inn valley and the Adige valley. Both valleys are wide and the valley bottoms are more or less without forest cover and are used for settlements and agriculture. Additionally, highways and railways follow these valleys.

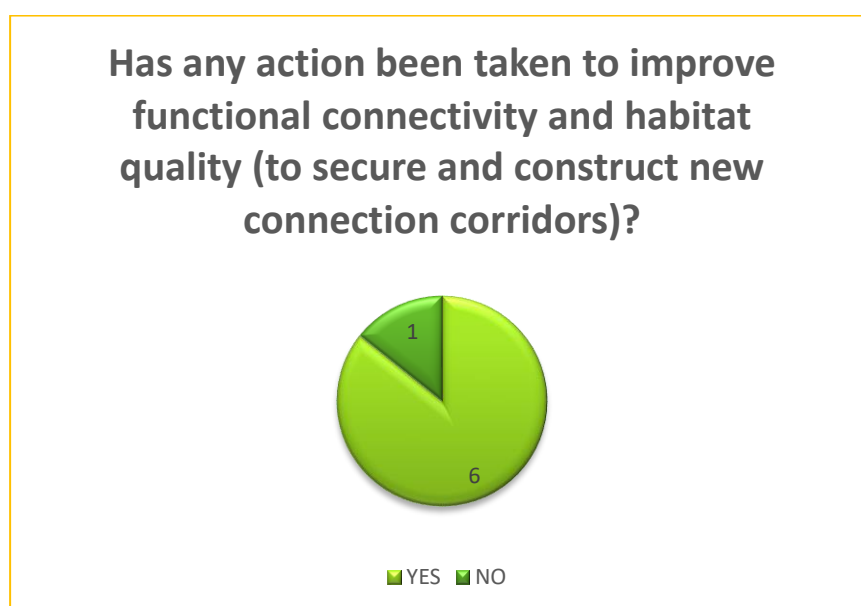


Figure 9: Answer to question 28.

Six of seven respondents answered affirmative to the question concerning improving functional connectivity and habitat quality. More detailed answers are presented further.

In Germany, no action was taken due to the absence of bears, and the consequent political insignificance of the matter.

In Lichtenstein, they are working on general habitat connectivity (Rhine valley connection corridors); Because of its current absence, the brown bear is not the focus of these actions.

In Switzerland, an inventory of wildlife corridors has been established. A program to safeguard and establish functionality is in place, including planning to build bridges across the national highways and railroads where necessary.

In Slovenia, workshops for spatial planners were conducted, the most important corridors were determined and implemented into wildlife management plans, and the process of preparing a state spatial plan focused on building the ecoduct crossing the Ljubljana-Koper highway has started.

In Italy, specific signs have been placed in spots where car accidents with bears have occurred in the past.

In France, some general improvements in connectivity have been made, but their target species was lynx, not bear. Nevertheless, the improvements can be applied also to bear.

In Austria, in 2006, the Ministry of Transport issued an instruction to the ASFINAG (Motorway and Expressway Financing Joint-Stock Company) to upgrade the existing network of motorways and expressways with wildlife crossings (over-or underpasses) at 20 important linkage zones until 2027. Three sites have been selected in the Inn valley (Telfs, Stans, Kundl). The construction of the green bridges in the Inn valley is still pending. Within the LIFE project, "Schütt-Dobratch" a green bridge was constructed on motorway A2 between Villach and Arnoldstein. ([http://www.schuett.at/life/massnahmen\\_gruenbruecke.php](http://www.schuett.at/life/massnahmen_gruenbruecke.php)).

	FUNCTIONAL CONNECTIVITY AND HABITAT QUALITY INCLUDING FOOD AVAILABILITY
SL	1. Integration of awareness about bear habitat and its connectivity into spatial planning processes (education, workshops, guidebooks, etc.)
SL	2. Conservation of the appropriate bear habitats and corridors connecting habitat patches.
AU	3. Determination of the most suitable micro-locations and type of mitigation measures to implement for the reduction of the barrier effect in Inn valley and Adige valley.
LI, CH, FR, AU	4. Construction of the mitigation measures (green bridges, reforested corridors etc.)
	5. Evaluation of the effectiveness of the mitigation measures.
LI	Other: General connectivity (Rhine valley).
IT	Other: Specific road signs in some high rate of bear crossing spots.

Table 5; Implemented activities in countries.

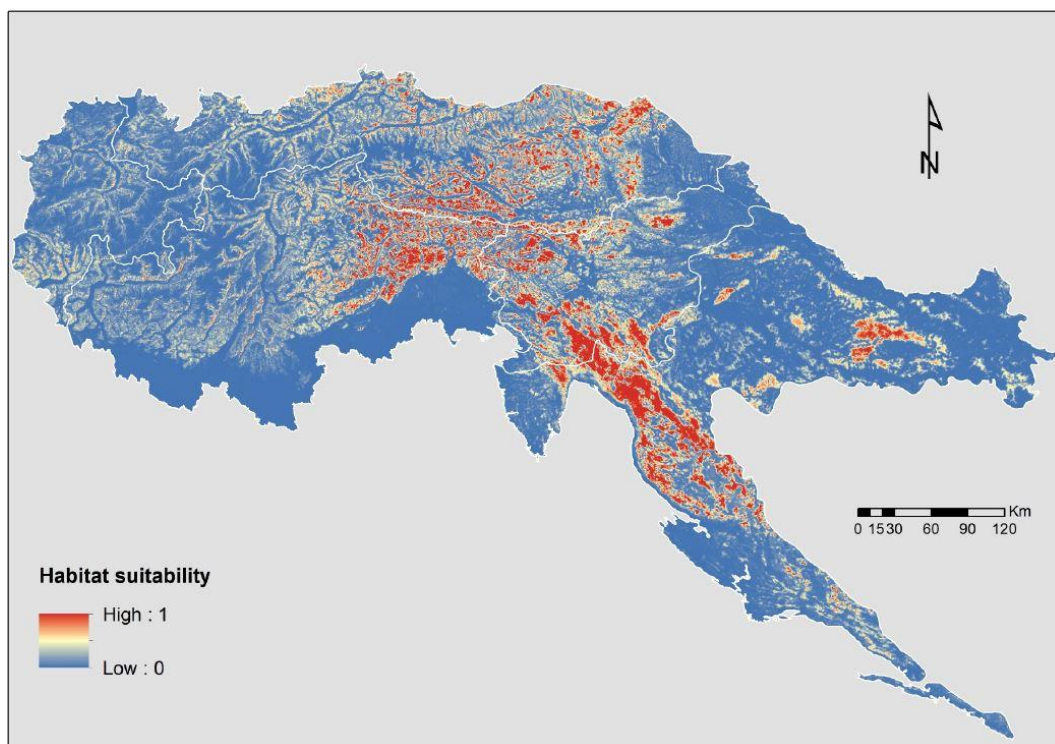


Photo 10; Functional connectivity and habitat quality (Recio et al. 2021).



Photo 11; Traffic mortality (Photo: Marko Masterl).

## 8. Governance and cross-sectorial coordination

The main objectives of this chapter are to establish or continue the sound collaboration between different national and regional sectors within each country and to continue the dialogue at the international level to ensure the long-term recovery and sustainability of the brown bear population. In addition, the plan is to improve cross-sectorial dialogue, trust and particularly coordination regarding the making and implementation of relevant managing decisions.

The optimal expected result is that relevant interest groups are involved in bear management and relevant sectors in decision-making and managing collaboration in well-coordinated population-level management.

The establishment and implementation of sound management plans require an active involvement of different stakeholders at different levels: local, regional, national and international. The developed recommendations need to be incorporated by responsible authorities into national Management and Action plans and regional decision making to meet the goals of different MU and brown bear populations per se.



Figure 12; Answer to question 32.

Six of seven respondents answered affirmative to the question concerning improving governance and cross-sectorial coordination. More detailed answers are presented further.

In Germany, due to the absence of brown bear, no actions were applied to improve governance and cross-sectorial coordination, and therefore political support is missing.

Liechtenstein takes part in regular meetings with the adjacent Swiss cantons concerning large carnivore management in the larger region as well as the Bundesamt für Umwelt BAFU. They are in contact with the Bundesland Vorarlberg concerning the situation of large carnivores.

In Italy, regular meetings at both national and international levels are held, despite severe limitations due to Covid-19.

In Switzerland, coordinated management between the sectors of conservation, hunting, forestry, agriculture and tourism for all large carnivore species is established

Slovenia is actively involved in the WISO working group, cooperation between wildlife management- environmental- and agriculture sectors.

In France the, regular cross-sectorial meetings are organised to exchange experiences and discuss challenges on a regional or national level. Challenges at the international level are discussed through the WISO working group of the Alpine Convention.

In Austria, the Österreichzentrum Bär Wolf Luchs was established in 2019. The purpose of this association, as the administration of the nine states and two national Ministries (agriculture, environment), is to develop the management of large carnivores in Austria. Stakeholder organizations and University institutes take part in the discussions as additional members at general meetings twice a year and in specific working groups.

	GOVERNANCE AND CROSS – SECTORIAL COORDINATION
CH	Identify a list of all relevant sectors.
LI, IT, CH, AU, FR	Organization of regular cross-sectorial meetings/workshops to exchange experiences and discuss challenges at the regional and/or nation level (at least once per year).
	Each sector delegates a person to coordinate work with other sectors planned under 7.2.
LI, CH, SL, FR	Organization of regular meetings/workshops with national management authorities at least once per year to exchange experiences. Discuss challenges at the international level (e.g. through the WISO working group of the Alpine Convention).
LI, IT, CH	Each MU/country delegates a person to coordinate work with other Mus/countries planned under 7.3.
CH	Active involvement of all responsible sectors in planning and implementation of relevant managing decisions.

Table 6; Implemented activities in countries.

## 9. Artificial feeding



Artificial feeding of wildlife is a controversial measure, practised in many areas worldwide. It serves different purposes and is an expensive measure with complex social background and many possible direct and indirect effects on target and non-target species.



Photo 13; Artificial feeding (Photo: Miha Krofel).

The topic was intensively studied in the Dinaric part of the project area (LIFE DINALP BEAR, [2018](#)).

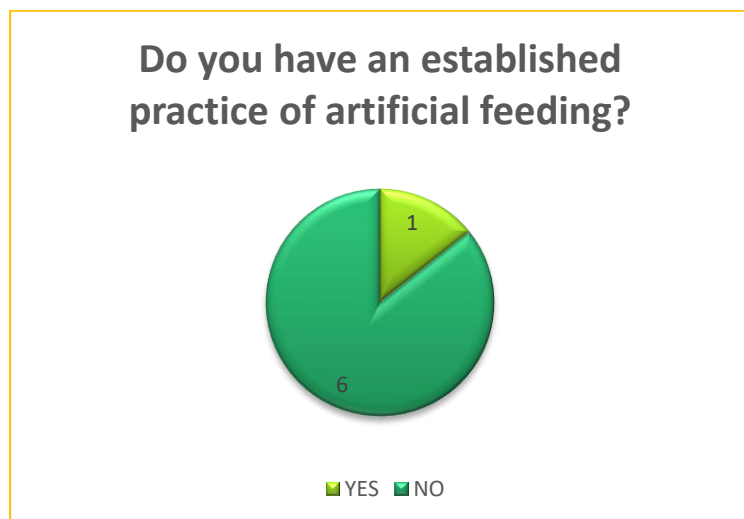


Figure 14; Answer to question 37.

One in seven respondents answered affirmative to the question concerning the established practice of artificial feeding. More detailed answers are presented further.

Slovenia has established the practice of artificial feeding that is in line with the wildlife management plans. There is a lot of space to improve the regulations in practice. No other

country has/is currently considering implementing the practice of artificial feeding, mainly because of:

- There are not any bears in the French Alps.
- In Germany, it is not a political priority due to no bears.
- Italy does not want artificial feeding; it is not necessary and may have a negative effect.
- In Liechtenstein currently there are no practices of feeding large carnivores artificially, also the artificial feeding of ungulates is forbidden (with very few exceptions in times of need or luring/baiting in hunting).
- In Switzerland, artificial feeding of wildlife is under the control of the cantonal authorities. For large carnivores, it is forbidden.
- In Austria there is no need and no practice to feed bears artificially but sometimes bears are attracted to cereals provided by hunters at roe deer feeding sites.

## 10. Poaching control

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The illegal killing of bears and other large carnivores is widespread across Europe. In some bear populations, poaching may be a threat to the population – either in small and endangered ones or in ones without regulated and implemented management. Police investigations rarely dedicate significant resources to detecting poaching and very few cases are successfully prosecuted. Killing can be caused by shooting (where large carnivores are directly targeted) and poisoning or trapping/snaring (where large carnivores may not always be the primary target).

Motivation for illegal killing in Europe seems to be linked to low tolerance and social protest rather than economic gain. Moreover, our common goal is to raise consciousness that the illegal killing of large carnivores is a serious crime and that society expects its laws to be upheld, such that political disagreements about large carnivore management and conservation are conducted through legal channels.



Figure 15; Answer to question 46.



Four of seven respondents answered affirmative to the question concerning improving poaching control, other members have already established practice. More detailed answers are presented further.

## POACHING CONTROL

	1. Perform the survey (questionnaire) on the stakeholders' opinion on the bear poaching issue: motivations, extends, ways to achieve a positive attitude and control poaching.
	2. Survey the relevant legislation in each country.
SL	3. Organize the initial and then regular (every 3 years) workshops with key stakeholder organizations.
AU, FR	4. Organize the information campaign and training for the authorities: for customs and border officials on CITES and other document use, for hunting inspectors and police ways to detect and report poaching, or for courts to enforce the regulations.

Table 7; Implemented activities in countries

In Lichtenstein, general poaching control is established.

In Slovenia, several activities are focusing on improving law enforcement and prosecution of illegal killings.

In addition, Italy has already established control that is working in Trentino.

In Switzerland, a system of supervision of wildlife by a professional wildlife warden is already in place.

In Germany, due to no bear presence there is no political interest to do such activity.

In France, there is no bear presence in the Alpine part of the country, but they have an established group for poaching control for other large carnivores, so it can be applied to brown bear if it appears.

Within Action A.3 of the LIFE WOLFALPS EU, project workshops are planned for the transfer of best practices of anti-poaching activities from the Italian Alps to Austria (and Slovenia). Over the period from 2007 to 2017 information about the situation of large carnivores in Austria was regularly presented in the training program for local police officers responsible for the investigation of environmental crime case in Niederösterreich, Steiermark and Salzburg.

## Conclusion

When we compare different Alpine countries regarding bear management in general, it is hard to understand the different state of the population of brown bears and compare it. The starting point of every state is different and our goal is to share experiences, build international collaboration and therefore manage the bear population and conserve the suitable habitat for the Alpine bear population.

Slovenia, Austria and Switzerland have prepared some national management strategies. Austria has a management plan, but not in form of a strategic document, but as a compilation of recommendations. In Slovenia, there are several activities and some waiting for adoption from the government. In Switzerland, they have sufficient legal bases for the management of male brown bears, but if a female comes, the law would have to be revised. In Liechtenstein, Italy and Germany, they established the legal background for expert based management of bears. In France, a national action plan is set, but their main concern is wolf and not bear, but it can be adapted for bears, if needed.

In the Alpine region, we should keep track of the re-colonization process and focus on how it is perceived by the local residents. A major obstacle to bear conservation in this area are negative attitudes of the general public and critical stakeholder groups that can hinder or even prevent bear population expansion. This makes monitoring of human attitudes towards bears possibly the most important monitoring activity in this area.

There was no population monitoring in Lichtenstein, France and Germany. Slovenia and Italy have monitoring carried out yearly. In Italy, yearly reports (mainly on monitoring) are published, discussed and communicated to the public ([grandicarnivori.provincia.tn.it](http://grandicarnivori.provincia.tn.it)). In Slovenia, bear mortality and human-bear interaction are systematically monitored. In Austria, non-invasive genetic samples are analysed to determine the sex, origin, distances travelled and length of stay of individual bears. In addition, nationwide monitoring of all reported bear signs (Österreichzentrum Bär Wolf Luchs) was summed. The international data is shared through the joint online database in Italy, Slovenia and Austria, established within the LIFE DINALP BEAR project in 2016.

In the chapter Research recommendations, we wanted contracting parties to define research activities that are considered necessary for bear management and conservation. In Liechtenstein and Switzerland, International collaboration and communication to increase acceptance were necessary. For Italy, research on factors that develop problem behaviours in bears was pointed out. Germany has planned research in genetics for comparing individuals and origin. In Slovenia, optimization of monitoring and reducing its costs, and finding new approaches of measures are used to maintain positive attitudes towards bears and coexistence. Some research has been conducted about the influence of bear presence on populations of wild ungulates. The low number of bears in Austria does not allow for profound applied research activities extending beyond the regular monitoring of occurrence, and human-bear interaction. There is a similar situation as in France, not the main priority because of the low number of bears in the country.

Concerns and identification of key stakeholder groups such as hunters, farmers, local communities, foresters and environmentalists provide regular input to the planning and implementation of the coordinated population-level management. Italy, Switzerland, Slovenia and Austria have yearly consultations with the key stakeholder organizations at the MU level, active involvement of stakeholders in planning and implementation of the management at the national level, and collaboration in population monitoring. In Germany and Lichtenstein, there is no bear presence; therefore, there is no interest to include stakeholders' groups. In France in the Alpine part, the situation is similar as in Germany and Lichtenstein. But in the Pyrenees, they have regular forums to exchange experience and ideas among stakeholders, organised more often than every 3 years, and active involvement in planning and implementation of management at the national level, involvement of the stakeholders in population monitoring. These experiences could be easily applied in case a bear appears in the Alpine part.

The best way to deal with human-bear conflicts is to prevent the occurrence of so-called "problematic" bears, which are food-conditioned and/or human-habituated. Usually, a small percentage of bears in the population turn into problematic, but they cause the majority of all human-bear conflicts. In that case, the removal of the individual is urgent for bear conservation and human tolerance for species.

In the chapter on conflicts, we found out that countries with high bear density have regular conflict prevention methods and others have different priorities. For example, in France, there are prevention methods well developed concerning wolves as a target species. In addition, in case that bear numbers go up, then countries can apply prevention methods to manage problematic bears as well.

It is essential to preserve bear habitat quality and its functional connectivity, with improved habitat connectivity in the Inn valley and the Adige valley. Both valleys are wide and the valley bottoms are more or less without forest cover and are used for settlements and agriculture. Additionally, highways and railways follow these valleys as a barrier.

In Germany, no measures to improve habitat were taken due to the absence of bears, and the consequent political insignificance of the matter. In France and Liechtenstein, work on general habitat connectivity is carried out, and although their target species was not bear, the measures can still be used. In Switzerland, an inventory of wildlife corridors has been established. A program to safeguard and establish functionality is in place, including planning to build bridges across the national highways and railroads where necessary. In Slovenia, workshops for spatial planners were conducted, the most important corridors were determined and implemented into wildlife management plans, and the process of preparing a state spatial plan focused on building the ecoduct crossing the Ljubljana-Koper highway has started. In Italy, specific signs have been placed in spots where car accidents with bears have occurred in the past. In Austria, in 2006, the Ministry of Transport issued an instruction to the ASFINAG (Motorway and Expressway Financing Joint-Stock Company) to upgrade the existing network of motorways and expressways with wildlife crossings (over- or underpasses) at 20 important linkage zones until 2027.

Cross-sectorial coordination, as well as coordination among different governance levels, is of utmost importance in bear management. Countries achieve the coordination with the

organization of regular cross-sectoral meetings/workshops to exchange experiences and discuss challenges on regional levels and/or national levels, or with the organization of regular meetings/workshops with national management authorities at least once per year to exchange experiences and discuss challenges at international level (e.g. through the WISO working group of the Alpine Convention). All contracting parties have some sort of cross-sectorial coordination and collaboration established, especially the one with a population of brown bears in the Alpine region.

The responses in the artificial feeding chapter all agreed (except Slovenia) that feeding wild animals is neither necessary nor in the plan for future implementations. In Slovenia, artificial feeding was intensely studied in the Dinarides (LIFE DINALP BEAR).

As far as poaching is concerned, it is clear that all countries have some sort of general poaching control already established. It may not be specific to the species of brown bear, but it can be adjusted just according to the situation when needed.

## ANNEX

	NATIONAL LEGISLATION	LIECHTENSTEIN	FRANCE	ITALY	GERMANY	SWITZERLAND	SLOVENIA	AUSTRIA
1	Has any gap analysis been carried out to identify the changes in the national legislation that are needed for the successful implementation of the guidelines?	NO	YES	NO	NO	YES	YES	NO
2	If yes, please provide further details	Naturschutzgesetz	X	X	X	An analysis report by the Federal Council (Jan. 2021)	A national management strategy was prepared based on the guidelines. The Ministry of the Environment is leading the adoption process.	X
3	Has any action been taken to establish the legal background for expert based management of the bears?	YES	NO	YES	YES	YES	YES	YES
4	Has any option listed below been taken to follow objectives?	1,2,3,5,7	1,2,3,7	1,2,3,4,5	2,3	1,2,3,5,6	3,5,6,7	1,2,3,7
5	Please provide further details for each of the options, which has been selected (a brief description of the action(s): region, date, duration, links to reports, comments...)	national legislation	Options are developed for wolf management, in case a bear appears it can be applied.	specific guidelines, BIG, bear-proof waste management	working on BIG, advised on protection measures,	Sufficient legal bases for the management of male bears. Room for improvement in damage prevention.	Legal background for LGD with the status of working dogs, quick removal of conflict bears implemented, bear watching regulated through the game management plans, development of proper legal background and efficient police teams for the prosecution of poaching cases (LIFE Lynx project).	Management plan as a compilation of recommendations. No need for a special program for prevention methods.
6	If nothing has been done, please specify the reasons (more than one answer is possible)	X	X	X	X	X	X	X
7	Comments	X	no bears in French Alps	X	X	X	X	X

Spreadsheet 1; Questions regarding national legislation.

	POPULATION MONITORING	LIECHTENSTEIN	FRANCE	ITALY	GERMANY	SWITZERLAND	SLOVENIA	AUSTRIA
8	Has any action been applied to improve population monitoring of brown bear or bear-human interactions?	NO	YES	YES	NO	YES	YES	YES
9	Has any option listed below been implemented in population monitoring of brown bears?	X	1,2,3,4,6	1,2,3,4,5,6,8,9	X	2,3,4,5,6	1,3,4,5,6,7,9	2,3,5,6,9
10	Please provide further details for each of the option, which has been selected (brief description of the project(s): region, the start of the project, duration of the project, links to reports, comments...)	X	X	Yearly monitoring, autopsies, database, yearly report	X	X	Next genetic monitoring is planned for 2023 (Dinaric MU every 8 years, Alpine MU every 4 years). Distribution of the monitoring information from hunters (questionnaires). Bear mortality and human-bear interactions are systematically monitored on regular basis.	Analysis of non-invasive genetic samples. Nation-wide monitoring of all reported bears. Mortality is analysed by a wildlife veterinarian.
11	If nothing has been done, please specify the reasons (more than one answer is possible)	no bear presence	X	X	no political support for not being concerned about the bear presence in the country	X	X	X
12	Comments	X	no bear presence in French Alps	X	only the occasional presence of brown bear, and usually short-termed	There are only a few bears.	X	X

Spreadsheet 2; Questions regarding population monitoring.

	RESEARCH RECOMMENDATION	LIECHTENSTEIN	FRANCE	ITALY	GERMANY	SWITZERLAND	SLOVENIA	AUSTRIA
13	Please define and rate in the order of priority applied research activities that you consider necessary for bear management and conservation, identify also possible sources of (co)funding:	International collaboration	no bear presence in French Alps	Research in factors that develop problem behaviors	Alpine genetics analysis, to compare individuals and origin	National monitoring, communication and collaboration with the neighboring country, and communication to increase acceptance.	Optimization of monitoring and reducing its costs. Finding new approaches/improvements of measures used to maintain positive attitudes towards bears and coexistence (damage prevention, preventing entering settlements etc.) What is the influence of bear presence on populations of wild ungulates (via e.g. predation of calves)?	Due to the low number of beares, no rearcheserch activities extending beyond regular monitoring are needed.

Spreadsheet 3; Question regarding further research activities.

	STAKEHOLDER DIALOGUE AND INVOLVEMENT	LIECHTENSTEIN	FRANCE	ITALY	GERMANY	SWITZERLAND	SLOVENIA	AUSTRIA
14	Has any action been taken to improve stakeholder dialogue and involvement?	NO	YES	YES	NO	YES	YES	YES
15	Has any option listed below been taken to improve stakeholder dialogue and involvement?	X	1,4,5	1,2,5	X	2,4,5	2,4,5	1,2,3,4,5
16	Please provide further details for each of the options, which has been selected (a brief description of the action(s): region, the start of the project, duration of the project, links to reports, comments...)	X	X	Meeting of main economic stakeholders at least twice	X	Cantons are involved in monitoring and implementation of measures. Several meetings per year to discuss the management of large carnivores.	Stakeholders are involved in the prevention of national strategic documents. Agriculture organisations are involved in projects focusing on damage prevention. Hunters are systematically involved in monitoring activities.	Authorities, stakeholder organizations and university institutes take part in discussions twice a year and in a specific working group. The Österreichzentrum Bär Wolf Luchs was established in 2019 to develop the management of large carnivores.
17	If nothing has been done, please specify the reasons (more than one answer is possible)	no bear presence	X	X	no political support	X	X	X
18	Comments	X	no bear presence in French Alps	X	due to the small number, there is no political priority	X	X	X

Spreadsheet 4; Questions regarding stakeholder dialogue and involvement.

	CONFLICT MANAGEMENT	LIECHTENSTEIN	FRANCE	ITALY	GERMANY	SWITZERLAND	SLOVENIA	AUSTRIA
19	Has any action been taken to reduce human-bear conflicts?	NO	YES	YES	YES	YES	YES	YES
20	Has any option listed below been taken to reduce human-bear conflicts?	X	2,3,4	1,2,3,4,5	3,4	3,4,5	1,2,3,4,5	1,2,3,4
21	Please provide further details for each of the options, which has been selected (a brief description of the project(s): region, the start of the project, duration of the project, links to reports, comments...)	X	X	all 5 options have been taken, it has not been reduced enough)	advise on prevention methods, compensation by public funds	Some rare attacks on cattle in recent years and two problem bears were shot because they often visited inhabited villages.	All listed options are implemented in the system (public service). Some improvements can still be made.	Awareness raising how to behave in bear country. Compensation for damages, by state administrations. Use of electric fences, some beekeepers.
22	If nothing has been done, please specify the reasons (more than one answer is possible)	no bear presence	X	X	X	X	X	X
23	Comments	X	no bear presence in French Alps	X	X	X	X	X
24	Has any action been taken to remove potentially dangerous bears and particularly problematic bears?	NO	NO	YES	NO	YES	YES	NO
25	Comments	no bear presence	no bear presence in French Alps	removing bears lead to unbelievable public debates with ARA	A working group is installed to discuss how to quickly remove	X	X	X
26	Please provide further details – the number of bears removed per year, the particularities, who executed the removal...?	X	X	8 bears (06-20), local competent authorities	X	One in 2018 and one in 2013 (radio collar), Confederation, the canton authorized the shooting.	In 2021, 128 bears were culled and we registered 20 additional cases of bear mortality. Hunters executed the removal.	No removals recently, in 1994 a bear caused damage close to an inhabited area; it was removed by order of a district commissioner.
27	If no conflict bears were removed, please specify the reasons.	no bear presence	no bear presence	X	the last bear we had did not behave in a conspicuous manner	X	X	No bear acted in a way posing a threat to people. Request to remove a bear killing unprotected sheep was not approved.



Spreadsheet 5; Questions regarding conflict management.

	FUNCTIONAL CONNECTIVITY AND HABITAT QUALITY	LIECHTENSTEIN	FRANCE	ITALY	GERMANY	SWITZERLAND	SLOVENIA	AUSTRIA
28	Has any action been taken to improve functional connectivity and habitat quality (to secure and construct new connection corridors)?	YES	YES	YES	NO	YES	YES	YES
29	Has any action listed been taken to improve functional connectivity and habitat quality (to secure and construct new connection corridors)?	4, other	4	Other: Specific road signs in some high rate bear crossing spots	X	4	1,2	3,4
30	Please provide further details for each option, which has been selected (a brief description of the action(s): region, the start of the project, duration of the project, links to reports, comments...)	General connectivity (Rhine valley)	X	where car accidents with bears occurred in the past	X	An inventory of wildlife corridors has been established. A plan to build green bridges across the national highways and railroads?	Workshops for spatial planners were conducted, important corridors were determined and implemented into wildlife management plans, and the process of preparing a state spatial plan focused on building the Eco duct crossing the Ljubljana-Koper highway started.	In 2006, instruction to the ASFINAG, to install wildlife crossings at 20 important linkage zones until 2027. Within the LIFE project "Schütt-Dobratsch" a green bridge at the motorway; Villach - Arnoldstein. The construction of green bridges in the Inn valley is still pending.
31	If nothing has been done, please specify the reasons (more than one answer is possible).	X	X	X	no political support/priority	X	X	X

Spreadsheet 6; Questions regarding functional connectivity and habitat quality.

	GOVERNANCE AND CROSS-SECTORIAL COORDINATION	LIECHTENSTEIN	FRANCE	ITALY	GERMANY	SWITZERLAND	SLOVENIA	AUSTRIA
32	Has any action been taken to improve governance and cross-sectorial coordination?	YES	YES	YES	NO	YES	YES	YES
33	Have any options listed below been taken to improve governance and cross-sectorial coordination	4, 5, other	2,4	2,5	X	1,2,4,6	4	2
34	Please provide further details for each of the options, which has been selected (a brief description of the activity(s): region, the start of the project, duration of the project, links to reports, comments...)	regular meetings concerning large carnivore	X	Regular meetings at both national and international level	X	Coordinated management between the sectors of conservation, hunting, forestry, agriculture and tourism for all large carnivore species.	Active involvement in WISO Platform, cooperation between wildlife management-environmental and agriculture sectors in Slovenia.	The Österreichzentrum Bär Wolf Luchs was established in 2019 to develop the management of large carnivores. Stakeholder organizations and university institutes take part in discussions twice a year and in a specific working group.
35	If nothing has been done, please specify the reasons (more than one answer is possible)	X	X	X	no political support/priority	X	X	X
36	Comments	X	no bear presence In French Alps	X	no political pressure due to no bear presence	X	X	X

Spreadsheet 7; Questions regarding governance and cross-sectorial coordination.

	ARTIFICIAL FEEDING	LIECHTENSTEIN	FRANCE	ITALY	GERMANY	SWITZERLAND	SLOVENIA	AUSTRIA
37	Do you have an established practice of artificial feeding?	NO	NO	NO	NO	NO	YES	NO
38	Has any action been taken to evaluate areas with artificial feeding?	X	X	X	X	X	YES	X
39	Have any options listed below been taken into management plans for areas with artificial feeding?	X	X	X	X	X	1,2,3	X
40	Please provide further details for each of the options which have been selected	X	X	X	X	X	Covered with wildlife management plans. A lot of space for the improvement of the regulations in practice.	X
41	Has any action been taken to implement the practice of artificial feeding?	NO	NO	X	NO	NO	X	NO
42	Have any options listed below been taken into consideration in case it is considered to be implemented	X	X	X	X	X	X	X
43	Please provide further details for each of the options, which has been selected (a brief description of the project(s): region, the start of the project, duration of the project, links to reports, comments...)	X	X	X	X	X	X	X
44	If nothing has been done, please specify the reasons (more than one answer is possible)	other: absence of brown bears	no bear presence	do not want artificial feeding, not necessary, negative effect	no political support/priority	Other: artificial feeding of wildlife is under the control of the cantonal authorities. Forbidden for large carnivores.	X	No need
45	Comments	artificial feeding of ungulates is forbidden	no bear presence	X	no political pressure due to no bear presence	Under control of the cantonal authorities.	X	Most bears are dispersers, visiting the country for short periods.

Spreadsheet 8; Questions regarding artificial feeding and possible implementation of artificial feeding.

	POACHING CONTROL	LIECHTENSTEIN	FRANCE	ITALY	GERMANY	SWITZERLAND	SLOVENIA	AUSTRIA
46	Has any action been taken to improve poaching control?	YES	NO	NO	NO	NO	YES	YES
47	Have any options listed below been taken to improve poaching control	other: general poaching control	X	X	X	X	3	4
48	Please provide further details for each of the options, which has been selected (a brief description of the action(s): region, the start of the project, duration of the project, links to reports, comments...)	Office of the Environment	X	X	X	X	Bear poaching is not a big issue in Slovenia (compared to wolf poaching). Several activities are focusing on improving law enforcement and prosecution of illegal killing of wildlife (LIFE Lynx project).	Within action A3 of the LIFE WolfAlps EU, project workshops are planned for best practices of anti-poaching activities in the Alps.
49	If nothing has been done, please specify the reasons (more than one answer is possible)	X	other: no bear presence	already established and working in Trentino	no political support/priority	In all Swiss cantons within the Alps, a system of supervision of wildlife by professional wildlife wardens is in place.	X	X
50	Comments	X	no bear presence	X	no political pressure due to no bears	Supervision of wildlife wardens in all Swiss cantons.	X	X

Spreadsheet 9; Questions regarding poaching control.

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