



Key actions for Large Carnivore populations in Europe

SECTION 2: BEARS

DRAFT

Prepared for DG Environment, European Commission, by Istituto Ecologia Applicata, Rome under contract no. 07.0307/2013/654446/SER/B3 "Support to the European Commission's policy on large carnivores under the Habitat Directive - Phase Two", with contributions from the Large Carnivore Initiative for Europe (SSC/IUCN)



Rome, March 2014

Index

Part I: Bear populations in Europe	3
Part II: Objectives	6
Part III: Actions for all bear populations	7
Part IV: Specific actions for each bear population	16
4.1. Alpine	16
4.2. Apennine	18
4.3. East Balkan	20
4.4. Baltic	22
4.5. Cantabrian	24
4.6. Carpathian	26
4.7. Dinarac - Pindos	29
4.8. Finnish-Karelian	31
4.9. Pyrenees Mountains	32
4.10. Scandinavian	34

DRAFT

PART I

1.1. Bear Populations in Europe

In Europe, the brown bears occur in 22 countries. Based on the existing data on distribution, as well as a range of geographic, ecological, social and political factors these can be clustered into 10 populations: Scandinavian, Karelian, Baltic, Carpathian, Eastern Balkan, Alpine, Apennine, Cantabrian, and Pyrenean.

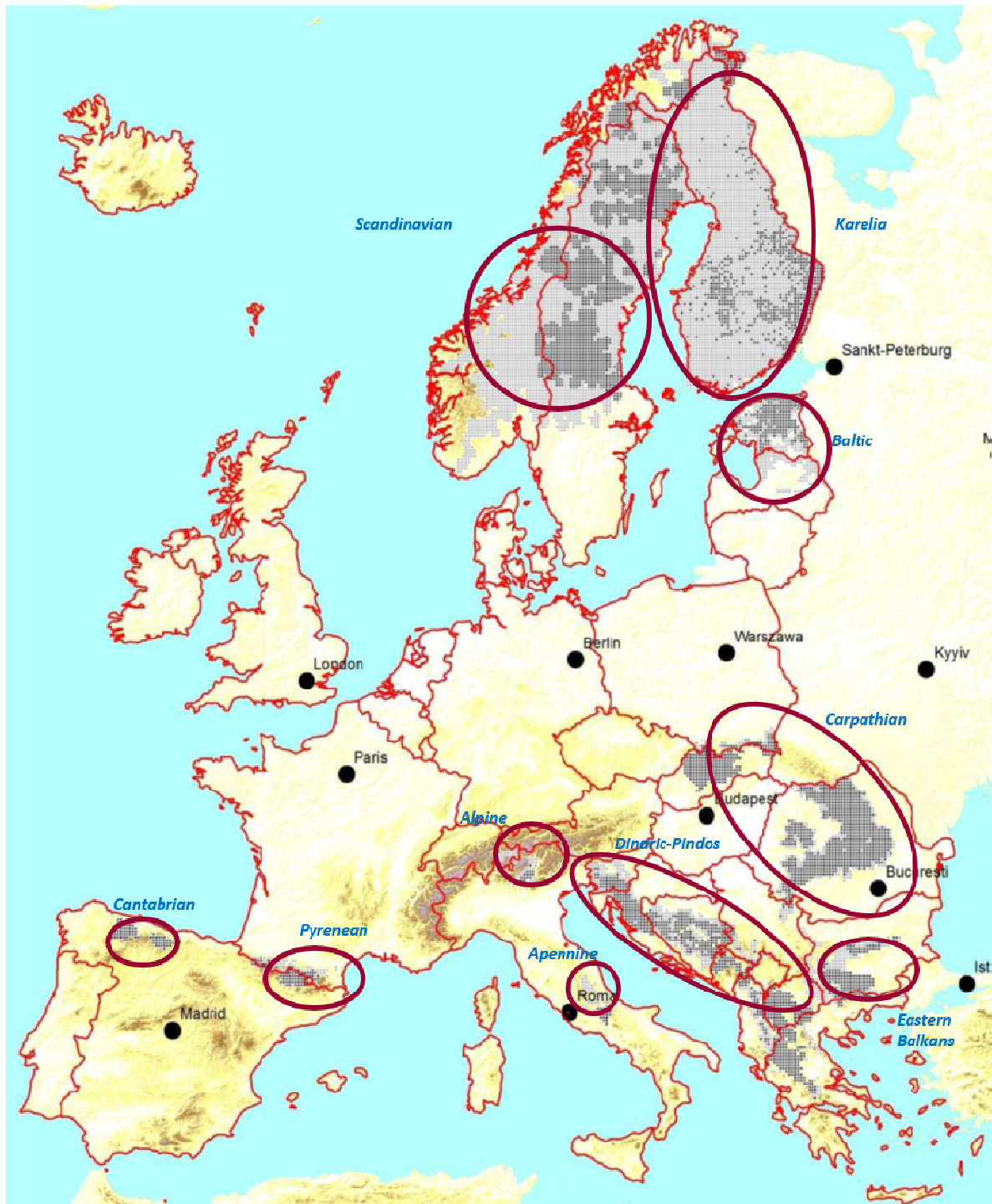


Figure 1. The 10 bear populations of Europe

1.2. Status

The estimated total number of brown bears in Europe seems to be around 18'000 individuals. Based on reported and updated census data, the largest population is the Carpathian population (>8'000 bears), followed by the Scandinavian and Dinaric-Pindos populations (> 3400 and 3040 bears, respectively). The other populations are much smaller ranging from several hundred (e.g. Baltic ~700, Cantabrian ~200) to less than hundred (e.g. Alps ~50 bears). Compared to the survey of that included data up to 2005 (Bear Online Information System for Europe, BOIS) the Scandinavian, Dinaric-Pindos population, Cantabrian, and Pyrenean population have recorded a clear increase. The other populations remained stable. The decrease in the Eastern Balkan population is likely due to new monitoring techniques. All population ranges have been relatively stable or slightly expanding. In the Alpine population the loss of the central Austrian segment was counterbalanced by the expansion of the north Italian segment in Trentino.

Monitoring in a number of countries/populations is based on genetic methods that use non-invasively collected DNA (from scats or hairs): Scandinavia, Italy, Austria, Spain, France, Greece, and Slovenia. In other countries these genetic methods are used to compliment other methods (e.g. Croatia, Slovakia, Poland), as well as counts at feeding sites, snow tracking and telemetry. In the countries without genetics and telemetry, absolute estimates are based on much weaker grounds. The small populations are generally subject to more intense and costly monitoring methods trying to count individuals, although the most closely monitored large population is in Scandinavia. In hunted populations harvest data is used to identify population trends.

Name of population	Most recent size estimate (2010, 2011 or 2012)	Trend 2006-2011	IUCN Red List assessment
Scandinavia	<u>Norway</u> : 105+ <u>Sweden</u> : 3300 TOTAL: 3405	Increase	Least concern
Karelian (this time not including Russia west of 35°E)	<u>Norway</u> : 46 <u>Finland</u> : 1900	Increase	Least concern (in connection with Russia west of 35°E)
Baltic (this time not including Belarus and the Russian oblasts of Leningrad, Novgorod, Pskov, Tver, Smolensk, Bryansk, Moscow, Kalinigrad, Kaluzh, Tula, Kursk, Belgorod & Ore)	<u>Estonia</u> : 700 <u>Latvia</u> : 12	Increase	Least concern (in connection with the Russian oblasts of Leningrad, Novgorod, Pskov, Tver, Smolensk, Bryansk, Moscow, Kalinigrad, Kaluzh, Tula, Kursk, Belgorod & Ore)
Carpathian (this time not including Ukraine)	<u>Romania</u> : 6000 <u>Poland</u> : 147 <u>Serbia North</u> : 8 <u>Slovakia</u> : 1940 TOTAL: 8095	Stable	Near threatened (including and not including Ukraine)
Dinaric-Pindos	<u>Slovenia</u> : 450 <u>Croatia</u> : 1000 <u>Bosnia & Herzegovina</u> : 550 <u>Montenegro</u> : 270 <u>"The Former Yugoslav Republic of Macedonia"</u> : 180	Increase	Vulnerable

	Albania: 180 Serbia: 60 Greece: 350 TOTAL: 3040		
Alpine	Italia (Trentino): 43-48 Italy (Friaul): <12 Switzerland: 1 Austrian: ~5 Slovenia: 5-10 TOTAL: 45-50	Stable	Critically endangered
Eastern Balkans	Bulgaria: 550+ Greece: ~50 Serbia: 8 TOTAL: ~600	Stable or decrease?	Vulnerable
Apennine	TOTAL: 37-52	Stable	Critically endangered
Cantabrian	TOTAL: 200	Increase	Critically endangered
Pyrenean	Spain: 25 France: 19 TOTAL: 25 (taking into account double counting)	Increase	Critically endangered

1.3 Legal status and management

Most of the bear populations are strictly protected. The parts of populations that fall within EU countries are strictly protected under pan-European legislation (the Habitats Directive), all populations being listed in Annex IV. Sweden, Finland, Romania, Estonia, Bulgaria, Slovenia and Slovakia currently use derogations under Article 16 of the directive to allow a limited cull of bears by hunters. Croatia, Bosnia and Herzegovina and Norway manage bears as a game species with annual quotas as only the Bern Convention binds them in this respect. For Croatia, this ended in 2013 when the EU laws had to be transposed. Nearly all countries have some kind of bear management plan, action plan or bear management strategy. However, in a number of countries such a document is still waiting to be adequately implemented.

1.4 Threats

The smallest bear populations are critically endangered. However, the current prevailing public interest, most management actions, and financial backup, seem to presently secure at least their short to mid-term survival. Almost half of the populations are currently growing, but to guarantee long-term survival, all present and potential future threats have to be taken in account.

The most relevant threats were identified as: habitat loss due to infrastructure development, disturbance, low acceptance, poor management structures, intrinsic factors, accidental mortality and persecution. Most threats were expected to become slightly more important in the future.

1.5 Conflicts and conflict management

Bears are large, opportunistic and omnivorous carnivores with a wide range of biological needs during their life cycle, which may bring them into conflict with humans. Some conflict types threaten human interests (e.g. property loss like livestock depredation or attacks on humans), some threaten bears (e.g. habitat fragmentation and den disturbance) and some are mutually problematic (e.g. traffic accidents).

Most countries pay damage compensations either from the state budget or from funds contributed by interest groups, mostly by hunters. The rough economic cost (based on reported compensation only) is in the magnitude of 2.5-3.0 M€ per year. Livestock losses are the most important damage type, but the variety of damages are much wider than for wolverines, lynx, and wolves and include damages to bee hives, orchards, crops, trees, and even vehicles and buildings. More than half of all the money is paid for compensations in Norway (1.5 M€), followed by 321'000 € in the Cantabrian Mountains, and 252'000 € in Slovenia. Other countries pay between 6000 € (Croatia) and 141'000 € (Greece) annually. The amounts paid are not at all proportional to the number of bears in the population. Costs per bear / year are generally higher in smaller populations than in larger ones: e.g. 12'666 € in Norway, 6114 € in the Pyrenees, 3445 € in Abruzzo, 1605 € in the Cantabrian Mountains, 1371 € in the Italian Alps, 555 € in Slovenia, 511 € in Greece, 102 € in Poland, 45 € in Bulgaria, 15 € in Estonia & Latvia, 8 € in Slovakia, 6.0 € in Croatia, and 3.6 € in Sweden. It should be noted that there are no data to show that countries which pay more have better acceptance of their bears.

PART II

2.2. Objectives of this list of actions

- To identify the most critical (*i.e.* important and urgent) actions for the conservation and management of the bear populations in Europe, in coexistence with local stakeholders, for the next 5 years.
- To provide the authorities responsible for the conservation and management of bears in the range countries for a strategic planning tool for relevant future activities in the next 5 years.
- To improve collaboration and relationship amongst relevant stakeholders for bear conservation and management in Europe by integrating them into the process of planning and implement Actions/activities.
- To raise awareness amongst authorities and the public for the most urgent needs for bear conservation and management in Europe.

PART III – Actions for all bear populations

Note :

Level of urgency:	(scale of 1-5: 1 = high urgency, 3 = medium urgency, 5 = low urgency)
Benefit:	(scale of 1-5 = 0-20, 20-40, 40-60, 60-80, 80-100%; how much this action is expected to improve the level of population conservation and/or coexistence with local stakeholders)
Cost	< 100K; 100k-500k; 500K-1000K

ACTION 1	
Title of the Action:	Protection of bear habitat and enhancement of connectivity within and among populations
Objective:	Secure that bear habitat in the currently used bear range will not get smaller and will not lose quality. The connectivity of bear habitat within each population and among populations will be maintained and where necessary will be enhanced through mitigation measures. Overall objective is securing the living space for bears on the population level and securing the mobility of individuals to keep the minimum necessary gene flow. The action is necessary for all 10 bear populations and each of 22 countries that host part of any population.
Description of activities:	<p>Evaluation of the impact of each</p> <p>(1) new construction (including roads, highways, railroads, pipe lines, power lines, wind energy, solar energy, hotels, skiing slopes, golf and other sport fields etc.),</p> <p>(2) new habitat use like forestry, hunting</p> <p>(3) human activity like hiking, camping etc. in the bear habitat</p> <p>Evaluation will be done following the specific Guidelines for Environmental Impact Assessment on Bears.</p> <p>Such EIA Guidelines on Bears will be prepared considering all the existing knowledge on bear biological and ecological needs. Maps showing the importance or sensitivity of sites (pixel size 250x250 m) will be produced based on unbiased known locations of animal use of the areas (telemetry points). Guidelines will additionally require specific study for each disputed site following the pre-described methodology. Special attention will be given to the cumulative effect of multiple human influences. Mitigation measures will be proposed for each case.</p>
Expected results:	<ul style="list-style-type: none"> ➤ Guidelines for the Environmental Impact Assessment on Bears written ➤ Guidelines accepted as an obligatory document ➤ Produced “sensitivity maps” for various habitat variables ➤ Consider widening the use of Guidelines to all large carnivore species ➤ Define specific criteria for NATURA 2000 sites with large carnivores (e.g. total maximum percent of area that may be affected by some human intervention)

	<ul style="list-style-type: none"> ➤ Standardized method used in each EIA considering bears (and other LCs) ➤ List of available mitigation measures and the criteria to apply them ➤ As a result some of planned construction/activities will not be done or will be placed somewhere else ➤ As a result some specific mitigation will be done at site where needed (e.g. green bridge over a highway) ➤ The minimum connectivity will allow more than one individual bear per generation to move within the population range (or secure the flow of genes spanning the population edges) ➤ All populations where it is feasible will have possibility for inter-population movements of individuals (exceptions for bears are Apennine, Cantabrian and Pyrenean populations)
Responsibility for implementation:	<ul style="list-style-type: none"> ➤ International group of experts writes Guidelines for the Environmental Impact Assessment on Bears ➤ European Commission endorses Guidelines as a “working tool” ➤ Ministry in each country accepts and implements the use of guidelines ➤ Responsible government body controls the implementation
Timing of the activities:	<p>1 year to prepare the Guidelines 1 year to implement the use of Guidelines 1-3 years to see some mitigation measures applied</p>
Level of urgency:	1
Cost and potential funding sources:	<p><100K EUR to prepare and implement the Guidelines (cost of working time and 2 international meetings for a group of 10 experts). Paid by EC or national governments Mitigation measures have their own specific cost and funding scheme.</p>
Benefit:	5

ACTION 2	
Title of the Action:	Economic use of the intrinsic (inherent) and extrinsic (utilitarian) value of bears
Objective:	Action aims to define the value to bears at local and country level. The fact that some areas are inhabited by bears should be the means to add value to the life in those areas and to counter-balance the problems (damages) that living with large carnivores unavoidably creates. Close-to-nature tourism (“eco-tourism”) has greater potential in bear country if marketed properly. Some bear populations can be additionally used for hunting tourism what produces profit by selling valuable trophies and meat of hunted animals.
Description of activities:	Preparing a “best practice manual” for “bear tourism”. Finding and encouraging tourist operators and the offices of national parks and other protected areas in bear range to include such programmes in their offer. Hunting organizations are also encouraged to offer bear viewing and photographing on the top of their hunting programs. Government should subsidize such programs by (e.g.) waiving or lowering taxes for the first several years. Bear experts are involved in writing programs, in

	training persons to become “bear educators” or “bear interpreters”, and occasional lectures for selected groups. Local people are involved in interpretation and guiding but also in providing sleeping and food for bear tourism visitors. Additionally local products can be sold with “bear friendly” label indicating way of production that in no way harms bears, but also have additional value because of origin from bear country.
Expected results:	<ul style="list-style-type: none"> ➤ The “best practice manual” for “bear tourism” is prepared and available for all potential users ➤ At least one tourist operator and one national park office per country/population includes and advertises such a programme ➤ At least one hunting unit per country/population offers and advertises bear viewing and photographing ➤ Government subsidizes or waives taxes to profit from bear tourism programs ➤ Bear experts train bear educators (interpreters) ➤ “Bear friendly labels” are used on local products ➤ Hunting programs are fully organized to service all needs of hunters including processing and delivery of trophies ➤ Total financial benefit of use of bears is equal or larger than the total amount paid for damages (in the region)
Responsibility for implementation:	Bear experts and stakeholder representatives write the «manual». Relevant government body supports the action. Tourist operators, national parks and hunting organizations execute (and advertise) the programs.
Timing of the activities:	6 months to prepare, adapt and advertise the “manual”. 1 year to start with programs.
Level of urgency:	3
Cost and potential funding sources:	<100 K EUR to prepare the “manual”. Paid by EC or national governments <100 K EUR to subsidize the first 3 years of program in one area. Paid through various projects including EC.
Benefit:	4

ACTION 3	
Title of the Action:	Managing bear populations based on monitoring trends, sizes and all mortality
Objective:	Base each management decision on sound data collected in the standardised way. Develop and implement standardized monitoring protocols for bear population. That includes recording, into the centralised data base, all bear related events following the defined and agreed list. Each record is defined by date and time, GPS location, observer and description. Certain events include taking the sample(s), measurements and/or photographing. Systematically collected data will reveal the trend of bear population including the changes in the range. Statistical calculations will enable the calculation of the population size.
Description of activities:	A. Preparation and legal approval of all monitoring protocols B. Training of the monitoring team

	<p>C. The examples of events to be recorded are:</p> <ol style="list-style-type: none"> (1) finding signs of animal presence (like footprint, scat, marking) which may be decided to be fully recorded only for small populations, for other ones only on the range edges, or only in some seasons and in the areas of interest – like close to people (2) photo trapped animal – useful when trap cameras are set systematically (3) confirmed sighting – very important for family groups (4) live captured animals – handling (measuring, sampling and marking) has to follow the protocol (5) problem bear – the whole history, actions undertaken and the final outcome (6) dead bears – from traffic, poaching, natural causes or legal hunting – standard necropsy with measurements and samples
Expected results:	<ul style="list-style-type: none"> ➤ Numerical data on each event type known ➤ Trend of the population size and range size ➤ Absolute population size may be calculated ➤ All mortality is known by causes ➤ Collected samples enable additional data on genetics, pathology, parasitology, various contaminations ➤ GIS map for spatial distribution of events ➤ Management decisions have firm base
Responsibility for implementation:	Governmental body responsible for bear management
Timing of the activities:	<ul style="list-style-type: none"> - 6 months to prepare all the protocols - 12 months for training the team and implementation - Continuous after that
Level of urgency:	1
Cost and potential funding sources:	<p><100 K EUR for preparation and adaptation of protocols. Paid by EC or national governments</p> <p>Training of monitoring teams: 100K EUR per bear population. Paid by country governments from the state budget.</p> <p>Cost of continuous monitoring depends on the number of events, i.e. the size of the population. To be paid from State budget.</p>
Benefit:	4

ACTION 4	
Title of the Action:	Implement sound protective measures to prevent damage by bears
Objective:	Damages by bears can be significantly decreased in the areas where properly implemented. Big segment of bear damages can be eliminated by avoiding certain human activities in some areas (like sheep husbandry in forested bear range). The acceptance of alternative activity by local inhabitants, which has to be “bear friendly”, is to be subsidized. The other aim is to make the list of proven active protective measures, to agree on it and implement in standardized and controlled way. The right for damage compensations is to be tied to the use of protective measures.
Description of activities:	Preparation of a manual of internationally accepted and proven

	<p>protective measures with specification for use. Education and control of users of protective measures- Stimulating studies for innovative protective solutions- Subsidizing the abandonment of human activities that are known to result in bear damages and replacing with bear-friendly ones. Target problems: livestock depredation, bee hives, orchards, reindeer.</p>
Expected results:	<ul style="list-style-type: none"> ➤ Manual on standard protective measures prepared and endorsed ➤ No damages in the areas where certain human activity was abandoned ➤ Decrease of damages for 50% at the sites where the prescribed measures were properly applied ➤ Local people are fully informed about available protective measures ➤ Specific measures to protect orchards, crops on fields, bee hives, livestock, reindeer, food storages are prepared locally
Responsibility for implementation:	<p>Government body is responsible for preparation and distribution of manuals, for «avoidance» subsidizes and for paying compensations (tied to the use of protective measures) Local administration, NGOs and personal funds for the cost of means to protect property. International projects (EC and other) to search for innovative solutions.</p>
Timing of the activities:	<p>12 months for all preparatory actions and education of users of protective measures. Paid by EC. 12 months (4 seasons) for each pilot action. Paid from local projects. Continual control and upgrading afterwards</p>
Level of urgency:	1
Cost and potential funding sources:	<p>Preparatory actions for standardization on international level: <100 K EUR. Paid by EC. Education and control of users: 100 K EUR per country/bear population depending on the size of country or bear range. Paid from the state budget. Cost of pilot actions depend case by case. Cost includes the purchase of equipment, installation and maintenance (roughly 100 k EUR per unit – farm, county or similar). Paid from the state budget. Innovative protective measures – various cost depending on the targeted projects funded by EC programs.</p>
Benefit:	5

ACTION 5	
Title of the Action:	Preparation and implementation of management strategy (plan) for each trans-boundary bear population
Objective:	The countries without bear management plan have to produce one in a separate (local) action. All new and existing plans do consider the fact that the bears in their country are a segment of population shared with one or more neighbouring countries. The level and style of coordination of country management plans has to follow the document by Linnell J., V. Salvatori & L. Boitani (2008). <i>Guidelines for population level management plans for large carnivores in Europe</i> . A Large Carnivore

	Initiative for Europe report prepared for the European Commission (contract 070501/2005/424162/MAR/B2). In coordinated work all countries sharing certain bear population prepare the management strategy. The strategy is to be accepted by all governments.
Description of activities:	<ul style="list-style-type: none"> ➤ Countries work on their own bear management plans through workshops of all interest groups ➤ International meetings on expert and governmental level ➤ Coordination and endorsement of bear management plans of all countries to fit to the “<i>Guidelines for population level management plans for large carnivores in Europe</i>”. (Linnel et al 2008) ➤ Implementation of plans
Expected results:	<ul style="list-style-type: none"> ➤ Each country has it’s own bear management plan ➤ Bear management plans of all countries are coordinated with all neighbouring countries sharing the same bear population ➤ Population level plan is written, agreed and endorsed ➤ The plans are implemented
Responsibility for implementation:	EC and national governments
Timing of the activities:	3 years till the implementation which is to be continuous
Level of urgency:	2
Cost and potential funding sources:	National plans should be done and financed separately by countries. Cost for population level plans depends on the number of countries (2-9) sharing one bear population. The work and meetings in average <100 K EUR per population. Paid by national governments
Benefit:	4

ACTION 6	
Title of the Action:	Gaining and maintaining the public acceptance of bears by providing genetically determined population size using data collected with public participation
Objective:	The disputes and mistrusts about various estimates on local bear population size lead to difficulties in executions of management actions. Even scientifically founded estimates are not accepted if local inhabitants and interest groups are not involved in the process. Genetic methodology allows today very precise estimates but requires large numbers of biological samples. If samples will be collected with local help and the methodology will be transparently described the obtained results will be trusted and all management decisions will be easier to reach and implement.
Description of activities:	Involving local hunters, backpackers, scouts, and volunteers in the sample collection, which are typically fecal samples stored in alcohol, in the number roughly 3 times higher than is the expected population size. The laboratory analyses will, in addition to the absolute population size, obtain the data on population range and trend, genetic structure and flow (heterozygosity, effective population size).
Expected results:	<ul style="list-style-type: none"> ➤ Size of the population (preferably the whole)

	<ul style="list-style-type: none"> ➤ Status of threat of the population ➤ Full information on the gene flow and effective site ➤ Agreement of all interest groups about the results ➤ Proper management measures implemented
Responsibility for implementation:	Bear experts supported by government bodies
Timing of the activities:	1 year for collecting of samples and 1,5 years of laboratory work
Level of urgency:	2
Cost and potential funding sources:	About 500 - 1000 K EUR for a population of 1000-2000 bears Paid from EC funded programs.
Benefit:	3

ACTION 7	
Title of the Action:	Establishment and training of bear management bodies: Bear management committee and Bear emergency team in each county with bears
Objective:	The bodies composed of experts and government administration people have to be officially established in each country with bears. The protocols for their work have to be written and approved. The Bear management committee (BMC) has to meet regularly and to advise the relevant minister on needed and proper actions in bear management. The Bear emergency team (BET) has a workshop with training every year and the members are ready to intervene in each bear related incident (problem bear, unusual damage case, traffic accident, bear in trouble, dead bear). Both bodies will secure that proper decisions will be done, that the population surveillance will be complete and that the conflicts will prevented or mitigated.
Description of activities:	<ol style="list-style-type: none"> 1. The group of 5 to 15 experts will be appointed along with the representatives of relevant ministries. They form the BMC and receive the official document signed by minister. Members of certain interest groups may be invited to some meetings. 2. BMC prepares the protocol for their work which is eventually endorsed by the minister. 3. BMC prepares the yearly country Bear action plans. 4. Once a year a workshop with presentation on the state of a bear population is organized by BMC for all interest groups where they can express their concerns to be considered in bear management. 5. People working with bears and living in the bear country or close to it are appointed to the BET. The goal is to have one or two or persons in each district to cover the entire bear range. 6. The working protocol for BET is prepared. It explains that BET members surveys each bear related emergency case and report to BMC with his/her own opinion on what to do. The BMC decides and the responsible person in the ministry approves the action (like shooting the problem bear when no other option works). In the case of urgency this can be done by phone. 7 All BET members are invited to workshop and training: two times in the first year and then once each year. These meetings are held to

	<p>standardise the response in various bear incidents like problem bear, orphaned cub, unusual damage case, traffic accident, bear in trouble, dead bear etc. The training includes target shooting with rubber bullets, handling of an immobilized bear, measurements and sampling of a dead bear, solving the situation of a bear on the highway, bear in a trap (of a poacher or fallen in well or natural pit etc.). For their work the BET members do get paid for travel cost and spent time.</p> <p>8. Optionally the BET members can be trained and licensed to work as damage inspectors, as well.</p>
Expected results:	<ul style="list-style-type: none"> ➤ BMC and BET are established and operational with approved working protocols. ➤ No more bear related decision is made by politicians alone ➤ The system secures that the response to various situations is in the same line. ➤ The number of incidents is smaller and the consequences are softer ➤ The data base on the bear population grows and allows increasingly better management decisions
Responsibility for implementation:	Responsible government office with the help of bear experts.
Timing of the activities:	One year to establish BMC and two years to establish and get operational BET.
Level of urgency:	2
Cost and potential funding sources:	<p>The first two years of establishment of BMC and BET cost in range of <100 K EUR for meetings and workshops with training for the groups of 15-20 people (3000 EUR per meeting within a country). The yearly workshop for interest groups (40-60 people) costs about 3000 EUR. For BMC and BET meetings occasionally a foreign expert is invited to share the experiences (1000 EUR). Total cost for operational bodies in two years is 100 K EUR per country. EC should contribute to State costs. The cost of work in the next years is covered by state budget.</p>
Benefit:	4

ACTION 8	
Title of the Action:	Prevention of bear access to garbage and anthropogenic food
Objective:	<p>Reduce accessibility to anthropogenic food by bears within and nearby human settlements, by 80% in the core and 50% in the peripheral range compared to current levels within the next 3 years. Organic waste that attracts bears is deposited in the way that bears cannot access it. That includes: bear proof baskets in natural surroundings and the household bins, municipal containers and garbage dumps. Action should be taken in each country sharing the bear range. Logistically it is to be organized on the local level but with strong governmental support.</p>
Description of activities:	<p>A team of bear and sanitation experts prepare technical guidelines to prevent accessibility of anthropogenic foods in bear range, to be formally submitted for approval to LCIE and the Ministry of the Environment. Initial survey provides list of facilities needed to be mitigated. All anthropogenic foods potentially accessible to bears within</p>

	<p>human settlements, both in the core and peripheral range, are surveyed and inventoried by trained personnel.</p> <p>Bear proof baskets and containers are professionally constructed. Garbage dumps are moved from the bear range or fenced with conventional wire mesh and electric fencing. Illegal dumps are cleaned and closed. Local inhabitants are obliged to keep the household waste out of bear reach. Presentations on the importance of the issue and the methods to mitigate the problem are held in each local community. Educational material will be produced and public meetings will be held in relevant settlements to facilitate implementation of sanitation measures in private households. Sanitation management will be monitored for 2 years to assess its effectiveness and allow adaptive improvements.</p>
Expected results:	<ul style="list-style-type: none"> • a team of experts on bear biology and sanitation draft technical guidelines for sanitation of the bear range • inventory of all potential anthropogenic food sources within human settlements within the bear range • public awareness on management of habituated and/or conditioned bears is enhanced, as well as their willingness to reduce human-made foods accessibility to bears - all household garbage from local people kept closed indoors or in bear-proof containers until collection by communal service - garbage bins on public land (for local blocks of houses) or on private land (restaurants, hotels, certain industries) are all bear proof and always closed - garbage dumps are removed from bear range - remaining garbage dumps are fenced to be bear safe - communal regulations oblige locals to keep household waste out of bear reach - each national park and mountaineers organization in the bear range educates visitors not to leave edible waste in the nature - people do not encounter bears close to settlements so frequently any more and the acceptance of bears is improved
Responsibility for implementation:	Bear experts, Ministry of the Environment, Regional and Provincial Governments, Protected areas authorities, local communal organization, all people in the bear range
Timing of the activities:	Six months for survey and preparations. Nine months from spring to fall in one year per single operation.
Level of urgency:	5
Cost and potential funding sources:	For one county/region with one garbage dump in range of <100 K EUR. Household containers locals buy privately.
Benefit:	5

PART IV - SPECIFIC ACTIONS FOR EACH BEAR POPULATION

4.1 ALPINE

List of actions:

1. Make problem bears management in the Italian Alps more effective by updating protocols and tools
2. Mitigation measures to reduce bear car accident fatalities
3. Help connection between central Alps and Dinaric nucleus releasing at least 4 females in the triangle area Italia - Slovenia - Austria

ACTION 1	
Title of the Action:	Make problem bears management in the Italian Alps more effective by updating protocols and tools
Objective:	Reduce heavy negative effects of problem bears on both human properties and therefore human attitudes. Improve acceptance and consequently reduce the risk of poaching.
Description of activities:	Revision and update of action plans for bear management: <ul style="list-style-type: none"> - adding “damaging bears” to the list of “problem bears” that can be removed, when damages are too high despite all aversive and prevention activities - allowing faster decisions in the frame of simplified procedures involving both central (Ministry) and local (Regions) authorities, according to EU regulations
Expected results:	<ul style="list-style-type: none"> - reducing damages - reducing negative human attitude - reducing poaching - medium and long term benefits on the bear population - development of effective common management tools
Responsibility for implementation:	Provincia Autonoma di Trento, Provincia Autonoma di Bolzano, Regione Lombardia, Regione Veneto, Regione Autonoma Friuli Venezia Giulia, Ministero dell’Ambiente, Istituto Superiore per la Protezione e la Ricerca Ambientale.
Timing of the activities:	2014
Level of urgency:	1
Cost and potential funding sources:	Limited costs. <100 K € Funding: local and central authorities directly involved in the management plan update
Benefit:	5

ACTION 2	
Title of the Action:	Mitigation measures to reduce bear- car accident fatalities
Objective:	Reduce bear mortality, considering the small number of bears roaming in the Alps and the high accident rate recorded so far. Such actions will then guarantee a higher human safety, not just against

	bear accidents, but all wildlife (wild ungulates first)
Description of activities:	Public awareness campaign Data base implementation Placement of ad hoc light signs in the hot spots Evaluate possible operations aimed to create underpasses or bridges
Expected results:	Lower bear mortality rates Higher human tolerance with bears Higher road safety
Responsibility for implementation:	All G.O. responsible for bear management
Timing of the activities:	Not very urgent, but needed. Even more in the mid-long term when more bears could be roaming in the Alps
Level of urgency:	3
Cost and potential funding sources:	Costs very hard to predict in this phase, depending on number and types of mitigations used – <100 K up to 10000 K EUR. Funding should come from G.O. of course with possible help of UE (i.e. Life projects)
Benefit:	3

ACTION 3	
Title of the Action:	Help connection between central Alps and Dinaric nucleus releasing at least 4 females in the triangle area Italia - Slovenia - Austria
Objective:	<ul style="list-style-type: none"> - Improve connectivity within the two population - Improve genetic fitness of central Alps population
Description of activities:	<ul style="list-style-type: none"> - Monitoring of the triangle area (IT, SL, AT) to spot possible presence of females with cubs in the next five years (2014-2018) - Development of a ad-hoc communication campaign - Public survey to check human attitude toward the idea to release few females; to be done before the beginning of the project - Release of at least 4 young females if the monitoring above mentioned will show no evidences of females in the target area in the period 2014-2018
Expected results:	<ul style="list-style-type: none"> - Improved connectivity within the two populations - Improved genetic fitness - A further step toward the bear recolonisation of the eastern-central Alps
Responsibility for implementation:	All G.O. responsible for bear management in that area
Timing of the activities:	Five years of strict (genetic) monitoring of the area (2014-2018) Releases the females of bear starting from 2019 in max a couple of years
Level of urgency:	3
Cost and potential funding sources:	Costs in the range of 500 - 1000 K EUR. Possible LIFE project.
Benefit:	5

4.2. APENNINE

List of actions:

1. Effective control program of free-ranging dogs in protected areas within current and potential bear range
2. Conservation priority to critical bear habitats over multiple uses (livestock grazing, hunting, tourism, etc.) in protected areas

ACTION 1	
Title of the Action:	Effective control program of free-ranging dogs in protected areas within current and potential bear range
Objective:	To reduce by at least 80% of the current levels the number of owned free-ranging and stray dogs within protected areas (i.e., regional and national parks) in the bear range, through enhanced implementation of the existing law (L.N. 282/91), within the next 2 years.
Description of activities:	A group of experts assists park authorities to develop ad hoc regulations to be adopted by all regional and national parks to strictly regulate use and ownership of all forms of dogs (e.g., working dogs, hunting dogs, truffle dogs, pets, etc.). Part-time contracts with private veterinarians are annually renewed to tattoo and PIT-mark all owned dogs by seasonal or annual residents within protected areas. Specific arrangements are made with local veterinary services to capture free-ranging dogs, and with humane-societies to host or for the adoption of captured, not owned dogs.
Expected results:	<ul style="list-style-type: none"> • A group of experts is nominated by the Ministry of the Environment and the Ministry of Health, with contribution from accredited biologists and veterinarians and managers from protected areas. • Dedicated regulations are drafted from the experts, discussed and approved in their final version by park authorities, including their official approval by individual Township administrations • Approved policies are publicly disseminated and strictly implemented by park authorities • Tattooing and PIT-marking service is made available for free to resident dog owners in each protected area • Specific arrangements are signed with local veterinary service for the periodic capture of free-ranging dogs • Specific arrangements are made with humane-societies for the adoption of captured dogs without owner • The number of free-ranging dogs is permanently reduced by at least 80%
Responsibility for implementation:	Ministry of the Environment, Ministry of Health, Regional and National Park authorities
Timing of the activities:	<p>Months 1-6: group of experts is assigned, ad hoc regulations are drafted</p> <p>Months 7-12: regulations are discussed and approved by park authorities; contacts with private vets, public veterinary services and humane societies are initiated</p> <p>Months 13-14: regulations are publicly disseminated and contracts with</p>

	private vets are signed by park authorities Months 15-24: specific arrangements are signed with veterinary services and humane societies and free-ranging dog monitoring is established as a routine activity
Level of urgency:	3
Cost and potential funding sources:	<100 K € (Ministry of Environment, Protected areas, NGOs, private donors)
Benefit:	2

ACTION 2	
Title of the Action:	Conservation priority to critical bear habitats over multiple uses (livestock grazing, hunting, tourism, etc.) in protected areas
Objective:	Seasonally critical bear habitats (i.e., comprising seasonal key resources) are identified within protected areas, both in the core and peripheral bear range, and appropriate management plans are approved by relevant authorities to ensure conservation priority over human activities.
Description of activities:	Using available data on resource use by bears, seasonal foraging and denning areas are identified and mapped through GIS modelling within the core and peripheral bear range. Such areas within protected areas are considered as conservation priority areas over multiple uses, and a management plan is accordingly drafted by park authorities to be discussed and approved by all relevant authorities (Ministry of the Environment, Regional and Provincial Governments, Townships). Indications by the management plan are implemented through active management and control of human activities such as livestock grazing, hunting and related activities, tourism, resource extraction, recreation).
Expected results:	<ul style="list-style-type: none"> • map of most critical feeding areas in spring, summer and fall • map of denning areas • management plan ensuring conservation priority to critical habitats over multiple uses in a seasonal basis • approval and implementation of management plan for critical habitats by relevant authorities
Responsibility for implementation:	Research Institutions (GIS modelling), Protected area authorities, Ministry of the Environment, Regional and Provincial Governments, local townships
Timing of the activities:	Months 1-6: development of GIS models Months 7-12: development of the management plan for critical habitats Months 13-18: discussion and approval of the management plan for critical habitats Months: 19-24: implementation of the management plan
Level of urgency:	1
Cost and potential funding sources:	<100 K € (Ministry of Environment, Protected areas, NGOs)
Benefit:	4

4.3. EAST BALKAN

List of actions:

1. Evaluate and control the effect of artificial feeding on bears
2. Identify and protect priority conservation areas of critical bear habitats with multiple uses, with special attention on the functional connectivity between population fragments of Stara Planina and Rilo-Rhodopean segment, as well as Eastern Serbia – northwest Bulgaria

ACTION 1	
Title of the Action:	Evaluate and control the effect of artificial feeding on bears
Objective:	To identify the effect of supplementary game feeding on bears and to implement measures for decrease of its significance for bear habituation
Description of activities:	This problem is of high importance for almost all East Balkan Bear population range, where regular supplementary feeding of game (wild boar, red and roe deer) is in place. Main activities would focus assessment of the level of importance of artificial feeding on bears through telemetry study and activities aiming to find solutions for decreasing of its effect for the habituation of bears (replacement of corn feeding with planted game fields, planted fruit trees, etc)
Expected results:	<ul style="list-style-type: none"> • Less bears close to human settlements • Less habituated/problem bears
Responsibility for implementation:	Forestry units, hunters' associations, Government bodies
Timing of the activities:	Continuous
Level of urgency:	2
Cost and potential funding sources:	Costs: ~<100 K € per year per country Funding: forestry units, relevant GOs and other sources
Benefit:	4

ACTION 2	
Title of the Action:	Identify and protect priority conservation areas of critical bear habitats with multiple uses, with special attention on the functional connectivity between population fragments of Stara Planina and Rilo-Rhodopean segment, as well as Eastern Serbia – northwest Bulgaria
Objective:	Proactive habitat assessment and management actions to ensure long term availability of undisturbed areas and natural key foods for bears within critical areas with multiple use.
Description of activities:	<ol style="list-style-type: none"> 1. To identify, assess and conserve priority areas of critical bear habitats with multiple uses (livestock grazing, hunting, tourism, etc.) 2. Enhancement of functional connectivity between protected areas within the core and the peripheral bear range through special conservation measures with special attention on the functional connectivity between population fragments of Stara Planina and Rilo-Rhodopean, as well as Eastern Serbia – northwest Bulgaria
Expected results:	<ul style="list-style-type: none"> - Critical bear habitats effectively protected - Functional connectivity between population fragments maintained

Responsibility for implementation:	relevant GOs and wildlife agencies
Timing of the activities:	Continuous
Level of urgency:	3
Cost and potential funding sources:	Costs: <100 K € Funding: relevant GOs and other sources
Benefit:	5

DRAFT

4.4. BALTIC

List of actions:

1. Establish and implement measures to predispose expansion of population range southwards
2. Bear occurrence outside permanent range: GIS data base, suitability of possible range

ACTION 1	
Title of the Action:	Establish and implement measures to facilitate expansion of population range southwards
Objective:	Habitat suitability analyses to assess the potential range and population size of bear within Estonia and Latvia, potential movement corridors and limiting factors for expansion. Implement the measures to predispose bear expansion southwards following the results.
Description of activities:	Initiate, develop, finance and carry on the habitat suitability analyse covering whole inland area of Estonia and Latvia. Encourage mammal experts in Lithuania to reconsider feasibility of natural bear range recovering in the country. Implement stricter harvest limits at the southern edge of bear range (Southern part of Estonia) and achieve higher tolerance towards bear conflicts, e.g. by more beneficial compensation system in this region comparing to that in core area of bear range. The key question is to save these few reproductive and/or potential females.
Expected results:	<ul style="list-style-type: none"> • Map of current and potential range of bear in Estonia and Latvia • Current and potential population size • Map of suitable dispersal paths southwards • List of potential limiting factors • List of measures to predispose the expansion • Continuous bear expansion southwards
Responsibility for implementation:	Bear researchers and responsible state agencies
Timing of the activities:	One year for preparatory work and one for implementation
Level of urgency:	1
Cost and potential funding sources:	<100 K €; national environmental or science funds
Benefit:	3

ACTION 2	
Title of the Action:	Bear occurrence outside permanent range: GIS data base, suitability of possible range
Objective:	Monitor the trend of occasional bear occurrences and range expansion in temporal and spatial scale
Description of activities:	Develop a new or improving an existing nature conservation or forest GIS data base. The information system should be easily accessible for public to input the data and at the same time a tool for responsible state agency to control and analyse the data and demonstrate the results. The system should be developed in close cooperation with GIS

	and wildlife monitoring experts.
Expected results:	<ul style="list-style-type: none"> • Functioning GIS database to gather, maintain and analyze the bear observations • Public online access to system to input the observations and view the results • Bear population trends are adequately monitored
Responsibility for implementation:	Responsible state agency in partnership with interested NGO-s and research programs
Timing of the activities:	Two years
Level of urgency:	2
Cost and potential funding sources:	<100 K EUR. State budgets.
Benefit:	2

DRAFT

4.5. CANTABRIAN

List of actions:

1. Resolve the San Glorio ski resort problem. Identify and implement rural development measures compatible with Natura 2000 sites in exchange for abandoning the project of construction of the ski resort
2. Implement actions to facilitate the re-colonization of bears in expansion areas, mainly (but not only) in the eastern population, removing the social and ecological constraints that hinder this re-colonization.

ACTION 1	
Title of the Action:	Resolve the San Glorio ski resort problem. Identify and implement rural development measures compatible with Natura 2000 sites in exchange for abandoning the project of construction of the ski resort
Objective:	To develop rural economy compatible with bear conservation in the eastern population area, where bears are Critically Endangered. Abandon the project of the ski resort of San Glorio, incompatible with bear conservation
Description of activities:	<ol style="list-style-type: none"> 1) A group of experts on rural development with a good knowledge of the economic, social, cultural and natural characteristics of the area of eastern León and western Palencia provinces prepares a plan of rural development in the area. The activities of the plan must be compatible with the conservation of this Critically Endangered bear population, with the requirements of Natura 2000 sites and with the national and regional laws on endangered species and protected areas. 2) The plan is reviewed by the relevant government agency 3) The plan is officially adopted and the project of San Glorio ski resort is officially abandoned
Expected results:	<ul style="list-style-type: none"> - Actions for rural development compatible with bear conservation are proposed and implemented - The illegal project of the San Glorio ski resort is definitively abandoned - The conservation and recovery of this bear population and the economic development of the rural society are compatible in the area - Rural people and bears can coexist in the area
Responsibility for implementation:	Regional government of Castilla y León. Rural development experts
Timing of the activities:	Six months for preparing the first draft. Three months for revision of official adoption of the plan.
Level of urgency:	1
Cost and potential funding sources:	<i>Costs:</i> <100 K EUR for preparing the plan. <i>Funding sources:</i> Regional government of Castilla y León
Benefit:	5

ACTION 2	
Title of the Action:	Implement actions to remove social and ecological constraints to the re-colonization of bears of expansion areas, mainly (but not only) in the eastern population.
Objective:	To improve the conditions of the areas of expansion, mainly in the east of León province, which is crucial to recover the eastern population and to restore the connections with the western population
Description of activities:	<ol style="list-style-type: none"> 1) To know a detailed list of the areas where the bears are expanding, mainly in the east of León province, but also in other areas relevant for the recovery of the population. 2) To obtain a deep knowledge of the actual and potential ecological and social problems that can prevent or delay bear recovery. 3) To work in the conservation of the most relevant forests that provide food, refuge and hibernation habitats of bears in these areas. 4) To work with hunter associations in order to carry out bear-friendly hunting activities in the most important areas for bear re-colonization. 5) Actions to avoid damages to the beehives and to the livestock if it is necessary. 6) Close monitoring of the areas in order to avoid other impacts, such as infrastructure, non-compatible tourism activities, etc.
Expected results:	<ul style="list-style-type: none"> - One person is hired to work in close contact with stakeholders, wardens and managers in the areas where the re-colonization is happening. - A ranked list of the best forest for short-term bear expansion - A list of forestry impacts and solutions - Meetings with hunter associations in order to agree on hunting activities least disturbing to bears. - Electric fences to protect beehives are donated to the producers and training to use and maintain them are offered in the best expansion areas. - A list of other impacts and solutions are provided to the regional governments and managers of protected areas in bear expansion areas.
Responsibility for implementation:	Regional governments, mainly of Castilla y León but also those of Asturias, Cantabria and Galicia. Bear experts.
Timing of the activities:	Continuous
Level of urgency:	1
Cost and potential funding sources:	<100 K EUR/ year to contract one person and vehicle expenses.
Benefit:	4

4.6. CARPATHIAN

List of actions:

1. Promote naturalness of bear feeding habits and provide guidelines for supplementary feeding practices
2. Implement effective programs to reduce the number of stray dogs and enforce the law regarding the guardian dogs
3. Integrating Ukraine to ensure continuity of the bear population throughout the Carpathians

ACTION 1	
Title of the Action:	Promote naturalness of bear feeding habits and provide guidelines for supplementary feeding practices
Objective:	<ol style="list-style-type: none"> 1. Assess the magnitude and trend of supplementary feeding practices for each country, including intentional bear feeding, ungulate baiting and creation of orchards for wildlife feeding 2. Assess the contribution of human-provided food to bear diet in different Carpathian regions 3. Identify main natural bear foods and main threats to important foraging habitats 4. Document the relationship between supplementary feeding and occurrence of problem bears in Poland 5. Workshops in each country organised to increase public awareness on the effects of wildlife artificial feeding 6. Provide guidelines for best supplementary feeding practices
Description of activities:	<p>Data on the amount of artificial food supplied from different feeding practices, as well as the regions where they occur, is gathered for each country in the last years. Traditional diet analyses are conducted in regions where no information on bear diet is available to assess the relative contribution of human-provided vs natural foods. This Action is partly based on and complements the output of a recent scientific project in Poland about the effects of ungulate supplementary feeding on bears. Stable isotope analysis of tissues (mainly hair) from problem and non-problem bears in Poland will reveal potential differences in the contribution of supplemental food to their diets. Results useable for other countries. The whole output, together with existing findings on the effects of artificial feeding on wildlife, is presented at two-day workshops in each country. The recommendation of not to increase the current levels of supplemental feeding is discussed and agreed by national stakeholders. A draft of the guidelines for best feeding practices is produced from each national workshop, and summarized in a general document for the whole Carpathian population. These final guidelines are translated into the national languages, printed as a booklet and distributed among national stakeholders.</p>
Expected results:	<ul style="list-style-type: none"> - Amounts of human-provided food to bears and the trend is known - Bear use and dependency on human-provided food is assessed - Key natural bear foods, important foraging habitats, and main threats are identified - The relationship between human-provided food and the occurrence of problem bears is investigated and documented - Recommendations for best practice regarding ungulate baiting, bear

	intentional feeding and non-natural food plantations (e.g. maize crops, fruit trees) are produced - Best feeding practices and the importance to protect habitats providing bear natural foods are disseminated to stakeholders, media and public.
Responsibility for implementation:	Bear experts, hunting organizations, forest administrations, NGOs and governmental bodies responsible for nature conservation and management
Timing of the activities:	Two years; first year for data gathering, second year for workshops and guidelines preparation
Level of urgency:	3
Cost and potential funding sources:	<100 K EURO per country (workshop, diet and artificial food assessments, guidelines production)
Benefit:	4

ACTION 2	
Title of the Action:	Implement effective programs to reduce the number of stray dogs and enforce the law regarding the guardian dogs.
Objective:	Deploy effective measures, aimed to reduce the number of stray dogs and enforce the wildlife conservation law regarding stray dogs in hunting areas.
Description of activities:	Remove and sterilize the stray dogs from bears territories
Expected results:	Reduction of cubs mortality due to diseases spread by the stray dogs in bear population Reduction of bear cubs killed or orphaned by packs of stray dogs. Reduction of general bear disturbance
Responsibility for implementation:	GOs and Hunting Organisations
Timing of the activities:	Permanent
Level of urgency:	1
Cost and potential funding sources:	<100 K EUR
Benefit:	5

ACTION 3	
Title of the Action:	Extend efforts to Ukraine, to ensure continuity of the bear population throughout the Carpathians
Objective:	Map the bear range in Ukraine Carpathians, estimate bear numbers and identify potential threats for connectivity from Romania to Slovakia and Poland. Need for more detailed map of individual patches. DNA studies to estimate proportion of "common" bears along borders with EU countries. Estimation of illegal hunting on bear.
Description of activities:	Law enforcement in Ukraine in order to reduce poaching of bears When radiocollared bears are crossing the border Ukrainian authorities to be informed in order to check mortality causes.
Expected results:	Better survival rates and better connectivity between bear populations

	from Romania to Slovakia and Poland through Ukraine
Responsibility for implementation:	Ukraine GOs
Timing of the activities:	Permanent
Level of urgency:	1
Cost and potential funding sources:	<100 K EUR
Benefit:	5

DRAFT

4.7 DINARA-PINDOS

List of actions:

1. Facilitated workshops with stakeholders on bear management for production and implementation of management plan (considering trans-boundary character of population)
2. Effect of feeding on bears (in Croatia and Slovenia)

ACTION 1	
Title of the Action:	Facilitated workshops with stakeholders on bear management for production and implementation of management plan (considering trans-boundary character of population)
Objective:	Reaching highest possible degree of consensus on key management principles, responsibilities and mechanisms for implementation.
Description of activities:	Inviting the representatives of all stakeholders to a non-governmental venue for a series of two-day workshops facilitated by a neutral and professional facilitator. Work includes presentations of available factual data from research and monitoring, plenary discussions with raising all relevant issues and debate in small groups. Between two workshops all results are written down and sent to participants. Representatives of interest groups discuss the issues with their base between the workshops. The priorities are the countries in the population range which have no bear management plan yet and no efficient governmental structure.
Expected results:	<ul style="list-style-type: none"> - Reaching consensus on key management actions as: - system of damage compensations - conditions for lethal removal of problem bears - conditions for regulated quota trophy hunting - participation in continuous and standardised monitoring - prevention of illegal killing - base for writing (or revising) the bear management plan - after all each country has a Bear Management Plan - the Plan is accepted by all stakeholders as they participated in its production - trans-boundary cooperation in bear conservation and management
Responsibility for implementation:	Governmental body for nature conservation
Timing of the activities:	Three two-day workshops held over the period of 6 months.
Level of urgency:	4
Cost and potential funding sources:	<100 K EUR per country (9 countries in the population range) Cost is shared by State and EU projects
Benefit:	4

ACTION 2	
Title of the Action:	Effect of feeding on bears (in Croatia and Slovenia)
Objective:	The objective picture of positive, negative and neutral effects of exposing food for bears at feeding sites. The long-term effect can be

	predicted and the sound recommendations for feeding management provided.
Description of activities:	All feeding sites in a target area are mapped and the amounts and types of food recorded. Estimated are the amounts eaten by bears, by other animal species or remained not eaten. The behaviour of bears approaching feeding site is monitored by time of the day and by sex and age class of bear. The amount of stress at feeding site is measured by steroid hormones in bear scats (short-term) and in hair (long-term stress). Stable isotopes will be measured in muscle tissues of shot bears and will show the share of the human provided food incorporated in the body mass.
Expected results:	<ul style="list-style-type: none"> - known amounts of human provided food offered to bears - incorporation of artificial food into bear bodies - the exposure to stress of bears at feeding sites - the degree of dependency to unnatural food sources - the degree of habituation to humans at feeding sites - the effect on body size, sexual maturity, reproduction rate, cub survival and longevity - results will be useable in various countries
Responsibility for implementation:	Bear experts and hunting organizations.
Timing of the activities:	Two calendar years with focus on springs and autumns.
Level of urgency:	3
Cost and potential funding sources:	<100 K EUR for one country
Benefit:	4

4.8 FINNISH-KARELIAN

List of actions:

1. Guidelines for bear feeding to reduce risk of human habituated bears
2. Flexible zoning in bear harvest to mitigate human - bear conflict

ACTION 1	
Title of the Action:	Guidelines for bear feeding to reduce risk of human habituated bears
Objective:	To reduce the risks of bear-human conflict associated with bear feeding
Description of activities:	Feeding bears for tourist purposes is a common practice in eastern Finland. Feeding bears may bring about a risk of bears becoming unwary of people. Presently Finnish legislation does not control this activity properly. Based on available information of bears' behaviour toward humans, including risk assessment, rules and guidelines for feeding bears should be created
Expected results:	Decrease safety risk that is potentially associated with bear feeding
Responsibility for implementation:	Ministry of Agriculture and Forestry, Finnish Wildlife Agency
Timing of the activities:	2014-2015
Level of urgency:	3
Cost and potential funding sources:	<100 K euros, State budget
Benefit:	3

ACTION 2	
Title of the Action:	Flexible zoning in bear harvest to mitigate human - bear conflict
Objective:	Adaptive management of bear population
Description of activities:	Based on regional distribution of bears, regional trends in bear density and damages cause by bears, flexible zoning in bear management could be beneficial.
Expected results:	Higher reactivity to changing situation
Responsibility for implementation:	Finnish Game and Fisheries Research Institute
Timing of the activities:	2015-
Level of urgency:	5
Cost and potential funding sources:	(best estimate or range) <100 K EUR to set the Protocol. State budget
Benefit:	3

4.9 PYRENEES MOUNTAINS

List of actions:

- 1a. Augment bears in central Pyrenees
- 1b. Augment bears in western Pyrenees
2. Promote hunting and forestry activities least disturbing to bears

ACTION 1a	
Title of the Action:	Augment bears in central Pyrenees
Objective:	Increase the demographic and genetic viability of the population.
Description of activities:	Two adult females and one male should be released in core area of central Pyrenees, where at least 20 individuals were detected in 2012. Determination of source brown bear population for the translocation according to logistical, ecological and genetic criteria and preparation of the operation with the authorities of the source country (period of capture, administrative and sanitary requirements). Define specific monitoring for the reintroduced individuals (fitting collar with GPS transmitter, schedule for locations...) and determine what to do if the translocated individuals disperse outside bear area.
Expected results:	<ul style="list-style-type: none"> - After large movement following the release, spatial settlement of the females in central Pyrenees. - Full contribution of the females to the demography of the population, possible births first year after release if females were pregnant at capture. - Increase the genetic variability of the population.
Responsibility for implementation:	Government of Catalonia. Collaboration of France who managed several translocations between 1996-2006.
Timing of the activities:	One year to prepare the operation, and translocation of the bears the following year.
Level of urgency:	3
Cost and potential funding sources:	500 - 1000 KEUR Governments of Spain and Catalonia, European Commission (Life + project)
Benefit:	5

ACTION 1b	
Title of the Action:	Augment bears in western Pyrenees
Objective:	Restore locally a functional population and establish a meta-population at Pyrenean level with the central one.
Description of activities:	A minimum of two adult females should be released in western Pyrenees where only two adult males are present. Determination of source brown bear population (see action 3) for the translocation according to logistical, ecological and genetic criteria and preparation of the operation with the authorities of the source country (period of capture, administrative and sanitary requirements). Define specific monitoring for the reintroduced individuals (fitting collar

	with GPS transmitter, schedule for locations...) and determine what to do if females disperse outside bear area.
Expected results:	- Initiate a new population thanks to reproduction with resident males - Possibility of exchange of individuals between western and central populations (rescue effect in a model of meta-population) - Increase the viability of the meta population in Pyrenees.
Responsibility for implementation:	Governments of Aragon and Navarra. Collaboration of France who managed several translocations between 1996-2006.
Timing of the activities:	One year to prepare the operation, and translocation of the bears the following year.
Level of urgency:	1
Cost and potential funding sources:	500 - 1000 K EUR Governments of Spain, Navarra and Aragon
Benefit:	5

ACTION 2	
Title of the Action:	Promote hunting and forestry activities least disturbing to bears
Objective:	Hunting and forestry activities will remain compatible with the presence of brown bears.
Description of activities:	Producing printed materials and audio-visual aids to hunter and forestry owner showing the interactions between bears and hunting and forest management. How to avoid an encounter with bear. How to act correctly in case of bear encounter. Carrying out talks and conferences to local hunters and forestry owners. Impact study) of the forestry activities (roads, forest trails, etc.) projects on bear habitat (denning and refuge sites, food and reproduction areas).
Expected results:	<ul style="list-style-type: none"> - Distribution of leaflet and audio-visual material about hunting in bear area. - Conferences and talks to local hunters. - Avoid the bear death because of bad customs of hunting. - Avoid the bear attack on hunters because bad customs of hunting. - Avoid the perturbations of hunters and forestry activities on specific areas used by females with cubs. - Guidelines for forest management sustainable with bear presence (avoid the destruction of bear habitats, limit the building of roads or control the access, promote food availability...).
Responsibility for implementation:	France: ONCFS. National Hunting and Wildlife Agency Spain: Governments of Aragon, Catalonia and Navarre. Bear experts, National and Natural Parks, hunting organizations, forestry owner.
Timing of the activities:	Two calendar years. After that should be spontaneously continuous.
Level of urgency:	3
Cost and potential funding sources:	<100 K EUR for each country.
Benefit:	4

4. 10 SCANDINAVIAN

List of actions:

1. Document the effects of forest management on brown bear habitat quality.
2. Brown bear predation on reindeer

ACTION 1	
Title of the Action:	Document the effects of forest management on brown bear habitat quality.
Objective:	Forestry is the dominant land use in bear habitats in Scandinavia, but its effects on the habitat use and population ecology of bears is very poorly known. However, the Scandinavian brown bear is much more productive than the North American brown bear, where negative effects of clear-cut forestry management are well documented.
Description of activities:	Study the habitat use of GPS-collared bears in a forested landscape dominated by clear-cut forestry, looking at how bears react when a part of their home range has been cut, how they select or avoid forest types and ages, the importance of forest management for bear foods (especially berries, ants, and moose calves), and the effect of the size of cutting blocks. This will require advanced spatial analyses.
Expected results:	<ul style="list-style-type: none"> • A documentation of the aspects of modern forestry that are positive and negative for bears • Information that can be useful for forest owners who want to give consideration to bears (and revenues from leasing bear hunting) when they plan forestry management activities • Forest owners might want to document the effects of forest management when selling their forest products to environmentally aware consumers • This would also help managers when coordinating the management of bears and moose in managed forests
Responsibility for implementation:	The Scandinavian Brown Bear Research Project
Timing of the activities:	This project could use existing data (GPS data from bears, forestry data from forest owners). It would probably take 2 years.
Level of urgency:	5
Cost and potential funding sources:	This project is ideally suited for a PhD project. The forest industry would be the logical funding source. A 3-year PhD project in Norway or Sweden costs 100K-500K EUR
Benefit:	3 (if it results in better bear habitat)

ACTION 2	
Title of the Action:	Brown bear predation on reindeer
Objective:	Studies have documented that brown bears kill a considerable number of privately owned semi-domestic reindeer calves during the spring, at least in forested reindeer husbandry areas. Some are calling for a reduction in the bear population to reduce this loss of reindeer. We need information on whether this is also a problem in mountain reindeer husbandry areas and the effectiveness of measures to prevent or reduce predation.

Description of activities:	Repeat the study conducted in forested reindeer husbandry areas in mountainous areas and conduct rigorous tests of the effectiveness of measures to prevent or reduce predation, in cooperation with reindeer owners.
Expected results:	<ul style="list-style-type: none"> • Provide reindeer owners with guidelines regarding measures to reduce or prevent bear predation on reindeer. • A documentation of the effect of bears on the reindeer industry throughout the reindeer husbandry area, which would be useful to managers when setting population goals for bears. • Better knowledge about predation rates, which will assist the authorities when deciding fair compensation payments for bear predation on reindeer.
Responsibility for implementation:	The Scandinavian Brown Bear Research Project, Swedish Wildlife Damage Center
Timing of the activities:	This project would require the marking of many bears with GPS-collars, pregnant female reindeer with transponders, and intensive fieldwork during both the research phase and the testing of preventative methods phase. It would require 3-4 years.
Level of urgency:	1
Cost and potential funding sources:	This would probably cost over 1000 K EUR and could be funded by the national departments of Agriculture and/or Environment.
Benefit:	5