

Layman's Report

The present document represents the Layman's Report compiled in the framework of:



LIFE CO-OP NATURE PROJECT
“Principles for the establishment of an Alpine brown bear population”
LIFE2003NAT/CP/IT/000003



The project was assigned and financed by European Commission to **Adamello Brenta Natural Park** (beneficiary), **Slovenia Forest Service – Department for Wildlife Conservation and Hunting** (partner), **Department of Animal Production Science - University of Udine** (partner), **WWF Austria** (partner).



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Project description

Brown bears (*Ursus arctos*) were widely distributed on the Alps until the 18th century. Then, a drastic bear reduction, mainly due to human presence, took place on the Alps leading to the present situation which is shown in Figure 1. Today, in north-eastern Italy, Austria and Slovenia there exist brown bear populations which are characterized by a low number of individuals (except for the Slovenian one) and in most cases isolated from each other. This poses a serious problem as it is possible that, in the future, the lack of exchange of individuals between the different groups may cause their extinction.

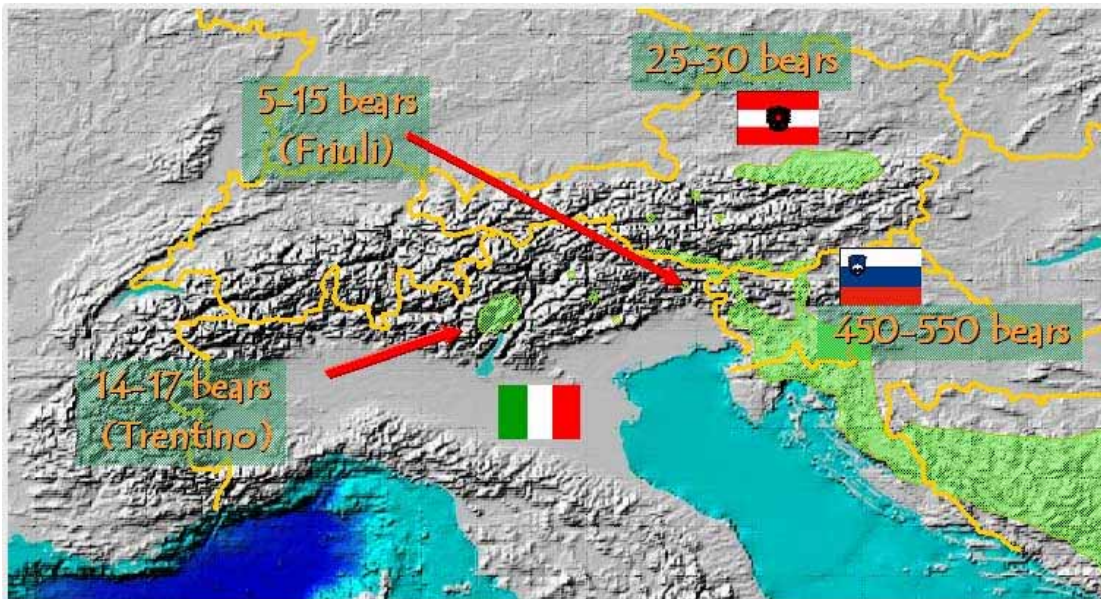


Figure 1 - Distribution and consistency of brown bear nuclei on the Alps.

Brown bears' future on the Alps is thus strongly dependent on the possibility of a brown bear metapopulation development. For metapopulation we mean an animal population made-up by more disjoint groups, separated by territory distances, but able to interact with each other by reciprocal exchanges of individuals which contribute to a genetic variability and a common gene pool (Fig. 2). This promotes a panmixia which should be an important feature of each population.

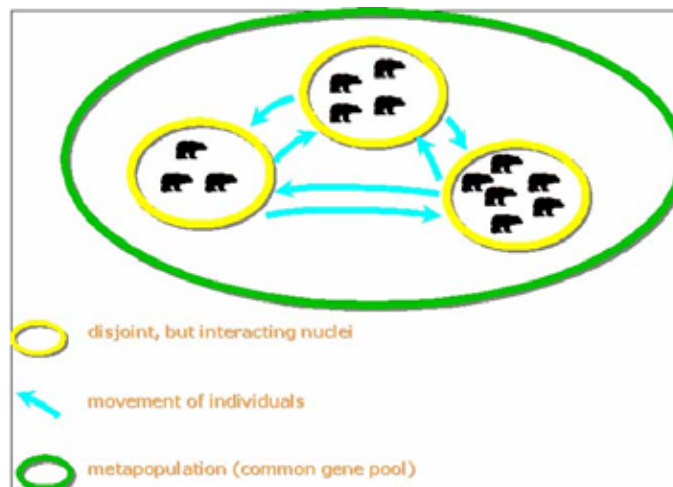


Figure 2 - Concept and constitutive elements of a "metapopulation".

In simpler words, the development of a metapopulation would mean (Fig. 3) the establishment of a connection among the nowadays separated groups of bears, which would be free to migrate between Slovenia, Austria and Italy and maybe one day even Switzerland, with a notable “reinforcement” of the nuclei and the definitive return of the species on a wide area of Southern Europe.

Such an objective is of particular interest for many ethical, moral and also legal reason considering that brown bear is included in Annex II of Habitats Directive (92/43/EEC), which is the legal framework of the EU for the protection of endangered animal and plant species, as well as habitats. *Ursus arctos*, brown bear, is there referred to as “Priority species” (with asterisk), as species “for the conservation of which the Community has particular responsibility” (Art. 1 of 92/43/EEC) and “for which Member States shall undertake surveillance of the conservation status” (Art. 11 of 92/43/EEC). In Habitats Directive, Annex IV, brown bear is also listed among the “species of community interest in need of strict protection”.

Another important convention for the protection of threatened species in whole Europe (the so called Bern Convention of 1979) also lists brown bear in Annex II (“Species of strictly protected fauna”): this convention stimulates the adherent nations to find adequate measures of safeguard for the species and of habitat conservation.

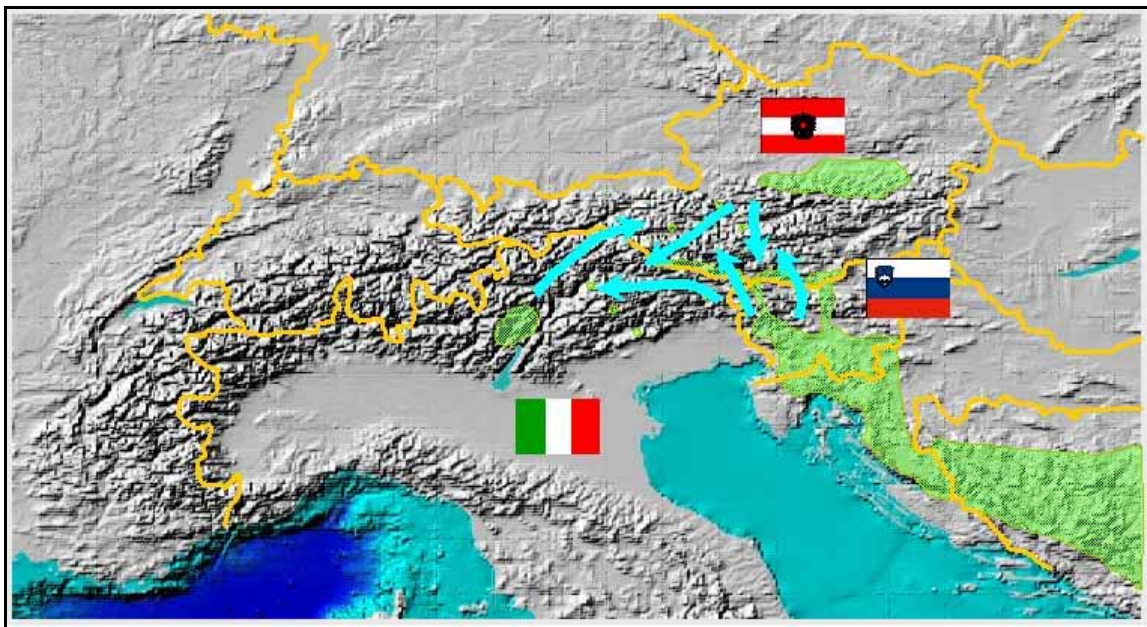


Figure 3 – Simplified view of the requirements needed for the development of an alpine brown bear metapopulation.

To understand if there are any chances for the development of an alpine brown bear metapopulation, between January 2004 and December 2005 a study in the shape of a LIFE Nature Co-op project was realized. The LIFE-program of the European Union supported Austria, Italy and Slovenia in a common project to examine the possibilities of the establishment of a alpine wide brown bear population in the future.

To better understand what a LIFE Co-op project is, we can say that a LIFE Co-op project involves at least 3 promoters or partners of (under way or already done) LIFE projects dealing with the same conservation subject (in this case, brown bears). This represents a good channel of co-operation and networking among several LIFE-Nature projects in order to share different experiences in support of species' conservation.

In the table below, each partner project reference is shown, with the year of realization and official UE code.

COUNTRY	CORPORATION	LIFE PROJECTS	YEAR	CODE
Italy	Adamello Brenta Natural Park 	Life <i>Ursus</i> Project – protection of Brenta brown bear population	1996	LIFE96NAT/IT/003152
		<i>Ursus</i> Project – second phase of Brenta brown bear protection”	2000	LIFE00/NAT/IT/007131
	University of Udine 	Priority measures for the conservation of large carnivores in the Alps	1997	LIFE97NAT/IT/004097
		Integrated plan of action to protect two NATURA 2000 sites	1998	LIFE98NAT/IT/005112
Slovenia	Slovenia Forest Service 	Conservation of large Carnivores in Slovenia – Phase I (<i>Ursus arctos</i>)	2002	LIFE02NAT/SLO/8585
Austria	WWF Austria 	Bear protection program for Austria	1995	LIFE95NAT/A/000399
		Conservation and management of the brown bear in Austria	2002	LIFE02NAT/A/008519

Project objectives

The present project intended to analyse the possibility that the conservation efforts realized in the different countries can find unity, both ideal and concrete, through the migration of the animals among the different existing nuclei, with the consequent creation of a brown bear metapopulation in Southern Europe.

To analyse the possibility of development and steadying of a bear metapopulation in the area among north-eastern Italian Alps, Austria and Slovenia, criteria of dynamic modelling were applied on the existent nuclei. Such a modelling foresaw, besides a territorial analysis aiming to valuate the presence of areas suitable for bears, the simulation of the future dynamics of occupation of the same areas, starting from simulations on the numerical dynamic of the populations (dynamic predictive models).

Thanks to the project, it was also possible to encourage the exchange of experiences among the above mentioned beneficiaries of the LIFE projects and, through the final report, to pass such experiences to other European countries committed for the species conservation.

In brief, the goals of the project were:

- to cooperate in order to evaluate the possibility to achieve a vital brown bear metapopulation on the Alps of: north-eastern Italy, Slovenia and Austria;
- to realize a common analysis of scientific data regarding environmental valuation for the species and population dynamics;

- to promote exchange of information and experience about coexistence between man and bear in the territories of the three countries;
- to supply the administrations responsible of SCIs management with a decisional support useful above all for what concerns the communication activities necessary to favour brown bear presence.

Results

The outputs of the scientific analyses realized (dynamic modelling) confirm that the area considered by the present study offers significant possibilities for a territorial development of brown bear populations currently present in Slovenia, Austria and northern Italy (Fig. 4).

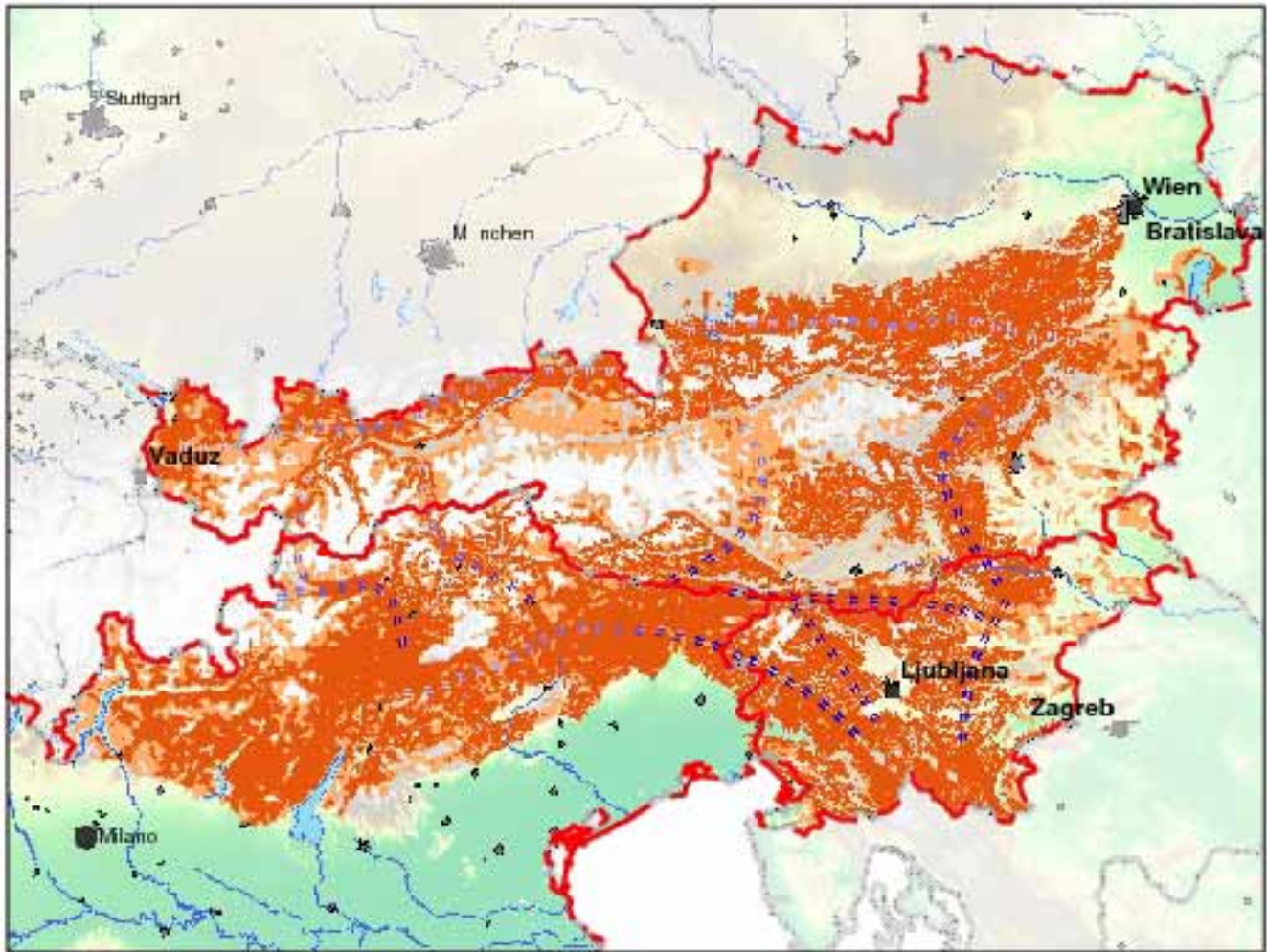


Figure 4 – Map representation of potential distribution of brown bears (orange = potential distribution; lighter orange = areas suitable for bear passage). Potential corridors are shown with blue arrows (darker arrows indicate already active corridors).

Looking at the map, it is evident how, although bear nucleus present at the moment are exiguous (with the exception of Dinaric – Slovenian population which is estimated at the moment in 450-550 individuals) and occupy a limited area, suitable areas for species potential presence are widely extended. More in detail, wide territories suitable for the species emerge in the midst of the zones currently frequented by bears.

This enables to think that the populations studied have a great future development possibility both in territory and, consequently, in number. The four considered nuclei are likely to reach independently such a dimension that keeps them safe from the extinction in medium and long term period.

Therefore, the picture which comes out from the analysis performed clearly shows as possible the future achievement of a brown bear metapopulation in Southern Europe.

Considering that the first goal for the project was to verify such a possibility, we can state that present LIFE Co-op project has obtained a notable result, supporting the idea that brown bear conservation in Southern Europe must be considered in a supranational context.

Nonetheless, a low correspondence between the Environmental Evaluation Model realized and brown bear distribution in Austria has been noticed. With reference to the wide study area of application of such a model, anyway, the value of the predictions about environmental suitability must be considered at a big scale rather than at a small scale: it seems, in fact, unavoidable that on such a wide territorial scale, a detailed analysis on a small scale points out local situations in which the applied model has not given correct predictions.

The Alpine situation described for brown bear is, on one side, potentially positive for the future of the species. On the other side, though, it necessarily leads to reflect on what kind of actions can be realized in order to favour the expansion of present brown bear populations. Despite the individuation of such actions is not among the primary goals of the present report, the following hypotheses can be formulated, in a preliminary way, in order to start working for a future territorial expansion of the bears and thus for the achievement of the metapopulation:

- conservation of all suitable habitats;
- release of bears in north-eastern Italy with the aim of creating a “bridgehead” that can favour contacts among already present populations;
- realization of divulgation/sensitization activities for public opinion of the possible expansion areas.

In order to realize the above mentioned points, the necessity of a connection at governmental level among the three involved nations becomes evident. Through their competent Ministries, the Governments of Italy, Austria and Slovenia could in fact search for the most effective strategy for the conservation of the species. In this context, the participants to the present project, as well as any other institution involved in bear conservation, will be able to act, on the basis of transboundary agreements, as “local executors” of the programmed activities.

The applied model evidences also the presence of various areas not suitable, from an environmental point of view, for the stable presence of the species, but that can be considered suitable for bear passage. These transition areas can be corridors connecting stable presence areas and allowing the establishment of a metapopulation. Through the corridors, in other words, bears could in the next future manage to move from one area to the other, allowing individuals (and genes) exchanges among nucleuses otherwise isolated, and therefore supporting the achievement of the genetic variability typical for the species.

In this sense we must also remind the possibility of the species to move through long distances, which allows it to travel tens kilometres in a single day and thus to fully exploit transition areas. In detail, the following two-ways “routes of expansion” seem to be evident:

Corridor path		Geografic interested area
1	East "Slovenia-Austria"	From Southern Slovenia forests (West core area part - Kočevje Reserve) going northwards, passing east of Ljubliana and south-west of Maribor. From here passing North-western Slovenia-Austria boundary, entering in Austrian Steiermark with a curvilinear path west and north of Graz.
2	West "Slovenia-Austria"	From Southern Slovenia forests (western part of the Slovenian core area - Jelen-Sneznik Reserve) going northwards to Triglav area, as far as ideally connecting with the corridor number 3 of the present table.
3	"Slovenia-Austria" boundary	Near and along Slovenia – Austria boundary: northern of Ljubliana, southern of Klagenfurt, almost until the border between Austrian Länder of Carinzia (Kärnten) and Tyrol. This corridor can be intended in continuity with the ones reported with number 1, 2, 4 and 5 in the present table.
4	East-West "Slovenia-Italy"	Wide potentially suitable area for bear movements, going from Southern Slovenia (western part of the core area) north-westwards. Beyond Slovenia-Italia boundary, passing from Friuli and Veneto until Trentino.
5	East "Italy-Austria"	On the Italian-Austrian border line (boundary between Friuli-Venezia-Giulia and Veneto regions) going northwards with a curvilinear path open westwards, in the western part of Austrian Land of Kärnten till Salzburg Land.
6	Centre "Italy-Austria"	From Cadore (BL) towards Bolzano province going up along Isarco Valley. From Vipiteno, towards Brenner pass, in Austria as far as Innsbruck (Tirol).
7	West "Italy-Austria"	In Tyrol, along Adige valley, western of Bolzano, along Venosta Valley to Engadina at one side and to Western Austria end at the other.
8	West-East in North part of Austria	From west to east in the northern part of Austria.

Corridors listed in the table below must not be intended as the only walkable areas for bears, but more simply as the ones where, according to the identified model, probabilities of their passages are higher. Also for this reason the graphic corridor representation do not report detailed indications and do not supply information about the same corridors width. It is thus evident their only descriptive value.

We must finally consider that the present study, in order to verify the possibilities of establishment of a metapopulation among currently present nuclei, limited the model application area to Central and Oriental Alps, i.e. to the territory enclosed in the triangle obtained joining existing bear populations. For this reason it is likely that even outside the study area there exists wide bear suitable territory and, as a consequence, that species future development along other portions of the Alps is possible.

Scarcity and dissimilarity of bibliographic data referring to brown bear population dynamics in Southern Europe has made impossible to produce reliable predictions concerning times of expansions and thus movements into the above mentioned corridors. It must, in fact, be considered that, without trustworthy sources, normal sinusoidal fluctuations that characterize animal population dynamics make even more aleatory the possible predictions on the timings of future colonization of the areas which are suitable for the species. Nevertheless it appears evident that current environmental and anthropic attributes of the study area can be considered suitable for the development and steadying of a bear metapopulation. It must be however considered that population dynamic factors, which can bias this possibility, have a low predictability in time. In particular, all the factors increasing direct mortality of the animals will have to be carefully examined.

As a correct and successful communication strategy is a basic requirement to promote the safeguard of expanding and/or exploring bears and also an essential requirement for the general objectives of species conservation at European level, another notable result of the project is the gathering of project participants' experiences in the framework of communication with the public and the consequent development of a synthesis of the techniques used in the past.

The identification of summary principles of communication to the public – which have been synthesised in a document named "Summary Principles of Communication for Brown Bear Conservation in the Alps" - will be useful to support the establishment of an Alpine brown bear metapopulation. In case of bear presence in new settlement territorial conditions, the principles outlined should serve as a reference for the administrators of the interested areas in order to facilitate the necessary public relations. In areas where the species is already settled, or even where it occurs sporadically, such principles should serve as a support to better plan an efficient communication strategy for brown bear conservation.

Although this output of the project is intended to be useful to favour coexistence between men and bears, the hope is that what is outlined may be of help also to cope with the presence of other Alpine large carnivores, such as wolf and lynx, who usually pose analogous concerns.

Conclusions

The modelling procedure permitted to obtain a map useful to identify areas suitable for bears on the Alpine territories of Austria, Italy and Slovenia. The migration of bears in those areas appears essential to favour, in the near future, the development and steadying of a bear metapopulation in Central-eastern Alps, which is considered one of the most important goals to achieve in order to avoid species extinction on the whole Alpine Mountain.

The project thus supplies European Commission and all the administrations responsible of SCIs management with useful information about the areas where bear expansion is probable in the next future. In this context, the review of the activities useful to cope with brown bear presence, also realized by the present project, may be of use to SCIs managers for writing the "Conservation Measures", referred to in art. 6 of Habitats Directive.

After all, the outcomes of the model produced are useful to valuate the areas of real or potential bear presence from the viewpoint of the NATURA 2000 Network and may stimulate the establishment of new SCIs in the areas of future steady presence of the species (which is listed in Annex II of Habitats Directive). They may as well stimulate the improvement of the network among all the already existing SCIs where bear transit is foreseen.

Finally, it can be assumed that the outcomes of the present project could indirectly be useful for the safeguard of habitats and of other animal and vegetal species in the areas considered by real or potential bear presence.

Last but not least, the successful cooperation among the four institutions involved (a governmental body, a protected area, a university research institute and a NGO) constitutes by itself a goal, also considering that one of the main problems in the conservation of large carnivores in Europe is the lack of exchange among the involved administrations. Such a cooperation may represent the first step of a wider collaboration in the framework of the connection at governmental level which is necessary for brown bear conservation on the Alps.