

**SUPRA-REGIONAL ACTION PLAN FOR
THE CONSERVATION OF THE BROWN
BEAR IN THE ITALIAN CENTRAL-
EASTERN ALPS
(PACOBACE)**

This publication series, specifically focused on conservation problems of Italian wildlife, is the result of a co-operation between the Nature Protection Service of the Italian Ministry of the Environment and the Protection of Land and Sea and the Institute for Environmental Protection and Research (ISPRA).

Aim of the series is to promote a wide circulation of the strategies for the wildlife preservation and management worked up by the Ministry of the Environment and the Protection of Land and Sea with the scientific and technical support of the ISPRA.

The issues covered by this series range from general aspects, based on a multidisciplinary and holistic approach, to management and conservation problems at specific level.

La collana “Quaderni di Conservazione della Natura” nasce dalla collaborazione instaurata tra il Ministero dell’Ambiente e della Tutela del Territorio e del Mare, Direzione per la Protezione della Natura e l’Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA).

Scopo della collana è quello di divulgare le strategie di tutela e gestione del patrimonio faunistico nazionale elaborate dal Ministero con il contributo scientifico e tecnico dell’ISPRA.

I temi trattati spaziano da quelli di carattere generale, che seguono un approccio multidisciplinare ed il più possibile olistico, a quelli dedicati a problemi specifici di gestione o alla conservazione di singole specie.

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Ministry of the Environment and
the Protection of Land and Sea

Italian National Institute for Environmental
Protection and Research

**SUPRA-REGIONAL ACTION PLAN FOR THE
CONSERVATION OF THE BROWN BEAR IN THE
ITALIAN CENTRAL-EASTERN ALPS
(PACOBACE)**

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PACOBACE working group.

The supra-regional PACOBACE group was established in order to develop a "Supra-regional action plan for the conservation of the brown bear in the Central-Eastern Alps", as provided for in the agreement regarding the conservation and management of the brown bear in the Italian alpine area.

The institutions making up the group are: the Autonomous Province of Trento (Forests and Fauna Department), the Autonomous Province of Bolzano (Forests and Hunting Department), the Friuli Venezia Giulia Region (Department of Agriculture), the Lombardia Region (Department of Agriculture and Department of the Environment), the Veneto Region (Department of Fauna and Hunting Policy), the Ministry for the Environment and the Protection of Land and Seas (Department of Area Environmental Values – nature conservation office), the ISPRA.

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Introduction

Action plans are a fundamental tool for the conservation of threatened species, and in many cases the implementation of such documents has permitted to recover species on the brink of extinction, so ensuring their persistence in the long term. However, the efficacy of action plans has often been limited, in particular because of the lack of enforcement of the actions prescribed by the documents. The risk that the measures included in action plans are not enforced is particularly high in legal frameworks such as the Italian one, that – differently to what happens in other countries – do not give to action plans legal value.

But the limited enforcement of action plans so far completed in Italy is also due to administrative fragmentation of our country in respect to wildlife management, that makes necessary a complex consultation process with the local administrations, protected areas, and different sectors of the public administrations in order to ensure a coherent implementation of the management options.

The difficulty to achieve coordinated and coherent management policies is particularly evident in the case of the Brown bear, both because this carnivore moves over very large areas, so imposing a supra-regional coordination, and because the interactions of the bear with human activities - from live stocking, to agriculture, from tourism, to human safety impose the involvement of several different sectors in the drafting of action plans.

For these reasons, when it became necessary to produce a strategy for the conservation of the Brown bear in the alpine arch, it was decided to follow an innovative approach, involving all the public administrations of the region. All regional and provincial administrations signed a Memorandum of Understanding, committing to collaborate for the development of the action plan, through a coordination role of the Autonomous Province of Trento, the scientific supervision of ISPRA, and under the auspices of the Ministry of Environment.

To complete this task a working group has been established, involving all local administrations, and ISPRA; that has provided the highest scientific knowledge on the issue. The drafting of the action plan also requires a number of technical meetings, carried out in the different areas interested by the work, ensuring a transparent effort to integrate the different views, approaches, and advices provided by all public bodies.

The Action Plan you now have in your hands is a first example of an innovative approach for Italy, based on a large consultation process, that have permitted to develop a widely agreed document, that has been formally endorsed by all local administrations, thus providing, for the first time in Italy, the Action Plan with a formal legal power. It must be underlined as the actions identified by the plan (monitoring, management of damage and emergency situations, staff training, communication) have been developed making reference to the experience gathered in Trentino in the last years, following the successful reintroduction of bears carried out by the Natural Park Adamello Brenta, the Autonomous Province of Trento, with the support of ISPRA and of the Ministry of Environment. In fact, in the carrying out of the reintroduction the Province of Trento has addressed – with the support of many bodies and institutions – the complex problems that the presence of this carnivore can cause, developing valuable experiences not only for the national context, but also at the international scale.

Based on the complex technical and Institutional work that has brought document, this Action Plan is the formal reference document for the Italian State, the Regions, and the Autonomous Provinces on the management and conservation of the Brown bear in the Alps. We hope that the innovative approach followed for the drafting of the document will provide a unique example also for other similar tools in the future.

For the Ministry of the Environment and the Protection of Land and Sea
Pier Luigi Fiorentino

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1. INTRODUCTION

National and international regulatory framework

The brown bear (*Ursus arctos*) is protected by the framework law of 11 February 1992, no. 157 –including it among species specially protected (art. 1 paragraph 1) by the Berne Convention – which includes the carnivore among strictly protected species – and by EC directive 92/43/EEC (“Habitat” directive, implemented by Italy with the DPR of 8 September 1997 no. 357, amended and supplemented by the DPR of 12 March 2003, no. 120) – which includes it among species of European Community interest in need of strict protection.

The national and international regulatory framework summarised above provides for a strict ban on the killing, capture, disturbance (in particular during periods of reproduction and hibernation), confinement and trading of brown bears (L. 157/92 and DPR 357/97 art. 8).

The “Habitat” directive and the relative national implementation provisions, have introduced general obligations for the safeguarding of populations and their habitat, which must be kept in a satisfactory state of conservation (DPR 357/97 art. 1 paragraph 2). DPR 357/97 also introduced the obligation for regional authorities and autonomous provinces to guarantee monitoring of the conservation of the species on the basis of guidelines produced by the Ministry for the Environment and the Protection of Land and Seas in collaboration with ISPRA (DPR 357, art. 7 paragraphs 1 and 2).

Waivers to the ban on the capture or killing of animals may be granted in order to prevent serious damage, in the interests of public security or for research and reintroduction, on condition that there are no alternative solutions and that application of the waiver does not prejudice the satisfactory conservation of the population (DPR 357/97 art. 11).

The application of waivers requires specific authorisation from the Ministry for the Environment and the Protection of Land and Seas, given on the basis of a technical evaluation of ISPRA. The Ministry for the Environment and the Protection of Land and Seas is obliged to send a report on the waivers granted (DPR 357/97 art. 11, paragraph 3) to the European Commission every two years.

Repartition of roles and responsibilities in relation to the conservation and management of brown bears

As has been stated, the national and international regulatory framework gives the Italian state responsibility for ensuring the satisfactory conservation of brown bear populations present in its territory. The regional authorities and autonomous provinces have the task of implementing action to safeguard, manage and monitor bear populations for the overall aim identified above. ISPRA has the task of providing technical-scientific support to central and peripheral organs, drawing up projects for recovery and supplying technical-scientific evaluation on safeguarding action to be taken by the responsible authorities.

Conservation status of the brown bear in the Italian Alps

Up to the 17th century the brown bear was still to be found in large numbers over a widespread area. From the following century, progressive deforestation and the transformation of mountain areas for agriculture, together with constant persecution by man, led to the species gradually becoming more and more rare, eventually becoming extinct in the western and eastern Alps. In the middle of the 20th century the bear had disappeared almost everywhere in the Alps, with the exception of a small group of bears in western Trentino, this too however having seen a progressive fall in numbers which almost led to its extinction at the end of the 1990s, when the programme of reintroduction was initiated.

Currently (2007) in the central Alps, following the releasing of 10 bears between 1999 and 2002, there is a group of around 22 - 25 bears. The project which made it possible to avoid the disappearance of the bear in the central Alps, called “*Life Ursus*”, was promoted by the Adamello Brenta Nature Park in collaboration with

the Autonomous Province of Trento and the former National Wildlife Institute (now ISPRA); to date it represents the most important conservation project ever realised in the Alps for bears, made necessary as the only way of safeguarding the last group of bears present in the Alps, at that time considered to be biologically extinct. In the period 2002-2006 11 females were recorded as having given birth, leading to the birth of 24 cubs. Although the group is growing constantly, the conservation of this small population remains precarious, considering the limited number of individuals it comprises and the isolation from the Dinaric-Balkan area, which to date has not allowed any gene-flow between the two populations.

In the eastern Italian Alps there are a few individuals (less than 12, as a rough guide) coming from the Dinaric-Balkan population due to natural dispersion. No case of reproduction has been ascertained after 1988 and the group present in the eastern Italian Alps can therefore no longer be considered viable.

Considering the limited overall numbers and the isolation of the population of the central Alps from the eastern group, the state of conservation of the brown bear in the Alps remains extremely precarious and therefore requires the implementation of an active conservation policy by those responsible for the question.

In order to ensure the survival of the bear in the Alps in the medium-long term it is considered necessary to encourage settlement of a metapopulation, made up of a central group of around 50 adult individuals in the central Alps and a stable nucleus in the eastern Alps, functionally linked to the Dinaric-Balkan population through a gene-flow.

Principles of conservation and objectives of the Action Plan

With recommendation no. 74 (1999) the Berne Convention invited European countries to produce action plans regarding the brown bear, bearing in mind the indications given in the European Action Plan for the Conservation of the Brown Bear (Swenson J.E., Gerstl N., Dahle B., Zedrosser A. 2001. Action Plan for the Conservation of the Brown Bear in Europe (*Ursus arctos*). – Nature and environment 114. 69 p). This document therefore represents a point of reference for national policy on the subject.

Given the precarious state of conservation of the brown bear in the Alps, the obligations deriving from national and international provisions on the species and the guidelines contained in the European Action Plan, this Action Plan for the Conservation of the Brown Bear in the Central-Eastern Alps sets itself the objective of maintaining or reconstructing a viable population of the carnivore in the Italian Alps, coexisting with man, as an integral part of the ecosystem and landscape of this region.

The reintroduction undertaken in the Central Alps has been an essential feature in achieving this overall aim (*European Action Plan - Objective 2*). It is also essential to reduce conflict between bear and man and to promote a positive attitude in terms of public opinion regarding the species (*European Action Plan - Objective 3*).

For these specific objectives it is necessary, among other things:

- to put into effect coherent and organic policy regarding programmes for the prevention and compensation of damage (*European Action Plan: actions 4.4.1, 4.4.2*);
- to prevent the onset of problem behaviour by bears, by reconditioning over-confident animals;
- to carry out information and communication campaigns (*European Action Plan – action 4.7.1*);
- to ensure programmes for monitoring the bear population and the damage recorded (*European Action Plan – action 4.8.2*).

As emerges from the action priorities summarised above, the resolving of conflict between bears and man is a critical aspect of policy for the conservation of the species. Indeed the economic damage caused by bears has been the main cause of persecution of bears and still leads to a concrete risk of illegal killing. Furthermore tension linked to the presence of the brown bear, often increased by emotional and psychological aspects linked to fear, may contribute towards diminishing acceptance of the species by the local population and thus hamper the implementation of policy to safeguard the animal.

In the light of the considerations above, also considering the jurisdiction of the regions and autonomous provinces in this area and the need for conservation policies to be applied at the level of the metapopulation, it is clear that there is a need to ensure standardisation of policy for the conservation of the brown bear on an alpine scale and hence coordination between the relevant local authorities. For these reasons this Action Plan has been realised with the direct involvement of the regions and autonomous provinces in the central-

eastern alpine area: the Autonomous Province of Trento, the Autonomous Province of Bolzano and the Lombardia, Veneto and Friuli Venezia-Giulia Regions.

These authorities have signed an agreement in which they undertake to collaborate in the drawing up of an "Interregional Action Plan for the Conservation of the Brown Bear in the Central-Eastern Alps", drawn up with the coordination of the Autonomous Province of Trento and the scientific supervision of ISPRA. This will subsequently be ratified by the authorities and formally adopted by the Ministry for the Environment and the Protection of Land and Seas. The Action Plan will be published by the Ministry for the Environment and the Protection of Land and Seas.

This Action Plan therefore represents the document of reference for the Italian state, regional governments and autonomous provinces in relation to the management and conservation of the brown bear in the Alps, particularly in relation to aspects regarding: monitoring and sharing of information; criteria and procedures for compensation and the prevention of damage; criteria and procedures for intervention in critical and emergency situations; staff training; communication initiatives.

It is hoped that this document may assist local governments in the alpine region by promoting coordination between authorities, simplifying processes for authorisation in relation to different action for the management of the bear, identifying roles and responsibilities in relation to the question and making the best use of the resources necessary for the realisation of activities for the management and conservation of the species. It also meets the obligations arising from art. 7 of DPR 357/97, containing guidelines for monitoring the species.

Considering that the territory of the brown bear in the Alps stretches out over an area covering more than one country, in the medium-long term it is considered necessary to also extend the collaboration between the authorities assisting in the drawing up of this plan to neighbouring countries, in order to promote the standardisation of policy for the conservation of the species on a cross-frontier scale.

CHAPTER 1 – PROTOCOLS AND MONITORING TECHNIQUES

1.1. - INTRODUCTORY REMARKS

- Effective medium-long term policy for the conservation of the brown bear and the correct management of conflict with man's activities relies on **adequate information regarding the distribution, consistency and population dynamics and variations in these parameters over time.**
- The presence of the group of bears originating in the project for reintroduction to the Central Alps also makes it necessary to carry out constant **evaluation of the results achieved in terms of reproductive success and geographical expansion.**
- An effective strategy for the prevention and compensation of damage, with a view to making the most of the financial resources and tools available, requires **information on the area occupied** by bears and on **their individual behaviour.**
- In the case of the brown bear, a species characterised by much wider dispersion of males as compared to females, data regarding the ratio between the sexes in the population takes on particular importance, along with statistics relating to presence/numbers. Indeed various marginal areas of the species' territory record the exclusive or prevalent presence of males, with clear consequences regarding the likelihood of them settling and an increase in such groups. It is therefore necessary to set up **survey programmes making it possible to characterise individual bears, identifying in particular the presence of males and females and recording any reproduction.**
- Faced with the need to ensure adequate monitoring of bears, it should be underlined that **study of the bear, as in the case of other large carnivores, involves certain operational difficulties,** linked to the elusiveness of the species, its nocturnal habits, the low density, the large areas covered by some individuals and the prolonged period of inactivity in winter.

1.2. - REGULATORY ASPECTS

The starting up of monitoring programmes is specifically provided for by the European Union "Habitat" directive, which was implemented in our country by DPR 357 of 1997; art. 7 of this decree indeed establishes that the Ministry for the Environment and the Protection of Land and Seas, with its own decree, having consulted the Ministry for Agricultural and Forestry Policy and the ISPRA, shall define guidelines for the monitoring of species of community interest (which include the brown bear). The regions and the autonomous provinces of Trento and Bolzano must therefore set up, on the basis of these guidelines, programmes for monitoring the conservation of species of community interest (art. 8, paragraph 4), communicating the results annually to the Ministry for the Environment and the Protection of Land and Seas. The Ministry, in its turn, is required to transmit these results to the European Commission through periodic reports (every 6 years) on the implementation of the regulations (art. 13).

1.3. – OVERALL AIM

To set up an effective **programme of monitoring** for the brown bear **on an interregional scale** based on:

- ❖ coordinated programmes implemented by the different authorities involved;
- ❖ standardised monitoring methods, adjusted on the basis of the distribution and number of bears at local level;
- ❖ implementation of a single genetic database relating to the alpine metapopulation of the brown bear.

1.4. – SPECIFIC OBJECTIVES

The specific objectives of a monitoring programme, namely the methods or combination of methods to be used, must be identified bearing in mind different environmental situations, the different numbers of bears and distribution of the population and the specific management/conservation priorities (Table 1.1). In general, monitoring techniques should at all events be inspired by criteria of objectivity, repeatability and scientific rigour, in line with the human and financial resources available.

In areas not yet concerned by the presence of bears, rapid ascertainment of the presence of any roaming individuals is a priority. For this purpose the priorities are advance training of staff and the preparation of monitoring procedures to be set up when sightings of bears are reported. In places where the bear is present in a stable manner the priorities are to ascertain whether reproduction has taken place and to set up medium-long term programmes allowing the structure of the population to be analysed and its to be progress checked.

In every case of recorded damage or noting of problem behaviour, it is necessary to start up monitoring programmes making it possible to identify the specific individuals responsible for this behaviour in order to increase the efficacy of action to prevent/mitigate conflict (Table 1.2).

1.4.1. Starting up of a coordinated monitoring programme using non invasive genetic methods

Non-invasive genetic sampling methods – which are based on analysis of DNA taken from samples of hair and faeces using modern molecular biology techniques – make it possible to obtain and possibly estimate various parameters regarding the population. In particular it is possible:

- 1) to determine the minimum number of animals present through the number of unique genotypes identified following analysis;
- 2) to highlight the eventual immigration of new individuals;
- 3) to determine the sex of the individuals identified;
- 4) to identify new-born cubs and reconstruct family relationships between the bears.
- 5) to estimate the numbers, rate of growth and survival rate of the population;
- 6) to follow the movement and distribution of the animals over the area;
- 7) to monitor genetic variability and the rate of inbreeding of the population over time.

The data gathered using genetic monitoring may also provide a useful form of support for the starting up of measures to limit conflict between men and bears, through identification of the individuals responsible for damage or critical situations.

A coordinated monitoring programme for the brown bear in the Central-Eastern Alps using non-invasive genetic techniques must be organised on the basis of the following principles:

- ❖ taking and conservation of biological samples according to specific standard procedures (enclosure 2);

- ❖ use of an automated and centralised system for the cataloguing of samples collected, which supplies a single identifying code for samples originating throughout the area;
- ❖ construction of a single database for consultation of all the samples catalogued, archiving of the information regarding samples and information regarding georeferencing. The fundamental characteristics of this database shall be: 1) correspondence of the code identifying the sample and the code in the database, 2) correspondence between the information recorded on the sample and the information given in the database;
- ❖ use of unambiguous genetic analysis methods, carried out on the basis of standard procedures, making it possible to compare samples collected in different areas and periods;
- ❖ sharing and clarity of data through creation of a centralised database, which can be consulted and used by the authorities involved, allowing comparison of the results throughout the whole alpine area.

Organic samples may be collected using the following methods:

- Opportunistic collection (casual). The experimental phases of projects monitoring the brown bear using non-invasive techniques carried out to date on the Alps have shown that opportunistic sampling, namely collection of organic samples not according to a specific genetic sampling scheme, generally allows a large number of samples to be obtained with limited efforts in terms of sampling. This is because collection can take place during the normal activities of the technical staff in the field. However this method strongly reduces opportunities for applying methods for estimating the extent of the population based on capture-marking-recapture (CMR) precisely due to the lack of a systematic plan. Furthermore the success rate for analysis of organic samples collected opportunistically may be compromised by the long time the samples remain exposed to the external environment.

Opportunistic collection generally provides for the collection of all the organic samples (faeces, hair, other) found in the area which can be attributed to the brown bear. However, in order to increase the chance of success for genetic analysis, especially for samples of faeces, it is preferable to conserve only samples which are not too old for analysis (see below and enclosure 2) or eventually to indicate the presumed age (in days) of the sample on the collection sheet, in order to make it possible to select samples to be analysed at a later date. It is advisable to prepare a kit (enclosure 1.3) for the collection and conservation of samples, to be distributed to the staff involved in these activities. Each organic sample must be accompanied by the special information sheet (enclosure 1.1) and relevant enclosures (map for georeferencing, copy of footprints on contact paper etc.), along with an identifying label noting information regarding the sample.

It is important that the staff involved in the collection of organic samples have participated in training sessions designed to provide indications regarding techniques for the recognition, collection and conservation of samples (see chapter on "Training").

- Collection during damage assessment and activities of the emergency team. During inspections carried out to assess damage, particular attention must be paid to the collection of any organic samples on site. Similarly, the staff in the emergency team must pay attention to the collection of organic samples which can be attributed to the bear during any expeditions, in order to be able to identify the individual responsible for the critical situation. The methods for carrying out collection and conservation are the same as for opportunistic collection.
- Systematic collection using hair traps. In contrast to opportunistic sampling, the collection of hair samples at sites with hair traps laid out over a regular grid and equipped with scent bait makes it possible to use the data to estimate demographic parameters, as the sampling is homogeneously distributed and quantifiable.

However, it is important to bear in mind that the likelihood of "capture" is generally low for small bear populations and this is one of the factors limiting the use of this method, making it necessary to draw up a careful and appropriate sampling plan.

The adoption of sampling using hair traps requires careful planning of the monitoring programme and scrupulous logistical organisation. The main tools necessary for ensuring that the activities function correctly are:

- careful planning of sampling (extension of the sampling grid, dimension of the grid cell, design of the traps, positioning sites, preparation of bait, number and timescale for checking traps, procedures for the collection and conservation of hair etc.)

- centralised coordination of activities, involving constant collaboration with those responsible for technical and scientific aspects, essential for guaranteeing overall functioning and constant control of monitoring activities;
- planning of meetings and training opportunities for staff involved in the operational phases of trapping (setting up, controls, collection of samples) before starting up sampling activities, in order to allow efficient coordination and the standardisation of sampling;
- the definition and starting up of procedures ensuring a constant and efficient flow of information;
- adequate planning of activities and logistical details, with a clear division of roles and responsibilities;
- careful organisation and management of databases and materials.

If it should be necessary to make choices regarding the samples to be sent to the laboratory, given the number of samples collected and the resources available, the decision regarding the appropriateness of carrying out genetic analysis of an organic sample collected must be taken bearing in mind:

- the quality of the organic material (number of hair follicles, age of sample, etc.);
- area of origin of the sample;
- critical situations in the area of collection related to the presence of problem bears;
- presence of cubs in the area.

1.4.2. Starting up of radiotelemetry monitoring

Radiotelemetry represents an important tool for analysing the spatial behaviour and ecology of marked individuals. In particular, radio-marking of problem bears can increase the efficacy of action designed to manage conflict (see "capture procedures") to a certain extent. The application of a radio collar indeed makes it possible to locate the animal and to follow its movements, thus allowing more effective action to prevent risks and more rapid intervention in the event that critical situations arise, facilitating any deterrent action. In certain cases this form of intervention makes it possible to ascertain or exclude the responsibility of a certain individual in the event of damage, note the development of overconfident behaviour towards man etc. and to simplify the capture/removal of a bear if this should be necessary. As a general rule, it can also be highlighted that in the case of small populations, equipping a significant percentage of the population with radio collars represents an effective monitoring method.

It is possible to use collars with satellite technology (GPS) or traditional technology (VHF).

In the first case, medium-long term monitoring must provide for the presence of a processing centre which checks the data and the locations transmitted by the collar regularly (particularly in the case of radio marking of problem bears). When using VHF technology it is instead indispensable to provide for a monitoring procedure establishing the methods and tasks of the relevant staff.

It is advisable for the monitoring procedure for animals equipped with radiotelemetry transmitters to be divided into two phases:

- intensive post-release monitoring. Immediately after capture a phase of intense radiotelemetry monitoring must be provided for during the 48 hours following release, in order to allow rapid assessment of any cases of mortality or post-anaesthetic emergency caused by the capture procedure. The intensity of monitoring will be decided by the vet in agreement with the person in charge, on the basis of the condition of the animal and the progress of the anaesthesia.
- medium/long term monitoring. After the phase of intensive monitoring, careful monitoring will be provided for, the intensity and duration of this being linked to the reason for capture (control of problem bear, research activities etc.)

1.4.3. Starting up of monitoring using the naturalistic methods

This type of monitoring provides for the collection and recording of signs of presence found casually or over sample routes (footprints and trails, sightings, damage, organic samples, etc.). The collection of this data may make it possible to ascertain the presence of the species, but generally does not allow reliable data on numbers to be extrapolated.

The signs should be recorded using the specific sheets (see for example Enclosure no. 1.1).

The starting up of this type of monitoring assumes the setting up of a computerised database, which allows the archiving of the data gathered and georeferencing of such data. A method for the immediate transmission of the information gathered to the relevant structure must be provided for, in the event that signs worthy of particular attention are recorded, such as;

- identification of signs of presence in areas frequented by man;
- close encounters with the bear by other persons;
- sighting of females with cubs;
- finding of trails for several animals, especially if the footprints are of different sizes.

It is recommended that closer examination of organic samples (faeces, hair) be carried out in order to recognise individuals through analysis of the DNA.

1.4.4. Starting up of censuses using line transect sampling during early and late snowfall

Simultaneous censuses over snowy terrain may be started up experimentally, with the scope of quantifying the number of brown bears frequenting the areas surveyed, through the recording of any indications of presence found along pre-defined transects.

Surveys along the sample routes identified shall be carried out simultaneously, following early or late snowfall. To ensure all the individuals in the population are potentially identifiable, the network of transects must not leave continuous surface areas equal or greater than the minimum home range of the brown bear (c. 15 km²) uncovered. In order to reduce the risk of counting the same bear twice, each bear trail met along the transects must be carefully localised and followed when possible, recording the route, direction and number of bears.

Once the routes have been covered, the information gathered will be compared and analysed in order to establish the minimum number of different individuals located. It should be underlined that the ability of the brown bear to cover significant distances (even several hundred kilometres) leads to a risk of overestimating the extent of the population (in some cases a population 10 times greater than that actually present has been estimated).

This monitoring method, also demanding in organisational terms due to the large number of staff involved at the same time, should be put into effect when the snowfall has the following characteristics:

- when it is early or late, i.e. falling at times when there is a high likelihood that part of the population is not in dens (as an indication up to the end of October and after the beginning of April);
- it extends over large areas;
- it has also fallen at low and medium altitudes.

1.4.5. Drawing up of a procedure for monitoring females with cubs

The counting of females with cubs born that year is a monitoring technique which, if correctly planned and rigorously applied, may provide reliable statistics regarding reproductive success and the demographic progress of brown bear populations. This technique is based on the observation and counting of groups made up of females that have reproduced and of cubs born that year accompanying them.

Extrapolation of the overall number of births within the population from this information involves two assumptions: 1) that all the females reproducing and all the cubs born that year in the group are counted; 2) that every family is counted only once, something which is very unlikely.

However, if sightings of females with cubs are recorded on the basis of detailed and rigorous procedures, this information may provide reliable indications of the reproductive success of the population and demographic progress over time.

Considering the limited numbers and recent origin of the bear population in the Alps, to date no standardised procedure for counting females with cubs has been developed and applied. Bearing in mind the potential of this technique for monitoring and the constant increase recorded in the bear population in the Alps in the last few years, it is considered to be a priority for ISPRA to define a standardised procedure for the application of this technique to the alpine area. In preparing this procedure, particular attention should be paid to the need to ensure the greatest possible standardisation of sampling action and the definition of rigorous criteria for identification of the minimum number of groups present (requiring careful evaluation of the distance between sightings, the dates and times of sightings, a description of each family group sighted (number of cubs, colour of coat, size of individuals etc.).

Table 1.1 Efficacy of monitoring techniques

		Techniques						
		<i>Naturalistic methods</i>	<i>Census over snow</i>	<i>Opportunistic genetic monitoring</i>	<i>Systematic genetic monitoring</i>	<i>Genetic monitoring of damage</i>	<i>Radio-telemetry</i>	<i>Counting of females with cubs</i>
Objectives	<i>Identification of individuals responsible for damage or with problem behaviour</i>	-	-	+	+	+	+	-
	<i>Presence/absence</i>	0	0	+	+	+	-	-
	<i>Estimate of numbers</i>	-	-	0	+	-	0	0
	<i>Structure of population</i>	-	-	+	+	-	-	0
	<i>Reproduction</i>	-	-	+	+	-	0	+
	<i>Trend</i>	-	-	0	+	-	-	+

Table 1.2. Levels of monitoring

Key:

N = naturalistic methods

C = census over snow

G = genetic monitoring

Go: opportunistic and on damage

Gs: systematic

R = radiotelemetry

F = counting of females/cubs

		Level of monitoring		
		<i>Minimum</i>	<i>Medium</i>	<i>Ideal</i>
Context	<i>Uncolonised areas</i>	N	N/Go	N/Go
	<i>Recently colonised areas</i>	N/Go	N/C/Go	N/Go/C/R
	<i>Areas with stable presence</i>	N/Go/C	N/Go/F	N/ Gs/F/R

1.5. – ACTIONS

1.5.1. Starting up of monitoring action

All the authorities undertake to adopt programmes for the monitoring of the brown bear, bearing in mind the different environmental context, in accordance with the technical guidelines summarised in this plan and in collaboration with ISPRA.

1.5.2. Coordination of monitoring actions

The authorities undertake to:

- seek forms of collaboration with the other alpine authorities and with ISPRA in developing their own monitoring programmes;
- to accept, with the exception of the financial and administrative checks, the proposal for collaboration of ISPRA and circulated by the Ministry for the Environment and the Protection of Land and Seas in note ref. no. 26492 of 17 October 2006 (enclosure no. 1.6) aiming to ensure the comparability of genetic analysis results throughout the whole alpine area;

1.5.3. Implementation of an alpine database

The authorities, in collaboration with ISPRA, shall promote the implementation of a database on the internet, possibly using tools already available, with the following characteristics:

- it can be consulted and used by the public and the authorities involved;
- it archives information already available within the various authorities;
- it provides archiving and georeferencing of genotypes identified by genetic analysis throughout the whole alpine area;
- it ensures comparability of data from the whole alpine area;
- it provides archiving and georeferencing of data on the presence of bears collected using naturalistic techniques.

In relation to genetic data, the database will hold archive information regarding: individual identification, location and the date of collection of the sample. For this purpose ISPRA and the authorities involved undertake to use standard genetic analysis methods, put into effect on the basis of standardised procedures allowing comparison between samples collected in different areas and at different times. ISPRA undertakes to make available the information necessary for comparison of individual data on presence throughout the whole alpine area to the authorities involved.

As regards data on the presence of bears collected using naturalistic techniques, the database will store georeferenced information regarding the type of data, date and location of the sampling supplied annually by the authorities involved.

ISPRA undertakes to draw up an annual report on the data gathered and to send this to the authorities involved.

The level of precision in terms of the geographical localisation of the data supplied by the authorities involved may be reduced, if this is made necessary due to specific priorities in terms of safeguarding the sites where the data is obtained.

The availability of the information contained in the database to the public, in particular on the internet, will be limited to the type of data, the year of collection and the geographical location; more detailed information regarding for example sex, relationships etc. will not be circulated.

CHAPTER 2 - CRITERIA AND PROCEDURES FOR DAMAGE COMPENSATION AND PREVENTION

2.1. - INTRODUCTORY REMARKS

- **Conflict between bears and man's activities**, generally understood as damage essentially of a financial nature caused by bears, has been the main reason for persecution of the species. Although today conflict with the brown bear no longer represents an excuse for wide-scale elimination, it is an **essential element around which strategies and policy for the conservation of the specie must be based**.
- The presence of bears may spark off tension related to their impact on agriculture, livestock and bee-keeping activities; this **tension** may be **increased by emotional and psychological aspects** linked to fear of bears.
- Poor acceptance of bears may hamper policy to safeguard the species and increase the **risk of animals being killed illegally**.
- Effective management of the conflict between the bear and man's activities, based on the implementation of an **appropriate strategy for damage compensation and prevention**, together with the provision of **information and the involvement of the economic categories most concerned** is an indispensable element in the conservation of the brown bear and its acceptance by the local community.

2.2. - REGULATORY ASPECTS

For a summary of the regulatory framework related to the different authorities, as regards compensation for damage caused by wild predators and funding for works preventing such damage, see enclosures numbers 1 to 5.

2.3. – OVERALL AIM

To minimise the economic and social impact of the brown bear through integrated policy based on the following principles:

- adoption of effective damage **prevention measures**, based on clear decision-making criteria, suitable regulatory tools, standard administrative procedures and adequate organisational structures;
- adoption of **measures for assessing damage and providing compensation**, when it is not possible to apply preventive measures or these should be shown to be ineffective, making it possible to ensure that compensation is only paid for damage actually caused by bears, that compensation is paid for all such damage and that compensation payments are made swiftly;
- procedures for the assessment and compensation of damage shall be dealt with by staff given adequate and specific **technical training**;
- **homogeneous policy for damage prevention and compensation throughout the whole alpine area**.

2.4. – SPECIFIC OBJECTIVES

2.4.1. Conformity of regulatory system

- All the authorities should equip themselves with regulations for the compensation of damage caused by bears and methods and conditions for financial intervention supporting the realisation of works to prevent such damage, possibly within the context of regulations regarding damage caused by wild animals.
- These provisions should be applied throughout the whole area to which the regulations refer (also, for example, within protected natural areas, including national parks, through links promoted by the Ministry for the Environment and the Protection of Land and Seas, in order to guarantee the application of standard criteria and procedures).
 - It is necessary for the following to be established:
 - the department responsible for the procedure;
 - the budget heading under which financial intervention falls. It is preferable to establish a fund destined specifically for intervention relating to the prevention and compensation of damage caused by bears and possibly other predators, regulated according to specific criteria. This makes it possible to transfer funds rapidly and therefore speeds up the procedure for compensation of damage and the issuing of funding;
 - the types of damage for which compensation may be paid;
 - the timescale for the procedure, bearing in mind that making the time necessary as short as possible (preferably less than 60 days) is a fundamentally important objective in limiting conflict;
 - the procedure for issuing payments for the amounts assessed;
 - the conditions attached to the payment of compensation.
 - As regards damage, it is necessary for the following to be established:
 - any eventual minimum threshold for the compensation of damage;
 - the percentage of damage caused by the predator eligible for compensation (this should preferably be 100%);
 - the time limits within which the user must report damage, starting from the time such damage is discovered;
 - the timescale for the carrying out of the inspection, if applicable, and the method of assessment; as regards this the possibility of permitting self-certification of the damage caused should be evaluated. This would make inspection unnecessary (however direct assessment remains the ideal option);
 - the criteria for quantification of the damage.
 - As regards prevention, it is necessary for the following to be established:
 - the types of work and prevention measures eligible for funding;
 - any minimum amount for preventive works eligible for funding;
 - the percentage of funding granted in relation to expenditure for the realisation of preventive works and the type of assets protected.

2.4.2. Identification and subsequent training of staff entrusted with assessing and certifying the damage attributed to bears

See the indications in chapter 4: "Training".

2.4.3. Definition of operational procedures and supporting forms

Procedure

Damage should preferably be reported to the relevant department within 24 hours after discovering such damage, in order to allow any inspection to be carried out promptly. Above all in the case of damage to livestock, the swiftness of the intervention is a fundamental factor in accurate assessment. In general, above all in the summer and with high external temperatures or exposure of the carcass to the sun, it is almost impossible to establish the cause of death after more than 72 hours from death. If the assessment does not

take place quickly there is also the chance that other carnivores may feed on the carcass, thus disguising the original wounds which would allow the damage to be correctly attributed.

Assessment of damage is the responsibility of staff specifically charged with the task and appropriately trained by the authority. Only such staff should be responsible for carrying out inspections as they are specifically trained to evaluate such cases. They are also equipped with PPE (personal protection equipment) and safety devices in order to deal with potential risks.

The departments receiving notification of the damage shall see to promptly contacting the damage inspector operating in the area in which the event has taken place.

The inspector shall carry out the inspection as quickly as possible (within 24 hours following the reporting of the damage), in order to verify the cause of the damage and allow the injured party to recover the area when possible and/or adopt any measures to safeguard the area. While awaiting the inspection (hence for a maximum period of 24 hours) the user is required not to modify the environment damaged by the predator, with the exception of any veterinary care for injured animals.

In the event of damage to livestock, it is advisable to allow the inspector to request the support of a specialist vet and to notify the ASL vet for the regulatory requirements.

When damage indirectly attributable to bears is reported (e.g. as the result of a fall caused by a pursuing bear), the staff responsible for assessment should pay the greatest possible attention to gathering all information which may assist in attributing the damage to the intervention of the predator or on the contrary exclude its responsibility. This may be particularly useful and important in the case that the classic signs of predators and/or consumption are not present on the carcasses, but it may nevertheless be surmised that the loss of the livestock is due to the presence of the bear (indirect damage).

Following the inspection, an assessment report should be drawn up, using a standard form.

The report must be sent by the inspector to the relevant office of the authority, which will start up the procedure for damage compensation, once it has been checked that it has been correctly and fully completed, if necessary following the application of the user.

Forms

As an example see the forms and reports used in the province of Trento:

Enclosure 2.6 – assessment report on damage caused by brown bears to domestic livestock

Enclosure 2.7 - assessment report on damage caused by brown bears to bee-keeping

Enclosure 2.8 - assessment report on damage caused by brown bears to farm crops

Enclosure 2.9 - Form requesting compensation for damage caused by wild predators

Enclosure 2.10 - Form requesting funding for intervention to prevent damage by brown bears.

2.4.4. Definition of a strategy for prevention

It is necessary to establish criteria, on the basis of which the authority will decide whether to accept the risk of damage in certain areas, rather than invest resources in funding preventive measures.

Some parameters which may be taken into consideration in making these choices are:

- the value of the asset protected;
- the appeal of the asset to the predator (for example cattle and horses are not particularly susceptible to damage);
- the effective possibility of adopting preventive measures, for example it is not viable to propose the adoption of preventive measures for widespread areas of crops;
- a risk map, based on the identification of the areas most likely to be frequented by bears and the most vulnerable structures and activities. This map should be constantly updated in areas where the presence of the bear is particularly dynamic (e.g. areas of expansion)

Evaluation of the damage caused by the brown bear must not be limited exclusively to financial aspects. The emotional implications may be significant and have considerable weight in terms of social consensus. Thus it is not possible to adopt rigid outlines for defining criteria for intervention as regards damage prevention and evaluation of individual cases cannot exclude the social context involved on each occasion.

A suitable prevention strategy should provide for verification of the preventive works realised by making checks on a sample of these.

The works commonly used to prevent damage by bears are:

Electric fences (standard fence)

Enclosure 2.14 shows the basic type of electric fence, designed in particular to safeguard assets not continuously transferred, such as bee-keeping activities. This type of intervention has been shown to be technically effective in terms of prevention. The life of these fences, if cared for with reasonable diligence, has been estimated as 8 years.

Electric nets

Electric nets (made up of nets with a 10 cm square mesh) have been shown to be practical in terms of installation and during transfers and are thus usually preferred by users as compared to the standard electric fences.

In particular, electric nets are preferred by farmers who periodically move pens for sheltering livestock overnight.

It is important that the user is provided with instructions regarding the assembly and maintenance of the nets (enclosure 2.12).

Guard dogs

The use of guard dogs to defend flocks, although to be hoped for, would appear not to be particularly practical in the Italian alpine area. This is due to cultural and economic factors, these last including the fact that the herds usually taken to summer pasture are only exposed to the risk of damage by wild predators for a limited period during the year (in summer). The presence of guard dogs for the rest of the year in areas not frequented by predators is normally not popular with shepherds.

Changes to the management system

Following the disappearance of large predators, the inhabitants in the alpine area have lost touch with traditional ways of limiting the damage caused by such predators. As a result of this the system for managing flocks in alpine pastures has changed: it is therefore advisable to recover animal husbandry techniques more suitable for areas where bears are present and aimed at preventing incursions by predators, in particular through:

- stabling of livestock overnight in folds with electric fences;
- supervision of herds and flocks in alpine pasture;
- use of well-prepared workers.

2.4.5. Definition of supporting activities for users suffering damage to livestock caused by bears

Below there are some examples of supporting action that may be considered in areas frequented by bears and developed in order to support users.

Supplying of emergency material

The peripheral offices of the authority may be equipped with the material necessary for the installation of electric fences in the case of particularly urgent intervention. It will thus be possible to intervene promptly following the first case of damage; the material will be made available to the farmer strictly for the time necessary to allow him to carry out the definitive preventive works.

Support for the installation of electric fences

Considering the extent of the work necessary to prepare and possibly also move the fencing (above all if it has never been assembled by the user), it is possible assist the farmer with putting up the electric fence, if requested and only on the first occasions.

Technical support, consultancy and protection

The authority may provide consultancy, when requested, regarding techniques for the positioning of electric pens for flocks at night. Indeed, the electric fence should be positioned and adjusted in order to allow the livestock to remain distant from the bear and away from direct visual contact with the predator. In particular situations the authorities may also ensure the presence of its own staff in the area, following critical events.

Disposal of the carcasses of livestock preyed on

When the farmer suffers considerable damage attributable to the brown bear (with a large number of animals killed), the authority may use its own staff and vehicles to assist the farmer with recovering and transporting the carcasses to the disposal centre.

Realisation of shelters at high altitude for shepherds

Making prefabricated shelters at high altitude available to shepherds may encourage the constant supervision of livestock at high altitude pastures, which can only be reached following long journeys on foot.

Finally, the importance of cultivating relations with farmers and the local population in areas where critical events have taken place is emphasised, also through the planning of periodic visits from appropriately trained staff.

2.5. – CURRENT SITUATION AND PROBLEMS

A survey has been carried out to check on the activities developed by individual authorities in the field of preventing and compensating for damage caused by bears, in relation to the objectives identified. For a summary of the current state see enclosure 2.15.

Problems

In the context of the area of reference, despite different situations, it is possible to identify common problems which may hamper acceptance of the species, also with a view to the possible expansion of territory, and reduce efficacy and efficiency in terms of using the human and financial resources invested in conservation initiatives.

The main problems recorded are the following:

- Fragmentation of strategies for intervention both as regards the assessment and compensation of damage and in relation to prevention works;
- Procedures for the compensation of damage and the funding of prevention works are different in individual areas, both as regards the time required (generally too long) and the amount of compensation;
- Lack of staff adequately trained to carry out assessment of the damage caused by wild predators and able to assist the user affected by the presence of the predator;
- Methods of management for livestock kept in alpine pastures not suitable for limiting the risks and damage linked to the presence of the bear (limited supervision of herds and flocks in alpine pasture, inexperienced staff, limited use of overnight sheltering of livestock in pens);
- Presence of very small animal husbandry units (often at amateur level) unable to support the increased costs deriving from the adoption of a different method of managing livestock, unless in the form of associations (e.g. taking on of a shepherd to watch over livestock);
- Little willingness by farmers and shepherds to adopt the prevention measures suggested by the regional authority, which usually lead to the need to change the management techniques adopted, at least in part;
- Lack of monitoring of conflict, with the consequential impossibility of evaluating the efficacy of the strategies adopted in the medium to long-term.

Table 2.15.1 (at enclosure 2.15) provides an estimate of the extent to which the different objectives have been achieved by each authority.

2.6. – ACTION

2.6.1. Review of the regulatory system

The authorities will carry out a review of their own regulations on the subject, checking that they correspond with the general principles stated in this chapter and identifying any necessary updates, additions and amendments.

2.6.2. Identification and training of staff assessing damage

The authorities shall identify roles and persons responsible for assessing damage and shall promote the training provided for in enclosures 4.1 and 4.2.

2.6.3. Review of operating procedures

The authorities shall start up a review of operating procedures regarding the assessment of damage, the issuing of compensation and the provision of any funding for preventive measures, checking that these correspond with the general principles outlined in this chapter and identifying any necessary updates, additions and amendments.

2.6.4. Interregional links

The authorities shall start up an interregional round table aimed at standardising the general methods for preventing, assessing and compensating for damage, with specific reference to particularly critical situations linked to homogeneous areas falling under the jurisdiction of different regional authorities.

CRITERIA AND PROCEDURES FOR ACTION REGARDING PROBLEM BEARS AND INTERVENTION IN CRITICAL SITUATIONS

3.1. - INTRODUCTORY REMARKS

- In all areas where bears and men coexist there is conflict, which may be more or less significant depending on the different socio-economic and environmental contexts. This **conflict may reduce acceptance of the bears** by man, sometimes strongly compromising the continuing presence of the species.
- **The presence of the bear is always associated with the damage** to activities in the primary sector, damage which may be significant locally and which often takes on a social significance. Usually a significant part of the financial damage and genuinely dangerous situations associated with bears can be **attributed to a few individuals**, so-called **problem bears**, which adopt an over-confident attitude towards man.
- **The brown bear is sometimes seen as a danger to man**, this perception usually being greater in recently recolonised areas, where the inhabitants no longer have a historic recollection of the presence of the species.
- In order to ensure the social acceptance of bears, it is important that the authority responsible for the conservation and management of bears take **prompt and effective action to prevent risks to the safety of man and to mitigate conflict**, in particular aiming to correct any behaviour linked to habituation to man.
- The **definition of streamlined procedures** and the organisation of **adequate plans for emergency intervention** in critical and emergency situations caused by bears, represents an essential prerequisite for limiting the risks to man and property and for reducing the likelihood that problem bears or bears finding themselves in *critical situations* have to be killed.
- According to the provisions of existing national and European regulations, direct action in relation to animals of this species is only possible when such action does not prejudice the conservation of the population which is the object of intervention and when alternative measures of intervention cannot be adopted.
- It is thus important that **action proportionate to the level of problem manifested by the bears be provided for and implemented**, with the intention of modifying their behaviour, not excluding, in extreme cases, the ultimate possibility of removing the bears.

3.2. - REGULATORY ASPECTS

3.2.1. Intervention to manage bears

The law of 11 February 1992, no. 157 includes the brown bear among species which are specially protected (art. 2, paragraph 1).

The DPR of 8 September 1997 no. 357 (subsequently amended and supplemented by DPR 120/03), implementing Directive 92/43/EEC regarding the conservation of natural and semi-natural habitats and wild flora and fauna, includes the brown bear in enclosures B (species of community interest whose conservation requires the designation of special conservation areas) and D (species of community interest in need of strict protection), therefore considering it to be a priority.

The current national regulatory framework prohibits the disturbing, capturing and killing of large predators (DPR 357/97 art. 8).

However, a *problem* bear or bear finding itself in a *critical situation* may be subjected to controlling action, in accordance with the provisions of national, regional and provincial regulations (DPR 357/97, art. 11, paragraph 1; L. 157/92, art. 19, paragraph 2; L. 394/91, art. 11, paragraph 4 and art. 22, paragraph 6).

Indeed, in order to limit conflict with man's activities, for reasons of public security or for other impelling reasons of significant public interest, waivers of the ban on the capture or killing of animals are possible, subject to the authorisation of the Ministry for the Environment and the Protection of Land and Seas, having consulted the ISPRA, on condition that there are no other practical solutions and that the action will not prejudice the satisfactory conservation of the population of the protected species (DPR 357/97, art. 11, paragraph 1).

Every two years the Ministry for the Environment and the Protection of Land and Seas must inform the European Commission of waivers granted, the species to which they were applied, the means authorised, the period and location in which they were applied and the results obtained (DPR 357/97, art. 11, paragraph 3).

3.2.2. Public security and safety

In the event of immediate danger to public security and safety, decisions regarding the action to be put into effect may be taken directly by the authority with jurisdiction on the matter (police chief, government office, governors, mayors etc.) and the action taken shall fall within the context of procedures, activities and jurisdiction related to public security (art 52.2 of DPR 3178/1972, no. 670).

However, it is advisable that an operational agreement between the regional and provincial authorities with jurisdiction for the management of wild animals and the authority for public security be realised, aiming to ensure the correct identification of risks linked to the specific critical situation. For this purpose, it is also advisable for staff with specialist skills in the management of bears to work alongside the personnel of the authority for public security in the situations mentioned above.

3.3. – OVERALL AIM

To ensure homogeneity in terms of the identification and management of problem bears and intervention in critical situations caused by the bear in the Central-Eastern Alps in Italy, through:

- the definition of standard procedures;
- identification of the minimum organisational structures necessary for guaranteeing that appropriate action can be taken.

3.4. – SPECIFIC OBJECTIVES

3.4.1. Definition of areas of intervention for controlling action

Controlling action is provided for in the event of brown bears:

- identified as *problematical*;
- finding themselves in *critical situations*, which may represent a risk for people or for the safety of the bear itself.

Problem bears

A *problem* bear may be defined as "*damaging*" or "*dangerous*" according to its behaviour, with reference to the definitions given below.

Damaging bear

A "*damaging bear*" is a bear that repeatedly causes material damage to property (preying on domestic livestock, destroying bee-hives or damaging crops, or causing general damage to infrastructures) or repeatedly uses sources of food linked to the presence of man (foodstuffs for man and livestock, food for wild fauna, waste, fruit cultivated close to houses etc.). These situations arise when the bear has lost its natural fear of man and is therefore conditioned and attracted by sources of food related to man.

A bear that causes a single major incident of damage (or which only causes damage sporadically) should not be considered to be a damaging bear.

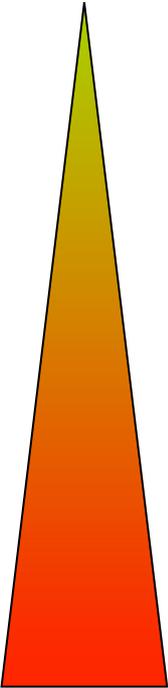
Dangerous bear

A series of behavioural attitudes may suggest that a bear represents a source of danger for man.

Apart from exceptional and fortuitous cases, a bear showing the typically shy behaviour of the species is not dangerous and will tend to avoid encounters with man. The dangerousness of an individual is generally directly proportional to its "habituation" (dependence) on man. In other cases the danger does not depend on habituation to man and is instead linked to specific situations, in the case that a bear is approached when it has cubs, for example, or when it is defending its prey or the carcass on which it is feeding.

Table 3.1. lists some possible bear behaviour, placing this alongside a scale of dangerousness.

Table 3.1 Degree of dangerousness of possible bear behaviour

	Behaviour	Degree of dangerousness
A	bear escapes immediately following a close encounter	
B	bear stands up on its rear legs during an encounter	
C	bear moves away from its usual area	
D	bear is repeatedly sighted	
E	bear stays around bee-hives, farms where animals are reared or unsupervised livestock	
F	bear is present close to houses in the mountains or isolated huts	
G	bear is repeatedly sighted at short distances	
H	bear stays around areas crossed by roads and busy paths	
I	bear causes continuous damage away from inhabited buildings	
L	bear causes damage close to inhabited buildings	
M	bear caught by surprise launches a false attack	
N	bear launches itself in a false attack to defend its cubs	
O	bear defends its prey with a false attack	
P	bear is repeatedly reported close to sources of food related to man	
Q	bear is repeatedly reported in inhabited areas	
R	bear attacks to defend its cubs	
S	bear attacks to defend its prey	
T	bear follows people	
U	bear tries to get into buildings where men are present (inhabited houses, inhabited shelters for shepherds etc.)	
V	bear attacks without provocation	

In order to describe a bear as “*dangerous*” it is important to know the history of the individual and to take into consideration any previous anomalous behaviour; the degree of dangerousness increases when there is repetition of potentially dangerous behaviour by the same bear.

Evaluation of behaviour should be carried out on the basis of each case, bearing in mind not only interpretation of the degree of dangerousness indicated in the table given above, but also the probability that the behaviour has been correctly attributed to a specific individual (not always an easy task, above all when genetic data is not certain or available and several bears are present in the same area), the frequency with which different behaviours have been recorded, the context in which they took place, the evolution of such behaviours, the efficacy of eventual methods of dissuasion etc.

Critical situation

Critical situations are defined as situations in which direct action regarding animals not classified as problematical on the basis of their previous behaviour is necessary in order to guarantee public security and safety and possibly to ensure the safety of the animals themselves (e.g. road accident, bears occasionally moving into urban areas, injured bear etc.).

3.4.2. Definition of intervention procedures

Procedures prepared for intervention in the event of *problem bears* or in *critical situations* must allow rapid and effective action.

Given the unpredictability and variety of possible situations which may arise, the decision-maker must be able to act with sufficient autonomy in order to carry out intervention which has been previously established and codified as much as possible. It is indeed important to avoid critical situations degenerating into situations which may prove dangerous for public security and safety due to delays in decision-making as a result of bureaucracy and/or organisational aspects.

Decisions to implement the procedures provided for in the case of *problem bears* and in *critical situations*, shall be made by the authority with jurisdiction for the area and the matter through the department responsible for the management of wildlife, which shall therefore take on the role of decision-maker.

The decision-maker, in the specific cases identified in this document, shall see to organising intervention, together with ISPRA and the Ministry.

Intervention

The term *controlling action* is intended to mean one of the following activities, designed to solve problems and/or limit risks linked to the presence of a problem bear:

- a) intensification of monitoring (in the case of a bear with radio collar);
- b) information:
 - for the owners and/or guardians of domestic livestock;
 - for the owners and/or habitual users of isolated mountain huts;
 - for people possibly using the area (tourists, mushroom pickers etc.);
- c) overnight stabling of sheep, goats and cattle and other protection measures;
- d) rapid removal of dead animals in alpine pasture;
- e) careful management of organic waste, with possible adaptation of containers and dumps;
- f) setting up of structures suitable for preventing damage caused by bears (electric fences);
- g) setting up of a defence watch, understood as the presence of the bear emergency team in the area;
- h) aversive conditioning, with the scope of recovering a fear of man and his activities: this is intended as direct intervention to condition the behaviour of the animal;
- i) capture with release, with the purpose of moving the bear and/or radio marking;
- j) capture with the scope of taking it into permanent captivity;
- k) killing of the animal.

Procedures

The *controlling action* may be divided into:

1. MILD action

Mild controlling action is intended as action covered by paragraphs a) to h) above.

The adoption of these measures shall be the autonomous decision of the decision-maker.

2. ENERGETIC action

Energetic controlling action is intended as action covered by paragraphs i), j) and k).

In its turn this is subdivided into:

- a) action which cannot be planned (improvised, urgent, impossible to postpone)
- b) action which can be planned

Planned energetic action will be put into effect on the basis of a "*Crisis plan*" prepared by the decision-maker, having consulted ISPRA and obtained the authorisation of the Ministry, in which:

- the measures to be implemented and those responsible for carrying them out shall be identified;
- any modifications to the pre-established organisational structure necessary in order to carry out the measures provided for shall be indicated;
- the best strategy for providing information shall be identified and implemented.

In these cases, the decision-maker shall also seek the most appropriate forms of collaboration with the public security services.

Unplanned energetic action, limited to the *controlling action* stated in paragraphs i) and j), may be taken by the decision-maker, having previously consulted ISPRA, even briefly. When it is not possible to contact the Institute or the situation does not allow this (e.g. operational area with no telephone coverage, events requiring an immediate decision etc.) the decision-maker shall autonomously decide to take action, informing ISPRA and the Ministry as soon as possible and in any case not more than 3 days after the event.

Except in cases when it is necessary to intervene urgently to solve situations which involve risks to the safety of bears, the capture of animals must take place according to the procedures defined in enclosure 3.1 "Capture of brown bears – regulatory aspects and operating procedure".

Given that the bear groups present in the Alps are below the threshold for a minimum viable population, before proceeding with the definitive removal of an individual from the natural environment (whether this is due to transfer or killing), the advisability of putting compensating measures into effect should be evaluated,

in particular the substitution of the individual removed with another bear, taking into account the situation of the relative bear population and the relevant social context.

Killing of bears

According to DPR 357/97, the eventual killing of a bear requires the specific authorisation of the Ministry, granted following consultation with ISPRA.

Thus in the event that a bear adopts behaviour which may lead to a concrete threat for the safety of people, the decision-maker, having evaluated the information available, the level of problems caused by the bear, the practicality of alternative solutions which could solve and/or limit the problems and any risks linked to the presence of the problem bear and the impact on the conservation of the population which may result from its removal, may ask the Ministry, in that individual case, for authorisation to proceed with the killing of the individual.

Public security and safety

At all events, the authority for public security shall have full jurisdiction and decision-making autonomy when faced with situations involving immediate risks to public security and safety.

Situations and related controlling action

The "anomalous" behaviour cited in table 3.1. is given again below (table 3.2), highlighting possible intervention, in each case, on the basis of levels of bear-man interaction and the consequential degree of dangerousness.

Table 3.2. Behaviour of bears and related action

Behaviour		Suggested action	
		Mild	Energetic
A	bear escapes immediately following a close encounter		
B	bear stands up on its rear legs during an encounter		
C	bear moves away from its usual area	a	
D	bear is repeatedly sighted	a	
E	bear stays around bee-hives, farms where animals are reared or unsupervised livestock	a-b-c-d-h	
F	bear is present close to houses in the mountains or isolated huts	a-b-e-g-h	
G	bear is repeatedly sighted at short distances	a-b-h	
H	bear stays around areas crossed by roads and busy paths	a-b-h	
I	bear causes continuous damage away from inhabited buildings	a-b-f-h	
L	bear causes damage close to inhabited buildings	a-b-e-f-g-h	
M	bear caught by surprise launches a false attack	a-b	
N	bear launches itself in a false attack to defend its cubs	a-b	
O	bear defends its prey with a false attack	a-b	
P	bear is repeatedly reported close to sources of food related to man	a-b-c-e-f-h	
Q	bear is repeatedly reported in inhabited areas	h	i-j-k
R	bear attacks to defend its cubs	a	i-j
S	bear attacks to defend its prey	a	j-k
T	bear follows people	a-b	i-j
U	bear tries to get into buildings where men are present (inhabited houses, inhabited shelters for shepherds etc.)		i-j-k
V	bear attacks without provocation		i-j-k

Aggressive behaviour M, N and O, although highly dangerous, should be considered instinctive and impromptu and therefore does not involve and/or require the adoption of any pre-established operational measures, except for the intensification of radiotelemetry monitoring, if the animal has a transmitter. When in these cases the attack leads to any damage to persons, even of a mild nature, (cases R and S), more energetic measures may be adopted.

3.4.3. Organisational structure

In areas where bears are present permanently it is advisable for the authorities to define an emergency intervention system for critical situations caused by bears.

Action to control problem bears shall be carried out by institutional staff, or other staff nominally indicated by the regional or provincial authority with jurisdiction for the area, preferably given formal responsibility for the task in a specific contract, and must have specific training, (see chapter 4 "Training").

Coordinating structure

The decision-maker, who takes responsibility for deciding and coordinating intervention to deal with problem bears in *critical situations*, shall see to identifying the office, official or other figure responsible for general coordination of the activities and to whom requests, observations and suggestions may be directed (this may be a single person). This office or persons will be kept constantly and promptly informed of critical situations and emergencies caused by bears.

Bear emergency team

Intervention to deal with *problem bears* or in *critical situations* linked to the presence of the brown bear shall be realised by one or more *bear emergency teams*.

The *bear emergency team* shall normally be made up of:

- 1 coordinator (who in some cases may also operate at a distance, giving telephone instructions);
- 2 rifle operators;
- 1 radiotelemetry monitoring operator (only in the case of bears with radio collars).

In special cases, the *bear emergency team* may also provide for the involvement of a vet and further staff. The team may also make use of specially trained bear dogs.

In areas characterised by a stable bear population and in the period that bears are active (usually from the beginning of March to the end of November) it may be opportune to provide for the coordinator, rifle operators and vet being on-call continuously.

It is also advisable for the staff in *bear emergency teams* to carry out activities which are compatible with them being on-call telephonically and with the need to ensure rapid access to the materials and vehicles necessary for intervention.

Setting up of the bear emergency team

In areas characterised by a stable bear population, even when the situation does not make it necessary to provide for the whole bear emergency team being on call, it is advisable to set up and publicise an **emergency telephone contact number** (chosen from those already available, such as 115) which links up to the coordination unit. It is also advisable that there be a link between the telephone contact number described above and other emergency numbers operational in the area.

The Coordinator may however be advised of the existence of a dangerous situation involving the brown bear using any other methods; in this case he will again see to starting up the procedures provided for in the event of situations falling within his jurisdiction.

Role of the Coordinator

The coordinator of the bear emergency team has responsibility for deciding intervention regarding the bear, within the context of the indications supplied by the decision-maker and within the limits established.

S/he shall:

- take responsibility for the actions of the bear emergency team;
- be responsible for the correct application of the procedures provided for in terms of intervention regarding problem bears and intervention in critical situations;
- decide whether to set in motion the bear emergency team and manage the activities of the team, also at a distance;

- decide whether it is necessary to reinforce the bear emergency team with further staff to be used for the operations underway (possible control of roads, telemetry monitoring, driving of vehicle to transport animals etc.);
- promptly inform the relevant department as regards situations occurring, possible trouble and any shortcomings encountered;
- interact with the police force;
- interact with institutional bodies and contacts in the mass media as regards the situation which has arisen.

Distribution of staff and equipment

The rifle operators in the *bear emergency team* shall be supplied with all the equipment necessary for intervention, normally represented by:

- 2 smooth-bore barrel rifles with appropriate ammunition made up of lead buckshot and plastic bullets;
- tranquilliser gun with relative equipment, including accessories for intervention in poor light (excluding drugs);
- two lights;
- 4 electric nets;
- range-finder with night vision.

In addition to this basic equipment, the material necessary for carrying out specific, exceptional and supporting intervention must also be made available: this material (Aldrich snares, radio collars, ear tag transmitters, radiotelemetry equipment, microchips and transponders, crate for transporting the animal with relative vehicle) shall be managed by the Coordinator of the *bear emergency team* and by the vet (as regards the pharmacological aspects see enclosure 3.1 "Capture of brown bears. Regulatory aspects and operating procedures").

Emergency code for intervention

In order to codify methods for dealing with bears and/or problematical situations, it is advisable to distinguish between "*ordinary*" situations and "*special*" situations.

"**Ordinary**" situations are intended as those which may be dealt with using the standard organisational set-up.

"**Special**" situations instead require specific intervention and may also lead to the mobilisation of considerable forces in terms of men and equipment.

Within the context of *ordinary* situations three levels of alert should normally be defined:

Code white: defence

This relates to the taking of preventive action, mainly designed to reassure residents and which is unlikely to be transformed into direct intervention involving bears.

Code yellow: operational

This relates to the taking of action which is likely to bring the *bear emergency team* into close contact with the bear and will presumably involve the team taking disturbing and/or deterrent action.

Code red: operational

Possible intervention to remove/transfer or kill the bear.

This relates to the taking of action which is likely to bring the *bear emergency team* into close contact with the bear and may involve the capture or killing of the bear.

With reference to different levels of emergency, figure 3.1 gives indications regarding the composition of the *bear emergency team* and the equipment which this should have available.

Considering the complexity of the cases and the possible evolution of events, it is not possible to establish in advance a precise distinction between the three levels of alert as described above.

What is more, it should not be forgotten that the information available to the Coordinator of the *bear emergency team* after the initial phone call is usually of general nature and reflects the knowledge available to the person making the call, along with his role and sometimes, his emotiveness.

Fig. 3.1. – Ordinary situations

	Emergency code		
	WHITE	YELLOW	RED
Importance			
Expected action	Defence	Operational	Operational with possible intervention to remove/kill bear
Staff involved	Pair of rifle operators	Pair of rifle operators + Coordinator + Radio operator (*)	Pair of rifle operators + Coordinator + Radio operator (*) + Vet + Driver of vehicle (**)
Equipment (suggested)	Rifle with rubber bullets Rifle with lead pellets Headphone radio link Lights Rangefinder, night vision Electric nets Radio receiver (*)		← + Tranquilliser gun + Drugs and anaesthetic material + Snares + Radio collar + Ear tags + Microchips, transponder + Radiotelemetry equipment + Means of transport (see enclosure 3.1 "Capture of brown bears. Regulatory aspects and operating procedures")

(*) only if the bear has a radio collar or in the case of capture with fitting of a radio collar

(**) only in the case that transfer of the captured bear is provided for

Decision-making roles

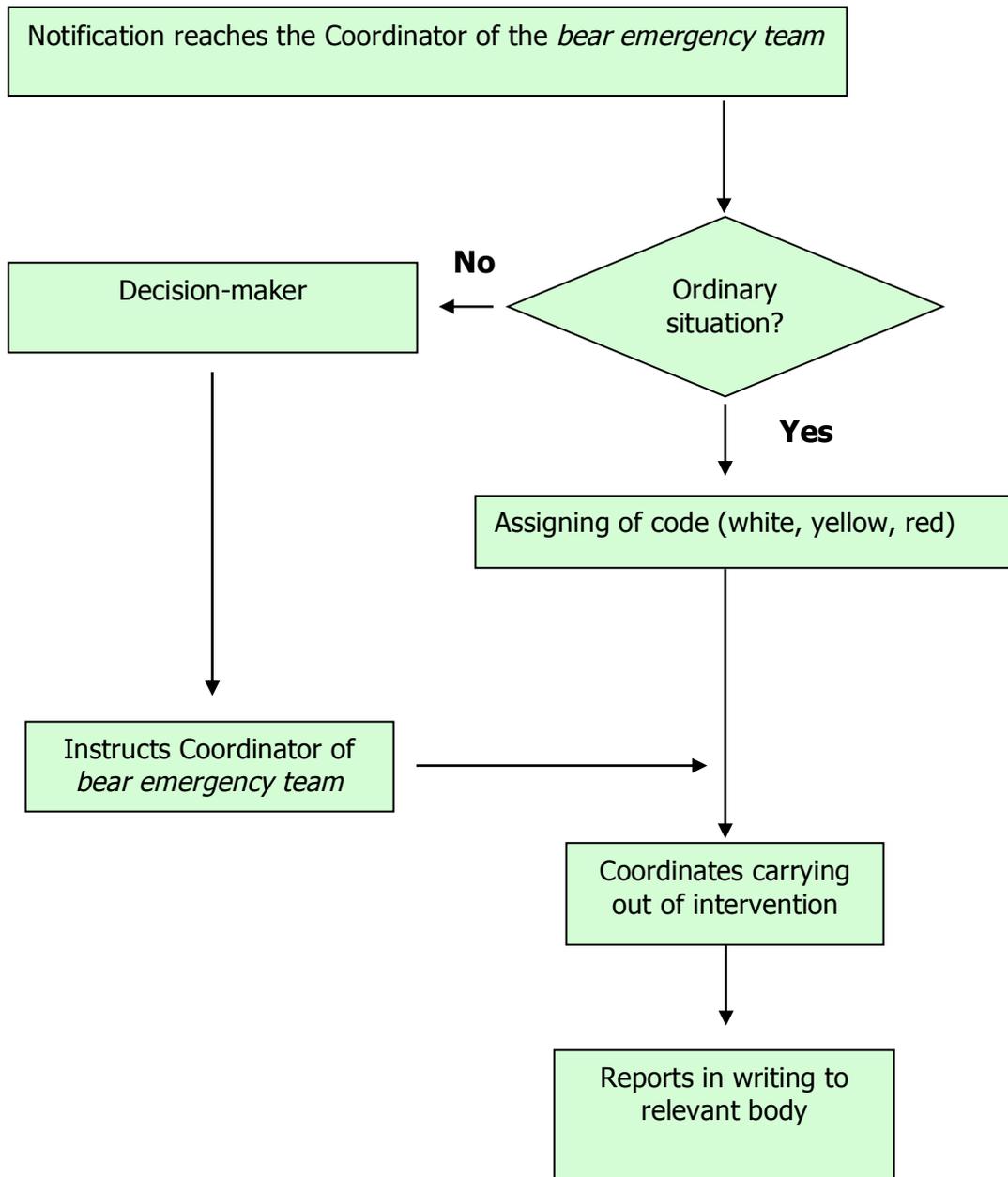
The Coordinator of the *bear emergency team* shall normally be responsible for taking decisions regarding intervention in the case of *problem bears* and/or *critical situations*.

If the emergency is classified as "**ordinary**", the Coordinator of the *bear emergency team* shall establish the emergency code (white, yellow and/or red) and on this basis mobilise the team

If the emergency is classified as "**special**", the Coordinator of the *bear emergency team* shall involve the decision-maker in the decision-making process as soon as possible. At all events he will mobilise the *bear emergency team* immediately.

The flow chart given in figure 3.2 gives a concise summary of the decision-making process stated up following reporting of a critical situation.

Fig. 3.2 – Decision-making roles



Reporting

After the action has terminated (or when the period on call has concluded) the Coordinator of the *bear emergency team*, is required to draw up and transmit a concise written report to the decision-maker, describing the intervention carried out (composition of the team, situation occurring, intervention carried out, problems encountered etc.).

The decision-maker shall see to periodically informing the Ministry and ISPRA regarding the intervention of the *bear emergency team*.

This information will be provided annually, it being understood that the Ministry and ISPRA will be promptly informed of the starting up of any "energetic action" involving animals.

3.4.4. Definition of communication criteria

Important news regarding *problem bears* and *critical situations* must be communicated according to an information strategy designed to guarantee adequate, correct and clear information to the public as regards problems and risks linked to the presence of bears, along with any problems related to specific bears. This also permits those involved, if necessary, to adopt the most suitable behaviour in the given situation (see chapter 5 "Communication strategies and initiatives").

In areas where there is a stable bear population, it may be appropriate to establish an operational procedure for communication between the coordinating body and representatives of the authorities, public security services and the mass media, in so far as this is possible.

During individual critical situations, the Coordinator of the *bear emergency team* shall normally represent the point of reference for communication with public security services, the local and regional authorities involved and users in the operational zone.

The staff in the *bear emergency team*, should avoid issuing declarations regarding operations underway and/or dealt with.

Considering that the aforementioned official, when involved in operations, may not be able to act as the central figure in "*external*" communication, it may be appropriate to identify an additional person to deal with communication activities on behalf of the decision-maker.

It is advisable for a link to be established with bodies specifically responsible for relations with the public or the media (press office, press officers etc.) in order to provide the media with exhaustive and complete information, allowing them to present the public with accurate information about the problem and the solutions adopted to solve and/or contain it.

3.5. – CURRENT SITUATION AND PROBLEMS

The limited and inconstant presence of the species in the Italian alpine regions and hence the small number of cases has meant that to date it has not been necessary to establish structured stable procedures and organisational structures, except in Trentino.

Given the new situation in terms of the numbers and distribution of bears following the recent project to reintroduce the species, the Autonomous Province of Trento was the only area to have adopted a specific protocol ("Protocol for action in relation to problem bears and intervention in critical situations" in October 2004. The development of this protocol originated in a document entitled "Protocol for the identification of intervention relating to problem bears" drawn up in May 1998 by the COO (Comitato Operativo Orso - Operational Committee on Bears – made up of representatives of the three main organisations involved in the *LIFE Ursus* project – the Adamello Brenta Nature Park, the Autonomous Province of Trento and the former Istituto Nazionale per la Fauna Selvatica, now ISPRA), and subsequently reviewed in April 2001. In August 2002 the provincial government passed a resolution, adopting the "Action plan regarding operational guidelines for managing the presence of the bear within the province". The former Wildlife Service, as it was then, drew up a "Protocol for action in relation to problem bears and intervention in critical situations" in the same year, implementing the action plan for "Management of critical situations and emergencies". In May 2003 the Istituto Nazionale per la Fauna Selvatica gave its approval for the action contained in this document. In July 2003 the Ministry for the Environment and the Protection of Land and Seas issued the Autonomous Province of Trento, according to DPR 357/97 and subsequent amendments, with authorisation to take the action provided for in the aforementioned document. In July 2004 the provincial fauna committee, in accordance with the provisions of art. 31 of L.P. no. 24/91, authorised the Autonomous Province of Trento - Forests and Fauna Department – to control brown bears which should cause problems and/or to intervene in any critical situations caused by the brown bear, in accordance with and following the methods provided for in the procedure.

Through the Forests and Service the Province, which is the provincial body of reference, has also identified, trained and equipped the staff responsible for intervening in these situations. The operational unit in Trentino refers to the provincial Forestry Service, and is based on a special stand-by unit.

The action provided for in the procedure is proportional to the "problematic" behaviour shown by individuals and goes from mild action (defence, deterrent action) to more energetic action such as capture for radio tagging, capture in order to take the animal into permanent captivity and as a last resort the killing of the bear.

Problems

In the alpine area the possibility of implementing standardised, organic and effective action as regards problem bears or those involved in critical situations is limited by the following factors:

- Absence of an appropriate operating procedure extending beyond provinces/regions, also as regards aspects relating to communication during critical situations or emergencies.
- Administrative fragmentation with regional and provincial authorities adopting different legislation and forms of organisation.
- Area divisions within the regional/provincial authorities with autonomous responsibility for the management of fauna (e.g. protected natural areas, state forests).
- Inadequate equipment, organisation and training of technical staff in charge of emergency intervention.
- Lack of an operational agreement with the relevant authorities for public security.

The table in enclosure 3.2 shows to what degree the different objectives have been achieved by each administration.

3.6. – ACTIONS

3.6.1. Collaboration between authorities

The authorities in the Central-Eastern alpine area undertake to exchange the experience gained by staff operating in critical situations or emergencies caused by bears. Joint action "in the field" may also be provided for.

3.6.2. Drawing up of annual reports on intervention carried out by each individual authority in relation to problem bears or critical situations

All the authorities in the Central-Eastern alpine area where critical situations caused by bears have occurred undertake to draw up an annual report on these cases and the intervention carried out and send this to the Ministry for the Environment and the Protection of Land and Seas. This will provide information regarding:

- cases occurring (number of cases, type, location, period etc);
- method of intervention and efficacy of the action taken (number, type, personnel, results achieved etc.).

3.6.3. Preparation of an organised system for emergency intervention in critical situations

In areas characterised by a stable bear population (Trentino, Friuli Venezia-Giulia), in addition to identifying the administrative unit coordinating the activities (decision-maker), the authority involved shall identify staff to be included in emergency teams. These staff should be appropriately trained.

3.6.4. Acquisition of the material necessary to carry out intervention

In areas characterised by a stable bear population, the authorities shall carry out a survey of the material and equipment already available and required for controlling bears and shall identify, also in terms of priorities, any supplementary equipment required.

3.6.5. Review of rules and regulations related to the sector

The authorities in the Central-Eastern alpine area undertake to examine their own regulations on the subject, in order to establish any amendments and additions necessary in order to allow full application of the "criteria and procedures for action regarding problem bears and intervention in critical situations" in the relevant region/province.

3.6.6. Administrative aspects

The authorities, in collaboration with the Ministry for the Environment and the Protection of Land and Seas and ISPRA, shall verify the process for authorising the action contained in the "Criteria and procedures for action regarding problem bears and intervention in critical situations" and if necessary prepare the documentation necessary for this process.

3.6.7. Organisation of informative and joint meetings with the representatives of the authorities for public security

The authorities with jurisdiction for areas where there is a stable bear population – and possibly those which do not have such a population – undertake to organise meetings with the representatives of the authorities responsible for public security, aiming to establish an operational procedure for communication, methods of collaboration and logistical aspects.

CHAPTER 4 - TRAINING

4.1. - INTRODUCTORY REMARKS

- In order to deal effectively with different phases of management and critical situations linked to the presence of a bear population which is expanding both in terms of numbers and territory, with particular reference to monitoring, the prevention and assessment of damage, the management of problem bears and critical situations, it is **necessary to have available well-qualified and updated specialist staff**. Training and refresher courses for staff must therefore represent a constant commitment of authorities, and should be **organised at various levels and diversified according to the type of operator**.
- In order to promote the standardisation of monitoring activities and operational methods linked to the management of the bear population in the alpine area, it is essential that the training of staff be based on **homogeneous educational programmes at supraregional level** and that there be provision for a **constant exchange of experience and techniques**.
- In order to allow the exchange of experience and periodic updating of the criteria and management methods adopted in other areas, both at national and international level, it is advisable to **provide periodic training for the staff of the different authorities involved in the management of bears**, and to create **forms of contact with other areas** characterised by the presence of a bear population.

4.2. – GENERAL AIM

The programme shall aim to ensure that specialist staff are present in all the authorities in the Central-Eastern alpine area by setting up **coordinated and shared training initiatives**, targeted at specific skills, organised on different levels and based on coherent programmes which are the same for all the authorities in the alpine region.

4.3. – SPECIFIC OBJECTIVES

4.3.1. Basic courses for all staff intending to specialise in the management of the brown bear

The basic courses shall be directed at all staff intending to specialise in management of the brown bear (transversal action). The objectives of the basic courses shall be:

- to improve the level of knowledge regarding the biology, ecology and ethology of the brown bear, the situation of the bear population, objectives, problems related to conservation and the main action to be taken;
- to teach staff to recognise the main signs indicating the presence of the species, also in order to standardise methods for the collection and archiving of data, creating a working group for the exchanging of experience and skills.

4.3.2. Specific training courses for staff in the sector

It is necessary to provide for the training of expert staff to be used for the following activities:

- assessment of damage;
- capture and intervention in emergency situations;
- "communication in the field". Adequately trained staff should act as a point of reference at local level for anyone requiring information regarding the brown bear and be able to deal with any situations of conflict on site.
- The courses may be structured at several levels, with an increasing degree of expertise; they may also be subdivided into a theoretical part and a practical part with activities in the field.

Participation at the aforementioned sessions could also be extended to representatives of public security services, given the need to ensure that there are also staff within these organisations aware of the problems involved in managing the species. This is a fundamental prerequisite for active collaboration in the management of the bear. It is also advisable that these courses, whether basic or specialist, be organised in the form of modules which can also be adopted by other authorities.

4.3.3. Realisation of periodic refresher courses

In addition to ensuring adequate specialist training for different types of operator, it is necessary to provide the staff involved with bears with constant refresher training, diversified according to their role, in order to adapt their skills to any new technology and extend their knowledge of specific issues or of any particularly problematical subjects.

Continuing training is indeed an essential requisite for carrying out their tasks correctly, maintaining an appropriate level of specific knowledge and improving the skills related to the specific role.

4.3.4. Realisation of general training courses also designed for staff not directly involved

This type of training event is also designed for staff not directly involved in the management of the brown bear. In order to best manage the presence of the bear in the area, it is indeed indispensable to instruct all personnel actively responsible for security at local level, so that they are capable of providing information and suitable responses, in particular as regards: the biology and ecology of the species, up-to-date news on the presence of the species, recognition of signs of its presence, behaviour to be adopted in the event of encounters with bears.

These training courses could also be extended to those in other roles responsible for supervising the area and staff not responsible for security such as park wardens, staff from public security services, fauna wardens, workers in protected areas and representatives of hunting and conservationist associations.

4.3.5. Promotion of opportunities for staff to compare notes and exchange experience

The organisation of periodic sessions for the sharing and exchange of experience between staff involved in the management of bears will contribute towards motivating staff, involving them in a practical manner in problems and guaranteeing uniformity in the application of working procedures. These sessions should:

- take place periodically, with possible intensification of meetings at particularly critical times;
- be dedicated to organisational/collaborative aspects and comparison of procedural aspects, forms and any problems arising;
- be an opportunity for updating/further study of specific subjects;
- update participants on the preliminary results obtained and on the possible future prospects for the various survey/research activities underway.

4.3.6. Training for administrative staff

Administrators should also be appropriately trained and periodically updated on methods of management and the most appropriate communication strategies for dealing with the presence of the bear in this area. For this purpose it is suggested that special training/information sessions also be organised for administrators of areas where the bear is present or which it is most likely to colonise in the future.

In addition to this, it would seem appropriate to keep a coordination group updated, linked to the Ministry for the Environment and the Protection of Land and Seas (made up of the administrators responsible for

crises in the different authorities involved) which should be informed of problems linked to the presence of the species. This should ensure coordination of strategies useful for the management of bears, above all in "crisis" situations.

4.3.7. Promotion and participation in training initiatives and refresher courses organised by others

The organisation of meetings between experts in the management of the species and/or participation in such initiatives represents an important opportunity for growth (conferences, workshops, other events etc.). These may give rise to important suggestions for best dealing with local situations.

4.3.8. Training for economic categories most vulnerable to conflict with the bear

Courses for the economic categories most affected, such as bee-keepers and sheep and goat farmers may also be offered, dealing with the subject of prevention and compensation for conflict with predators and in particular bears.

4.3.9. Preparation of forms and supporting material for courses

It is important that staff involved in activities relating to management of the bear are formally given the task by the authority and assigned this specific role, so that it is possible to adjust the type of training according to the job assigned to them. At the same time, it is important that the skills acquired by them be recognised, both in terms of courses attended and activities carried out and hence the experience gained in the field.

The preparation of individual records bringing together the training and work experience of staff is a practical way of achieving this objective.

The preparation of teaching material such as handouts and manuals (also products designed for communication such as leaflets and other material) to be distributed to all the course participants is of fundamental importance.

4.4. – CURRENT SITUATION AND PROBLEMS

A survey has been carried out to find out about the activities organised by the individual authorities in the field of training, in relation to the objectives identified. For a summary of the current situation see enclosure 4.3.

Table 4.3.1 (enclosure 4.3) shows the degree to which the different objectives have been achieved by each administration.

4.5. – ACTION

4.5.1. Organisation of training courses (basic and specialist), also jointly, extended to staff of the various authorities in the Central-Eastern alpine area

Courses started up by the authorities for their own personnel, involving different types of staff and levels of training, shall also be extended to the staff of the authorities in the Central-Eastern alpine area that have not yet developed structured training activities.

This will make it possible:

- to make the most of the financial resources available for training;
- to provide standard skills to staff working in different authorities;
- to standardise operational methods and methods for the collection of data and information linked to the presence and distribution of brown bears in the area.

4.5.2. Certification for different types of staff

The authority that organises the training activity may issue a certificate of attendance for the staff attending the courses ("operator trained to assess damage"; "operator trained in capture and intervention in emergency situations"; "operator trained in communication in the field").

4.5.3. Training for administrative staff

The authorities undertake to organise training/information sessions with varying frequency according to the context (stable presence of the bear or occasional presence of pioneering bears only), open both to administrators responsible for the matter and local administrators in the areas concerned (Mayors etc.).

The programme for these sessions should include:

- updating on the situation of the bear population, particularly as regards the area of jurisdiction of the authority and neighbouring areas, paying particular attention to the possible colonisation of new areas;
- updating on the most recent management guidelines regarding the brown bear;
- updating on the most recent and effective communication strategies;
- updating on "crisis" situations.

These sessions could also be managed by a coordination group being set up linked to the Ministry for the Environment and the Protection of Land and Seas (made up of the administrators responsible for crises in the different authorities involved) and could be largely based on the information and processes developed by the authorities most affected by the presence of the bear.

CHAPTER 5 - COMMUNICATION STRATEGIES AND INITIATIVES

5.1. - INTRODUCTORY REMARKS

Conservation and management of the brown bear necessarily involves raising the awareness and increasing the involvement of the public, both on a national scale and, above all, at local level. Indeed, none of conservation objectives may be achieved without a **consensus and widespread and aware participation in management choices by local communities**.

Correct, clear and effective communication of the objectives, strategies and results of management and conservation action is fundamentally important in the process of managing the species; if correctly planned and carried out, this activity may contribute substantially to reducing perception of the bear as a species in conflict with man, limiting unjustified fear and reinforcing the credibility of the bodies responsible for the management of bears.

- An **inadequate knowledge** of the species and associated problems may lead to **negative consequences in social and political terms**, with accentuation of situations of conflict and rejection of initiatives designed to conserve the species.
- Communication initiatives must be **adjusted in relation to the distribution and number of bears present** in a certain area.
- It is also necessary to promote **communication beyond regional and national level**, with the scope, among other things, of encouraging the protection of roaming bears, which may represent essential points of contact between different bear populations (Italian, Austrian, Slovenian).

5.2. – GENERAL AIM

To increase knowledge and raise awareness of the species and to create a “critical awareness” among the public that is as objective as possible, in order to establish an appropriate cultural approach as regards the man-bear-environment relationship, thus reducing situations of conflict linked to the presence of bears.

Action developed within the context of communication must therefore be directed at:

- presenting an image of the brown bear which is as correct and objective as possible from the scientific point of view;
- promoting knowledge regarding strategies for management of the bear, in order to increase confidence and support for policy for the conservation of the species, thus promoting a positive attitude towards the carnivore;
- supplying prompt, objective and accurate information with a view to absolute clarity and transparency.

5.3. – SPECIFIC OBJECTIVES

Communication strategies on different levels have been identified. These should be carefully planned and adapted on the basis of the distribution and number of bears present and any critical situations (extent of the damage, presence of problem bears etc.) which may occur in a certain area.

The development of these strategies has also taken place bearing in mind the indications contained in the document “Communication criteria for the conservation of the brown bear in the Alps” drawn up within the context of the LIFE-Nature Co-op project (LIFE2003NAT/CP/IT/000003 - “Criteria for the creation of an

alpine metapopulation of brown bears”), promoted by the Adamello Brenta Nature Park and realised thanks to funding from the European Union, in collaboration with the Slovenian Forestry Service, WWF Austria and the Department of Animal Sciences of the University of Udine.

Three communication strategies are proposed on the basis of the different situations in which it may be necessary to operate,

- a) **preparation strategy**: this should be put into effect in areas where there is not yet an established bear population, but in which the arrival in the short-term is considered possible or in newly colonised areas;
- b) **maintenance strategy**: this is put into effect in ordinary situations taking place in areas which have seen the presence of the bear for some time, whether this be stable or occasional;
- c) **crisis strategy**: this is put into effect in areas also experiencing problems due to the presence of the bear. The action provided for is directed at dealing with events of considerable public interest, linked to the presence of problem bears. It involves establishing a specific operational and coordination procedure for communication in critical situations and emergencies (see chapter: “Criteria and procedures for action regarding problem bears and intervention in critical situations”), defining procedures for establishing an operational link with administrative representatives and public security services and promptly informing the mass media (which play a particularly critical role in these situations). It is also necessary to adopt an information strategy designed to guarantee adequate and correct information to the public, particularly to the social groups and economic categories most involved.

Each strategy should provide for the preparation of an *ad hoc* communication plan, designed for separate target groups, characterised by initiatives as closely linked to these as possible. The priorities for realisation should be established on the basis of the human and financial resources available (enclosure 5.1).

5.3.1. Preparation strategy

In the context of a “preparation strategy” the main communication objectives shall be:

- to develop understanding of the importance of the bear’s presence in the area, emphasising the ecological, cultural and economic value, without however avoiding the problematical and negative aspects of coexistence between man and bear (at the same time illustrating possible solutions);
- to correctly illustrate the objectives and methods involved in strategies for management of the bear, in order to promote the greatest possible faith and confidence of the public in the bodies responsible for these activities, encouraging involvement and trying to avoid the presence of the species being perceived as an imposition;
- to reduce possible situations of conflict linked to the return of the bear;
- to provide the different categories involved with targeted and adequate information in order to meet the “needs” of both sides and to identify possible solutions in order to reduce conflict;
- to raise awareness with local administrators and the organs responsible for controlling the area, above all in the initial phase of colonisation of a new area, as regards problems relating to management and thus to create from the very beginning a relationship of trust and collaboration in management initiatives;
- to establish a direct channel of communication with the mass media, which may become of strategic importance in subsequent phases.

Target groups

Communication should be directed at the following target groups:

- local administrators and authorities;
- the resident population;
- farmers, bee-keepers and relative representative organisations;
- hunters and relative representative associations;
- those in other economic sectors operating in the area (e.g. tourism);
- teachers and pupils in schools.

Activities of primary importance

- Definition of roles and responsibilities. The definition of roles and responsibilities is also a key element in the field of communication activities. It is necessary to establish who will be in charge of each initiative

and what issues will be dealt with by those involved. This is essential so as to avoid overlapping, with the risk of duplicating initiatives or supplying contrasting information.

- Establishing contact and a relationship of trust with the mass media. The scope is to discourage the mass media from making recourse to unreliable or unqualified sources of information, so as to limit the risk that subjective and incorrect portrayals of the species are presented.
- Establishing contact with local politicians. It is fundamental to create a direct channel of communication with local politicians in order to create a relationship of trust, something which is even more important in "crisis" situations.
- Raising the awareness of the local authorities and organisations responsible for controlling the area. Raising awareness is closely linked to training, as the presence of expert personnel within the various management organs is of fundamental importance in encouraging active collaboration in the management of the bear.
- Identification of expert staff for communication "in the field" and for contacts in situ. The identification of local contacts for information "in the field" on questions relating to the bear may be useful, especially in situations of conflict. These people should represent the point of reference in the area for all those requiring information on any subject related to the brown bear.
- Informative material of a general nature. General leaflets and handouts are very useful for supplying standard information, as they can be distributed in a widespread manner, at least in limited areas. This informative material may also contribute towards preparing the resident population for possible encounters with the bear, providing explanations of how to recognise signs of its presence and suggestions of how to behave during any sightings (as an example see enclosure 5.2).
- A series of leaflets designed for different target groups. Using direct marketing, it is important to provide targeted information with personalised formats to the different economic sectors concerned (animal husbandry, bee-keeping, agriculture and tourism) and to hunting associations. The type of material should be differentiated according to the category and the language should be adapted to suit the target group (as an example see enclosures 5.2, 5.3, 5.4, 5.5 and 5.6).
- Public meetings. These should be organised in the area and adapted to suit different target groups, whether these be residents, the economic sectors concerned, hunters or tourists.
- Meetings to raise awareness and conferences with the groups most concerned by the presence of the bear. In this first phase it is advisable to establish direct contact with the various representative organisations and those working in different sectors of production (animal husbandry, bee-keeping, agriculture and tourism), considering possible conflict between the brown bear and traditional production activities and tourism-recreational activities. The meetings with stakeholders make it possible to transmit information in a direct and targeted manner, contributing towards dispelling doubts and unfounded fears.

Activities of secondary importance

- Workshops. Meetings of an informative nature and to exchange experience with other areas' authorities (regions, countries in the alpine area) involved in the conservation of the same bear metapopulation are important in order to standardise and coordinate management methods, phases and strategies.
- Conferences and seminars for those working in the field. In addition to allowing the acquisition of knowledge useful for planning the activities necessary to prepare for the arrival of the species, the support of the scientific community is helpful in terms of gaining recognition and acceptance from local administrators and politicians and attracting the attention of the mass media.
- Lessons in schools and educational activities. Raising awareness, education and the involvement of the school-age population are undoubtedly fundamentally important in promoting acceptance of the species in the medium-long term. Educational programmes directed at schools at all levels, in addition to increasing the knowledge and awareness of pupils regarding the species, may also be considered an effective way of reaching pupils' parents (and therefore part of the resident population), something which may have a positive influence in terms of the acceptance of the species.
- Exhibitions and/or events. So long as these are appropriately organised, these activities should be considered within the context of disseminating information regarding the ecological and cultural value of the species.

5.3.2. Maintenance strategy

The maintenance strategy should be oriented in particular towards:

- improving dialogue with residents;

- improving dialogue with different stakeholders. Sometimes the damage caused by bears, especially if repeated in relation to the same asset, leads to discontent which cannot even be resolved by prompt compensation for the damage suffered. Identification of the conflict arising from the coexistence between traditional production activities and the needs of the brown bear is of fundamental importance, as the safeguarding of the bear also depends on the consensus and involvement of stakeholders. This may also be obtained thanks to appropriate campaigns providing information and raising awareness;
- provision of detailed, clear and up-to-date information on the situation underway, on any problems and the management strategies adopted. Any situations of conflict linked to the presence of the bear must be presented to the categories involved with objectivity, together with possible solutions helping to avoid, prevent or mitigate these situations;
- maintaining a high level of social acceptance for the species.

At the same time, however, it is necessary to avoid media "overlapping", as paying excessive attention to the bear, above all in the event of particularly difficult situations, may also encourage political exploitation.

The results of scientific research and surveys in the field may provide support for communication, making available objective and detailed data on the situation of the species.

Target groups

Communication should be direct at the following target groups:

- administrative contacts in municipalities and representatives of public security services;
- the resident population;
- farmers, bee-keepers and relative representative organisations;
- hunters and relative representative associations;
- those in other economic sectors operating in the field
- those working in the tourist sector.

Activities of primary importance

- Periodic meetings with administrative contacts in municipalities and representatives of public security services;
- Information for the mass media. The drawing up and periodic publication of impartial articles regarding the situation and activities underway in the local media (newspapers, and magazine but also radio and TV) may be very useful for involving the resident population, avoiding the public gaining the impression that something is being hidden from them, with consequential risks for acceptance of the species. In order to deal with the most high-profile events (whether positive or negative) it is also advisable to anticipate the breaking of news with press conferences and/or press releases, in order to deal with them first hand, rather than being obliged to respond to versions of the facts offered by the media.
- Informative activities directed at the economic sectors most involved (animal husbandry, bee-keeping, farming and tourism). The information conveyed should be adapted to the specific needs of the different sectors concerned, with particular attention for administrative aspects linked to procedures for obtaining damage compensation and the granting of contributions to realise prevention works. These activities may take place through:
 - the publication of articles in specialist magazines;
 - the drawing up of special handouts;
 - the organisation of periodic meetings.

It is also advisable to seek to maintain collaborative relations with the representatives of trade associations, aiming at the reciprocal exchange of information regarding the evolution of the situation underway.

- Educational initiatives in schools. On the basis of specific environmental education projects, it would be possible to provide for modules on a theme (e.g. the biology and ethology of the bear, the ecology of the species, its conservation and management, its presence in local traditions, the main reasons for interaction between the bear and man). The educational and training programmes should be developed in collaboration with the school's management and only adequately trained educational staff should be responsible for educational activities. For this reason it is advisable for preliminary meetings to be organised with teaching staff. If possible the work should be accompanied by the distribution of specially prepared informative material. Finally, the possibility of promoting competitions on the theme could be considered.
- Public meetings and conferences. Public meetings should be organised regularly, in order to allow experts in the field to keep the local population up-to-date on the evolution of the situation. During the various meetings and opportunities for exchanging opinions it would also be possible to prepare special

forms allowing participants to express their opinion regarding the quality of the event and issues relating to the management and conservation of the bear. Subsequent processing of this information could contribute towards evaluating the "level of acceptance" for the bear.

- Films. Depending on the funds and resources available, this communication option could be useful for various purposes, such as school lessons or TV broadcasts for example. As an alternative to making several films, each directed at a different target group, it would also be possible to provide for a "multipurpose" product, in order to reach a wider target with a single product, thus limiting expenditure.
- Photographic and bibliographic archives. The realisation and subsequent updating of specific photographic archives will offer valid support for educational and informative activities. A similar role could be served by bibliographical archives on the subject.

Activities of secondary importance

- Publications, scientific documents, theses. The production of articles and scientific reports on the activities realised and on the data gathered will represent a further tool for dissemination, especially for the scientific community. The importance of a constant link with the scientific community should not be underestimated, both in order to allow constant improvement of management techniques and due to the advisability of making the information gathered in the Central-Eastern Alps available to other projects.
- Scientific meetings, conferences. The organisation of scientific meetings and/or participation at specific national and international conferences is important in order to obtain the exchanging of experience and data, in addition to information and suggestions for dealing with problems encountered during management activities.
- Internet site. Although the Internet cannot genuinely be considered as an information tool of primary importance for the resident population (in most cases the web does not have a significant influence on the social categories involved in the problems) it may nevertheless encourage a consensus as regards the species.
- Guided tours to areas where bears are present. These must be adapted in relation to the users (school parties, trade associations, technicians, tourists etc.) and could also be combined with evenings on a specific theme. The presence of expert staff makes it possible to provide accurate answers to specific worries. These communication options are of particular interest for tourists (residents are unlikely to participate in guided visits to the area in which they live). Although tourists are generally considered to be less important than residents, gaining their consensus could also mean convincing those working in tourism and also some of the residents, in the case of particularly tourist-oriented areas.
- Information panels, stands. Realisation of stands, information panels and information points during fairs or events may offer a significant opportunity for promotion, but also for providing information regarding the biology and ecology of the species.
- Annual reports. Realisation of a bulletin, in a straightforward format but with rigorous control of the content, providing up-to-date information on the situation of the bear.
- Merchandising. In so far as this is compatible with the resources available, it may be worth realising promotional material/gadgets, possibly linked to the distribution of informative material. Individual publishing initiatives could also take place in the form of partnerships, i.e. by seeking sponsorship.

5.3.3. Crisis strategy

Crisis situations are also the most difficult events to manage in terms of "communication", given that the public can rapidly change its attitude towards the species, moving from acceptance to intolerance, also as a result of the emphasis given to events by the mass media and political pressure.

A crisis strategy should therefore set itself the following objectives:

- to establish a rapid, clear and authoritative channel of information with the relevant administrators and politicians in order to create a relationship of trust with the technicians responsible for management of the species;
- to provide prompt and accurate information through the mass media, thus avoiding excessive publicity which is not objective or distorts reality and which could lead to a disproportionate reaction by the public and the authorities with jurisdiction for the area or be exploited for political purposes, with a subsequent overall decrease in social acceptance for the species;
- to provide clear information on problems and risks linked to the presence of bears and the eventual problematical nature of certain bears frequenting the areas, avoiding the issuing of incorrect or imprecise news. This also allows the citizens involved, if necessary, to adopt the most suitable behaviour in a given situation.

Target groups

In crisis situations the efforts in the field of communication should be directed primarily at the following target groups:

- local administrators and authorities responsible for the area;
- the mass media
- the resident population;
- those in economic sectors concerned by problems involving bears.

Activities of primary importance

- Contact with politicians and relevant area authorities. In order to resolve particularly difficult situations, over and beyond the strictly operational aspects provided for in the protocol for communication in critical situations and emergencies, the involvement of the relevant politicians and local administrators is necessary. This should include all the organs which can interact and cooperate at decision-making and political level and which may therefore contribute towards dampening down the crisis and preventing the interruption of conservation projects.
- Contact with the mass media. In crisis situations, more than in any other circumstances, it is fundamentally important to pay attention to relations with the mass media, which should be rapidly and actively informed through previously established contacts. It is necessary to explain what is happening clearly, with the intention of clearing the field of inaccuracies and exaggerations.
It is advisable to nominate a single contact as the official link with journalists. In order to guarantee the support necessary to management in relation to communication with the mass media in important or emergency situations, it is also possible to make use of collaboration with the press officers in the authorities. They may be able to guarantee the mass media exhaustive and complete information, allowing them to present the problem to the public in the correct context, along with the initiatives adopted to resolve and/or contain the problem.
- Contact with stakeholders. In particularly difficult situations, in order to avoid development of a negative attitude towards the species or aggravating the situation, it is fundamentally important to reinforce relations with the economic sectors most concerned by the crisis. This may be done directly, through public meetings making it possible to transmit more accurate and in-depth information also in response to specific doubts and worries.

Activities of secondary importance

- Advertising campaigns. Generally costly and not always effective, these may be considered in cases when it is necessary to improve the image of the bear and/or increase social acceptance for the species. The realisation of such campaigns should be carefully evaluated, possibly with the assistance of communication experts.

Exceptional activities

- Issuing of press releases. In order to be effective in crisis situations press releases must be issued promptly and if possible in advance.
- Organisation of press conferences

5.4. – CURRENT SITUATION AND PROBLEMS

A survey has been carried out to discover the activities carried out by the individual authorities in the field of communication, in relation to the objectives identified. For a summary of the current situation see enclosure 5.7.

Table 5.7.1. (enclosure 5.7) shows the degree to which the different objectives have been achieved by each authority.

5.5. – ACTIONS

5.5.1. Sharing of material already produced

The authorities in the Central-Eastern alpine area shall make available communication material already produced, in order to make the most of the resources available and to avoid overlapping and duplication of products already realised on the subject. In this way it will be possible to concentrate any investment in communications on subjects not yet covered.

5.5.2. Alpine web site

The authorities in the Central-Eastern alpine area shall explore the possibility and appropriateness of realising a single internet site for the whole alpine area, understood as a source of information, database and communication tool. ISPRA shall be responsible for the technical and scientific aspects. The web site should include basic information on the project, concise information on the biology of the bear, regulatory and administrative aspects, forms, organisational structure, bibliography etc. It should also include sections dedicated to the updating of information (news, press review, video review etc.) and to the management of communication (sending of e-mails, information on the different initiatives implemented etc.). The web pages should be periodically updated and also available in English.

5.5.3. Alpine-wide information campaign agreed and shared by the various authorities

The feasibility of realising an information campaign on an alpine scale agreed between all the authorities in the Central-Eastern alpine area will be explored. In the event, a single logo to be associated with these initiatives at interregional level will be identified.

5.5.4. Periodic reports

The authorities shall collaborate in the drawing up of a periodic bulletin, in a straightforward format but with rigorous control of the content, providing up-to-date information on the situation of the bear throughout the alpine area.