

CONSERVATION OF SMALL BEAR POPULATIONS THROUGH STRATEGIC PLANNING

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Abstract: Worldwide, many bear populations face increasing threats from habitat loss and fragmentation, demographic limitations, and loss of genetic diversity. Managing these small populations presents special challenges requiring organized, quick, efficient responses from limited personnel and resources if a small population is to persist. Local wildlife managers can use strategic planning to help to focus their conservation efforts by defining conditions necessary to sustain a threatened population in terms of habitat needs, public support for conservation, and mortality limitation. Managers can develop a program that will address how to obtain the conditions specified in the strategic plan. To define conditions that will allow a population to persist, strategic planners must describe the desired future condition for the major factors affecting the population. To achieve this desired future condition, a strategic targeting approach should be used. Strategic targeting is an ordered approach to: (1) identify problems limiting bear populations and rank their importance; (2) identify who has the most influence and control over these problems; (3) assign responsibilities to address these problems; (4) develop an approach to minimize the threat and eliminate the problem; and (5) schedule the actions necessary and monitor the success of the actions. Management efforts to conserve small bear populations are often costly and may require significant changes in human use of bear habitat. Such changes are not casually accepted by the general public, or by people interested in resource development. Credible data and monitoring are necessary both to monitor management activities and to maintain them over the period necessary to achieve results. Implementing conservation efforts usually cannot wait until monitoring data are available. However, monitoring can improve and refine conservation efforts as data are gathered. Successful monitoring requires annual application of methods to be used by management agencies with minimal disturbance to the population. Data from monitoring can help convince the public of the need to conserve the population and to direct and improve conservation actions so they continue to address the problems facing the population. I outline a strategic targeting approach for conservation of small populations emphasizing biological and habitat parameters that can be monitored and describe how to organize a conservation program to establish such monitoring.

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Effective conservation efforts are those that maximize efficiency so that primary problems are addressed first and funding and personnel resources are used most effectively in solving these problems. As resources for conservation decline, success of conservation programs will depend on their efficient use. Many bear species worldwide are increasingly threatened by small population size and by habitat fragmentation and loss. As human actions intrude on bear habitat, problems associated with management of small populations are becoming a major challenge facing bear managers. If the primary threats to a bear population are not addressed first, the future of the population may be jeopardized.

Many conservation programs lack a system to identify and prioritize the issues and threats facing a population. This lack of strategic organization may lead to inefficient use of resources and questionable results (Clark and Harvey 1991). A lack of strategic planning can lead to overemphasizing actions such as research and ignoring immediate problems. Research is often necessary to determine basic biological and habitat needs and to document the effects of human activities on survival and habitat use. Initial efforts directed toward strategic planning for conservation of small bear populations should help identify the most important issues of concern. These efforts will increase the efficiency and effectiveness of conser-

vation programs dealing with small bear populations where time is limited.

ORGANIZATION OF THE CONSERVATION EFFORT

To influence wildlife management and conservation policy, a successful conservation program for small bear populations must address biological, social, political, and organizational factors (Kellert and Clark 1991). Conservation programs are less effective if they focus on biological factors at the expense of social, political, and organizational factors (Fig. 1). Most conservation programs are managed by biologists who are inherently and understandably biased toward biological approaches. This limits efforts directed at other factors affecting a population. A program must integrate the expertise of specialists in policy development, public education, resource economics, and social science if it is to address all the factors (Schon 1983, Schon and Renn 1994) influencing the successful conservation of a bear population.

Specialists in other fields are needed because those implementing conservation programs need to understand public and political values as well as biological values. Only through understanding the bases for different value systems can a successful public information campaign

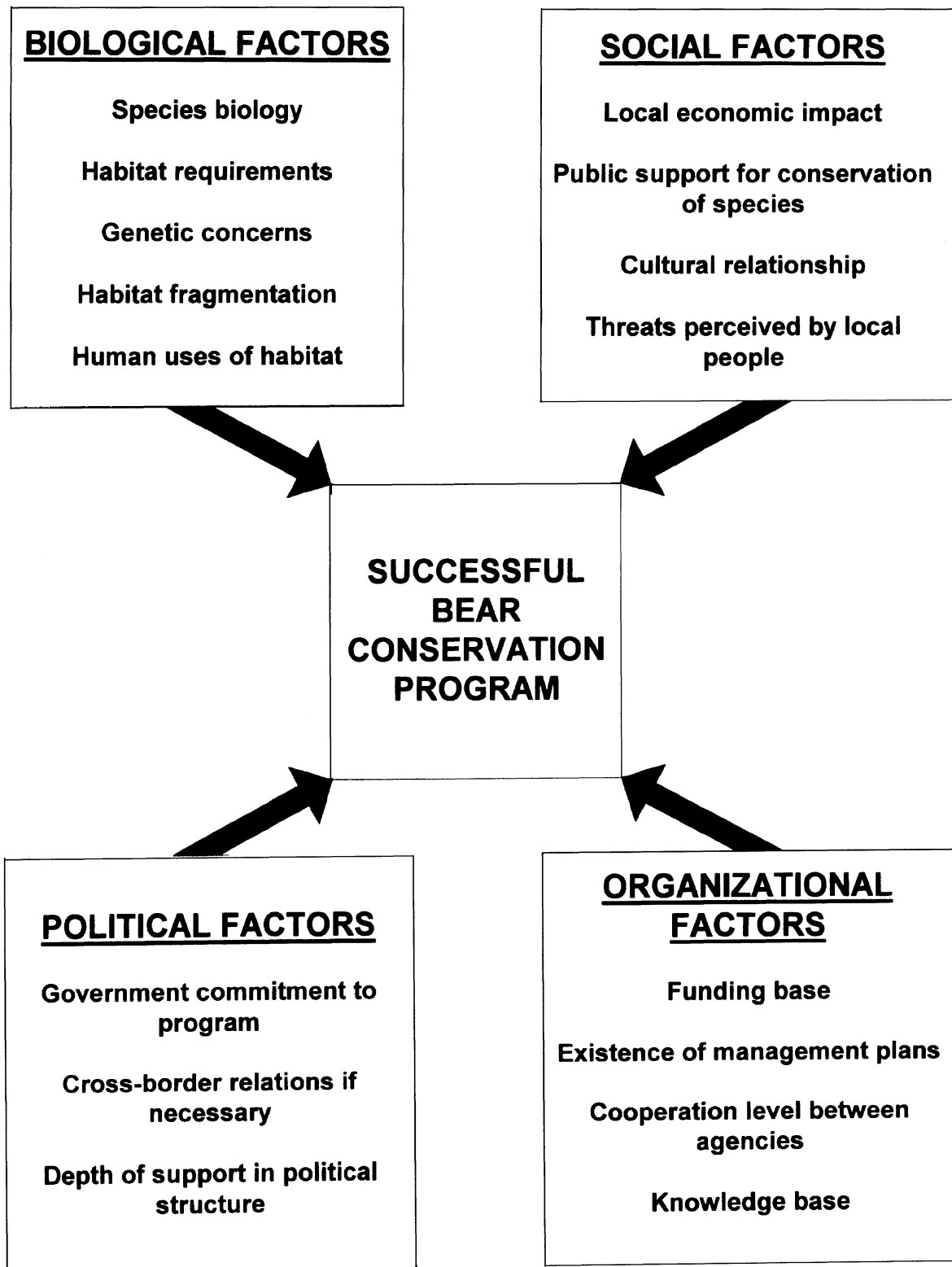


Fig. 1. Concerns that should be addressed in an effective conservation program (adapted from Kellert and Clark 1991).

be developed to build social and political support for bear conservation (Kellert et al. 1996). Surveys on attitudes of local and national constituent groups toward bears and bear conservation can help gain such understanding, and the results can be used to improve support for conservation and to explain the issue to those having the greatest influence on the bear population.

Government agencies and non-governmental organizations (NGOs) need to develop better relationships to support governmental conservation actions. Governmental agency involvement is necessary because it is based on a legal and institutional framework that allows the agencies to pursue bear conservation as part of their mission. Without this legal framework, diverse agencies such as forestry managers, public works administrations, and rural administration units (e.g., local villages) would be less responsive to necessary changes to benefit bear conservation. Because conservation of bears may require some changes in the procedures of government, and because these changes usually have economic effects, such changes must be implemented by government agencies and supported by legal and social frameworks. Involvement of NGOs in conservation actions resulting in economic changes is difficult, but not impossible. NGOs can and should be partners with government, but usually cannot be viewed as the leaders in management that results in resource use or social changes. Social factors require understanding of (1) land ownership of bear habitat, (2) decision making processes for actions such as livestock grazing leases and timber harvest on private or local government-owned land, and (3) the relationship of hunters to the government in hunting regulation decisions. Since these factors are critical, specialized teams of lawyers, land planners, opinion-poll takers, local government specialists, and others could research and develop reports on each major factor that could be used as a basis for making management decisions.

THE DESIRED FUTURE CONDITION

The first step in an organized approach is identifying the desired future condition for each major factor effecting a bear population (Table 1). Identifying the desired future condition assists in charting a management course to achieve the goal of the conservation program. Management can then focus on these desired conditions and chart actions to achieve them. The major factors that will influence the future of small bear populations are: (1) minimizing the number of bears killed by humans, (2) maintaining and enhancing habitat, (3) developing public support for bear conservation, (4) ensuring linkage

between populations where possible, and (5) continued monitoring of the population and its habitat.

STRATEGIC TARGETING

Once the desired future conditions have been determined, a strategic targeting approach should be used to focus conservation efforts. A strategic approach should define what will be required to maintain bears and what needs to be done to achieve this (Honadle and Vansant 1985). This is a proactive approach in contrast to a reactive approach that responds to influences, such as road or mine development proposals, as they appear. An organized program will clearly identify threats to the population and address those threats in an ordered fashion. This is best developed through a strategic targeting approach. The strategic targeting concept uses the desired future condition as a guide and directs resources to those aspects that are most important to achieve success (Table 2).

Conservation is like warfare. The objective is to protect your resources while addressing the factors that erode or directly threaten your objective. Strategically developing a proactive and responsive strategy to address all issues in a prioritized fashion is necessary to a successful conservation program. Without a strategic and proactive approach, a management program continuously responds to ongoing conservation threats. Such a defensive and reactive approach is doomed to failure. To quote Napoleon, "The only logical end to defensive warfare is surrender."

A successful strategic approach in conservation addresses problems before bear habitat and populations are reduced to levels where the population cannot continue to exist. A successful targeting strategy is organized and is adaptive (Walters and Holling 1990). It addresses all threats and it prioritizes the expenditure of conservation effort to meet the greatest threats first. The following assumptions should be accepted in applying a targeting strategy: (1) all human activities affect bears, (2) some human activities have more effects than others, (3) we can most efficiently improve the prospects for bears by addressing the impacts that have the greatest effects first, (4) time is limited, (5) doing nothing will guarantee failure (extinction).

Figure 2 presents a detailed application of strategic planning to bear conservation through an applied targeting strategy. This system allows organization of a conservation effort in an efficient and productive manner. It uses an organized approach to identify and prioritize the threats to small bear populations, assigns responsibilities and

Table 1. The desired future conditions for factors influencing survival of small bear populations.

Major factors for survival	Desired future condition
Human-caused bear deaths	No human-caused bear deaths. Known human-caused mortality always <3% of the minimum population based on females with cubs. All mortalities reported and investigated. Legal action taken for illegal kills. No poison use in bear habitat. Hunting carefully managed. Livestock losses compensated promptly to minimize bear deaths from livestock owners.
Habitat	No net loss of habitat in conservation areas. Habitat area for bears is delineated. Each population divided into monitoring units of 100–150 km ² . Timber harvest practices designed to localize disturbance and provide large areas of undisturbed forest, especially in seasonally important habitats. Security provided by a minimum of 60–70% of each 100–150 km ² unit as free from roads and harvest each year.
Public support	An organized public relations program promotes bear conservation needs to important user groups like hunters and foresters. Special programs developed to teach school children about bears and their needs and the relationship of bears to the cultural and natural history of the area. Organized lectures and informal talks at local communities in bear range and with user groups such as hunter associations telling them how they can participate in bear conservation. Posters, brochures, and video tapes on conservation available for distribution to appropriate public groups. Television and radio announcements developed for distribution to the media.
Linkage within and between areas	Identify all vulnerable linkage areas within habitat nuclei and across borders if necessary. Management plans jointly developed for special management of livestock, timber harvest, and public information campaigns in each potential linkage area. Establishment of international teams for planning and maintenance of links across border areas. Consultation with appropriate government agencies before any developments such as highways that could fragment necessary habitat, with consideration given to relocate or mitigate such projects.
Monitoring programs	Annual monitoring of minimum numbers of females with cubs, distribution of family groups, and human-caused mortality within each 100–150 km ² -unit of occupied and potential bear range. Monitoring of roads constructed, timber harvested, and livestock grazed in all bear habitat. Annual summary of monitoring results distributed. Scats collected to understand seasonal food habits. Annual sampling program to monitor abundance, distribution, and predictability of major foods (i.e., <i>Quercus</i> spp., <i>Fagus</i> spp., and <i>Vaccinium</i> spp.)

Table 2. The application of the targeting strategy concept to conservation of small bear populations.

Strategic targeting	Relation to bear conservation
Clearly identifies threats.	What basic problems do bears face?
Clearly prioritizes threats.	What are the most immediate problems?
Determines the location of most vulnerable point for each threat.	What agency or group has the greatest effect on this problem?
Determines responsibility for addressing each threat.	Who is responsible to get information to the authorities responsible for this problem and request a change in current activities?
Determines what is necessary to successfully address each threat.	What information, facts, data, graphics, presentation type, public support, or approach is necessary to address the threat and to change existing detrimental conditions?
Sets a timetable to address each threat.	When will each threat be addressed?
Monitors the effect of each management action on a threat to be sure of success.	Are the results of actions being monitored? If no positive change is noted, readdress the tactical approach.

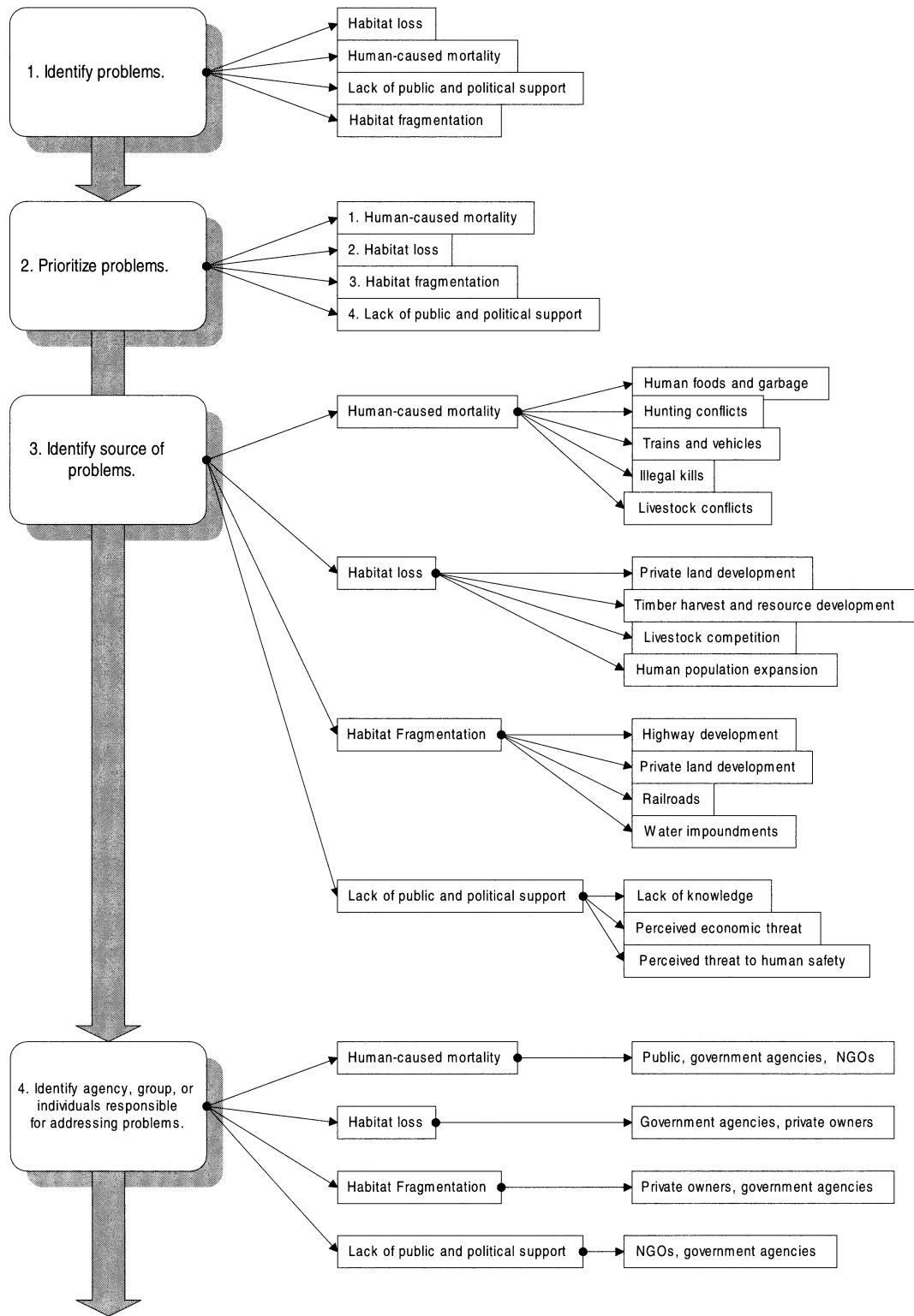


Fig. 2. An example of the targeting strategy concept applied to bear conservation.

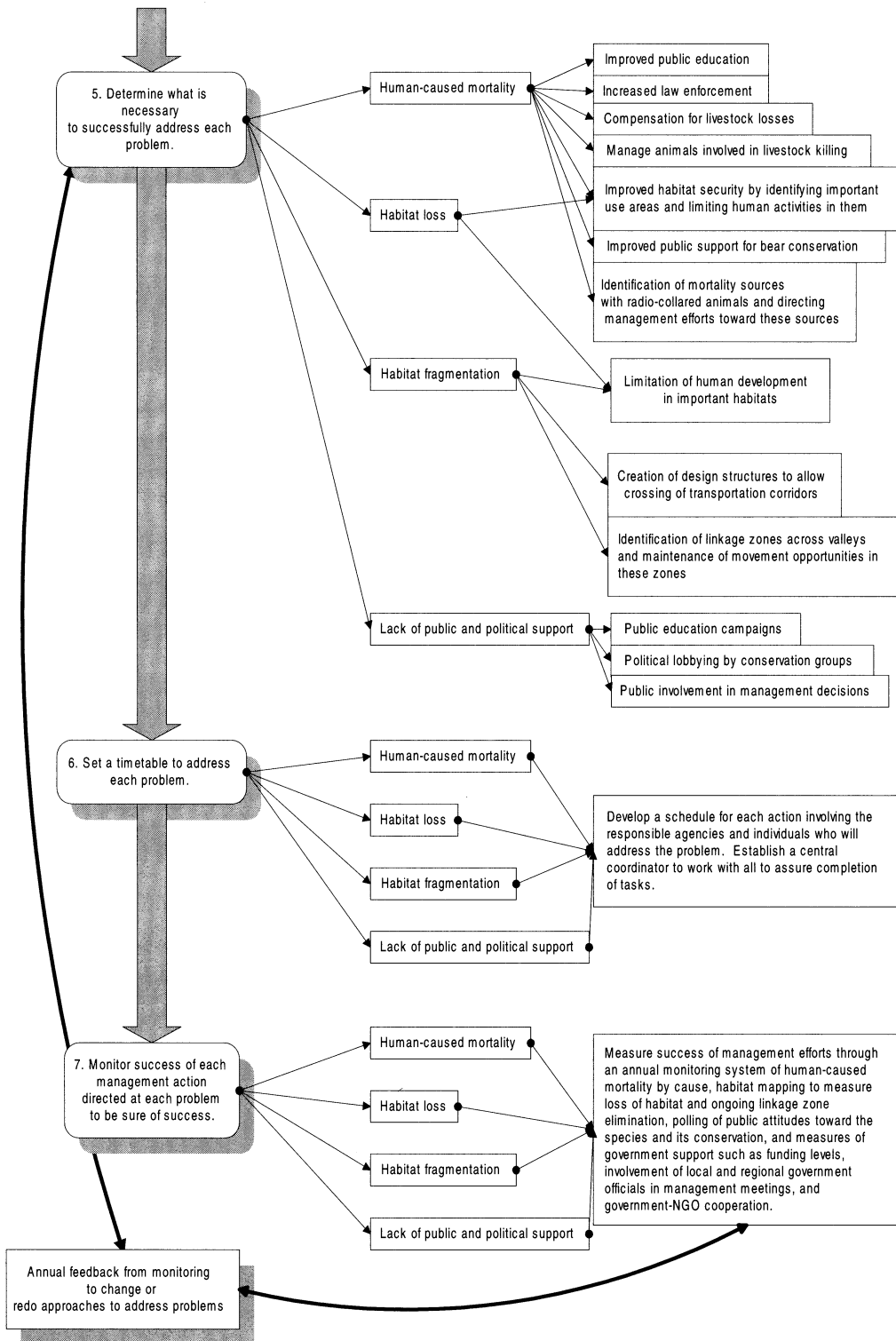


Fig. 2 (Con't). An example of the targeting strategy concept applied to bear conservation.

methods to address each threat, and includes a feedback loop to monitor and improve conservation efforts. Its main advantage is the application of conservation effort to the major issues in a proactive approach, thereby maximizing efficiency.

SUMMARY

The successful management of small bear populations depends on an organized conservation program that proactively addresses problems facing bears and their habitat. This is most important for small populations that are at great risk where timely and effective action is important if the population is to continue to exist. To maximize the probability of success, a conservation program should be organized to: (1) clearly identify the threats to the population and its habitat; (2) prioritize threats so that resources and actions can address the highest priority threats first, and monitor the results of these efforts; (3) include a diverse range of specialists including biologists, forest managers, public works administrators, social scientists, and local political leaders; (4) include legal mandates on which to base any change in resource allocation that will have economic cost; and (5) include non-governmental organizations as partners helping to aid in developing public support.

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