Black Bear Management Plan

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RESOURCES AGENCY
CALIFORNIA
DEPARTMENT
FISH & GAME

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During the summer portion of the Department's black bear survival and production study, bears are captured with snares. Each snare is hidden in the dirt and surrounded by logs so that it can be approached from only one angle. A strategically-placed can of sardines lures the bear into the trap. Traps are checked each day.

Captured bears are tranquilized, weighed, and measured; blood is drawn; a tooth is extracted; and the bears are fitted with radio telemetry collars so their activities can be monitored. Photos by William Grenfell.

Introduction

Black bears (*Ursus americanus*) are recognized as an important component of California's ecosystems and as a valuable resource for the people of California. The black bear has been classified as a game mammal since 1948. Since that time, hunting regulations have become more restrictive, prohibiting trapping, killing of cubs or sows with cubs, and reducing the bag limit from two to one bear per license year. Before the early 1980's, regulation changes were infrequent. However, in 1982, the Department began recommending regulatory and legislative changes to reduce poaching and increase the Department's ability to monitor bear populations.

Data indicates that California's bear population has increased in recent years. Black bears are being observed in areas where they were not seen 50 years ago along the Central Coast and Transverse mountain ranges of Southern California. Between 17,000 and 23,000 black bears are now estimated to occupy 52,000 square miles in California.

Wildlife laws and regulations are established in a two tiered fashion. Laws are established by the state legislature, supersede regulations, and are listed in the Fish and Game Code. Regulations are established by the Fish and Game Commission (Commission), which is responsible for regulating the noncommercial taking and possession of wildlife (Section 200, Fish and Game Code). The Commission is made up of 5 commissioners who are appointed by the Governor. Hunting and fishing regulations are detailed in Title 14 of the California Code of Regulations (CCR).

Section 1801 of the Fish and Game Code establishes state policy regarding wildlife resources. The ultimate goal of this policy is to maintain sufficient wildlife populations (including black bear) to accomplish the following goals:

a) to provide for the beneficial use and enjoyment of wildlife by all citizens of the state;
b) to perpetuate all species for their intrinsic and ecological values;
c) to provide for aesthetic, educational, and nonappropriative uses;
d) to maintain diversified recreational uses of wildlife including sport hunting;
e) to provide for economic contributions to the citizens of the state through the recognition that wildlife is a renewable resource, and;
f) to alleviate economic losses or public health and safety problems caused by wildlife.

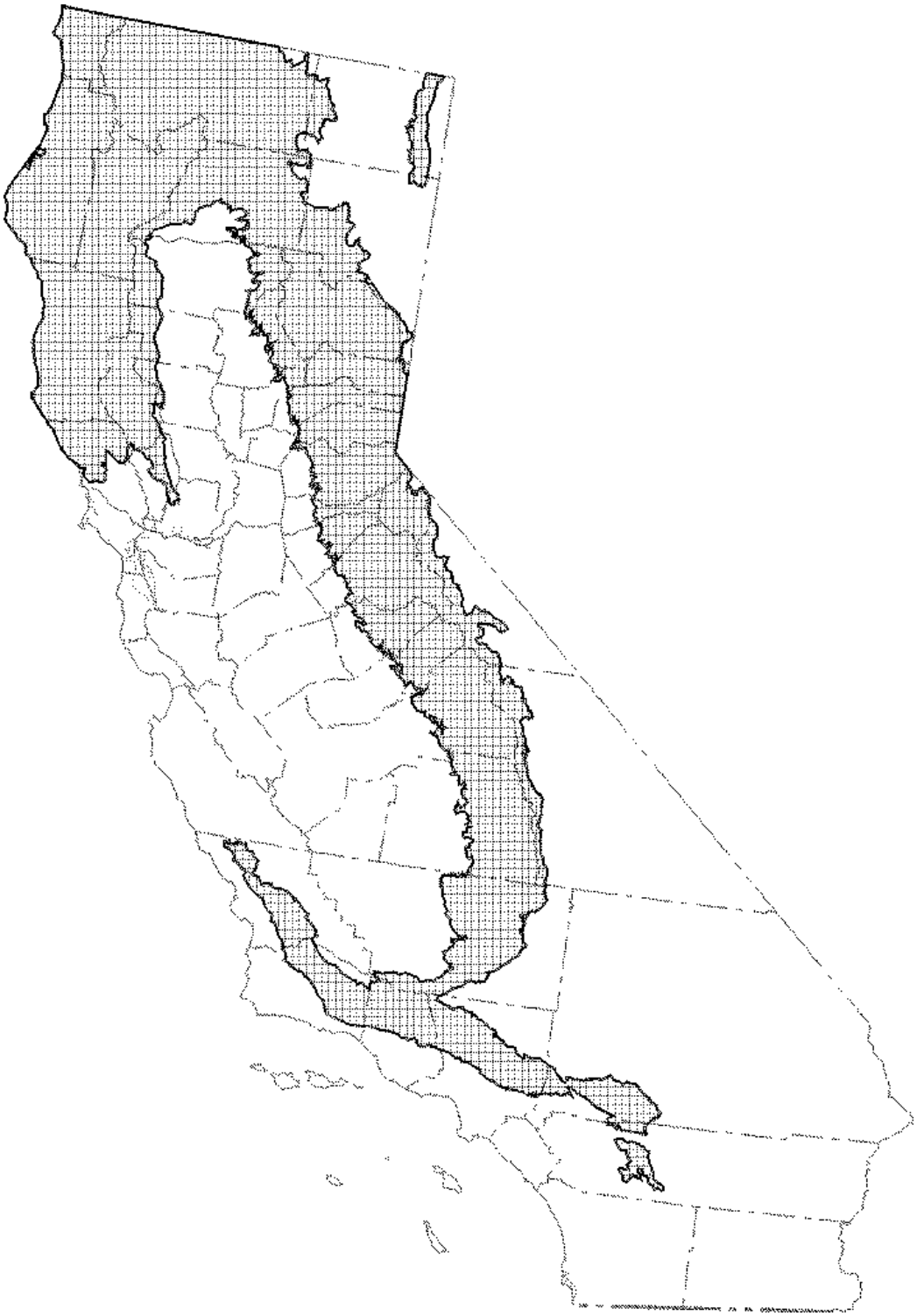
Each year, the Department of Fish and Game prepares a Draft Environmental Document (DED) for the proposed project of a bear hunting season. After a 45-day public review period, the DED is finalized and certified by the Commission. The Commission then adopts a preferred alternative within the range of alternatives analyzed within the DED. The black bear management plan (BBMP) is not intended to circumvent or replace this process. Instead, the management plan is intended to provide guidance and measurable goals for bear management within the state. The goals established within the BBMP will be addressed in future DED's. In summary, the DED is the annual analysis of black bear hunting regulations and the BBMP provides multi year guidance for black bear management.

The primary goal of the Department's black bear management program is to maintain a viable and healthy black bear population. Within this goal, the BBMP provides the guidance for balancing the needs of this species with the diverse economic and recreational needs of the people of California.

During the winter portion of the Department's black bear survival and production study, bear dens are located. Some bears den high, inside large coniferous trees, while others den in caves or large logs and stumps on the ground. A look inside one den reveals a sow nursing her cub while hibernating. Photos by Bob Stafford.

1.0 Current Status

Figure 1: Black Bear Range in California



1.1 Population

California's black bear population has increased over the past 15 years. Sitton (1982) estimated the statewide bear population to be between 10,000 and 15,000 in the early 1980's. Presently, the statewide black bear population is conservatively estimated to be between 17,000 and 23,000.

Two subspecies of black bear are recognized in California (Hall 1981), the northwestern black bear (*Ursus americana altifrontalis*) and the California black bear (*U. a. californiensis*). The subspecies are thought to be geographically distinguished by the crest of the Klamath Mountains. Differentiation between distinct black bear "populations" is difficult in California, even at subspecies level, because there are no significant barriers restricting bear movement between occupied habitat. However, differences in vegetation, water availability, and bear density, allow biologists to differentiate three regional "subpopulations" of black bears in California—North Coast/Cascade, Sierra, and Central Western/Southwestern (Figure 1).

The North Coast/Cascade subpopulation occurs north and west of the Sierra Nevada Mountains and includes both the Northwestern and Cascade floristic provinces (Jepson 1993). Roughly half of the statewide black bear population resides in this portion of the state. Previous and ongoing studies indicate that bear densities range from 1.0 to 2.5 bears per square mile (Department of Fish and Game 1993, Kellyhouse 1977, Piekielek and Burton 1972). Almost all of the bear habitat in this area is publicly owned or used for timber production. Large wilderness areas are located in each of the National Forests of this region.

The Sierra Nevada subpopulation encompasses the Sierra floristic province (Jepson 1993) and extends from Plumas County south to Kern County. Black bears inhabit the entire region. Forty percent of the statewide black bear population inhabits the Sierra Nevada Mountains. Bear populations are less dense in the Sierra with between 0.5 and 1.0 bears per square mile (Grenfell and Brody 1983, Koch 1983, Sitton 1982). Over two-thirds of the bear habitat is administered by the U.S. Forest Service and two large National Parks are located within this region.

The Western/Southwestern subpopulation extends south and east from Monterey County to Riverside County. Prior to 1950, black bears were not believed to inhabit the Central Coast or Transition Ranges (Storer and Tevis 1978, Hall and Kelson 1959, Grinnell et al 1937) where black bears were believed to be excluded or limited by the larger California grizzly bear (*Ursus arctos californicus*). After the California grizzly became extinct around the turn of the century, black bears started to appear in Ventura and Santa Barbara Counties (Grinnell et al 1937). The Department of Fish and Game supplemented this natural range expansion by moving 28 black bears into southern California during the early 1930's (Burgduff 1935). The current black bear population in the San Gabriel and San Bernardino Mountains is believed to be at least partially descended from this supplemental introduction.

Probably less than 10 percent of the statewide black bear population inhabits the Central Western/Southwestern California bioregion and bears are restricted to the Central Coast and Transverse Mountain Ranges. In the Central Western province, bears were detected by bait stations with decreasing frequency as latitude increased (Schultz 1994). Based on studies of black bears in chaparral habitats in Arizona (LeCount 1982) and southern California (Stubblefield 1992, Novick 1981, Moss 1972) bear density is probably less than 0.25 bears per square mile.

1.2 Habitat

Black bears occupy a variety of habitats; however, bear populations are densest in forested areas with a wide variety of seral stages. Habitats with both vegetative and structural diversity provide alternate food resources when other foods are in short supply. Food availability for black bears has been strongly correlated to reproductive success in female black bears (Rogers 1987, Piekielek and Burton 1975, Jonkel and Cowan 1971). Vegetation and structure diversity not only allow for greater survival of existing bears, they also provide for increased reproduction.

As with all wildlife, black bears have specific preferences for reproduction, cover, and feeding. With respect to reproduction, secure, dry den sites are needed for female bears giving birth or raising cubs. Many studies have indicated that female black bears selected the most secure den locations (Mack 1989, Alt and Gruttadauria 1984, LeCount 1983, Johnson and Pelton 1981, Lindzey and Meslow 1976). While black bears have been found to den in slash piles, under large rocks, and even on open ground, the most secure and thermally protective den sites are associated with large trees.

On a regional basis, black bears “thrive” in some habitats while other habitat types are marginal. For instance, black bears are known to use annual grasslands sporadically during the year. However, self sustaining bear populations are not found in this habitat type. In contrast, montane hardwood, montane chaparral, and mixed conifer forests sustain high bear populations because they supply sufficient food, cover, and water. Other habitat types, such as valley foothill hardwood, provide seasonally important habitat. Similarly, some habitat types vary in importance depending on the composition of surrounding areas.

Habitat loss is the leading threat to wildlife populations in California. Over half of the suitable black bear habitat in California is in public ownership of which an estimated 10 percent is managed as either a wilderness or park. Current ownership patterns allow large blocks of habitat to remain undeveloped and core areas within these blocks where bears encounter few humans. Furthermore, black bears typically inhabit rugged lands and conversion projections indicate that only 1 percent of existing black bear habitat is expected to be lost each decade (FFRAP 1989).

Land management activities can effect the capability of an area to support bear populations. For instance, many of the important food plants (manzanita, oaks) only grow in forest openings. Therefore, controlled burns or other management strategies aimed at creating a mosaic of forest openings can be especially beneficial for black bears by providing abundant food resources in close proximity to cover. Additionally, retention and recruitment of snags and large woody debris provide den sites and potential food sources (colonial insects). Conversely, management practices (i.e.—fire suppression) which result in even aged stands without structural and vegetational diversity decrease habitat value for black bears. Often attendant activities such as road construction, which do not directly reduce habitat, adversely effect bear populations by increasing hunting vulnerability.

Table 1: Black bear habitat evaluation in percent (based on Forest and Rangeland Resources Assessment Program (FFRAP) database run December 1993).

Bioregion	High Value	Medium Value	Low Value	TOTAL
North Coast/Cascade	37%	5%	1%	43%
Sierra	17%	16%	5%	38%
Central Western/ Southwestern Calif.	2%	7%	10%	19%
TOTALS	**56%**	**28%**	**16%**	**100%**

1.3. Hunting Recreation

Existing regulations provide for a 23-day archery only season beginning in August and a separate general bear season which opens concurrently with the general deer season in the A,B,C, and D deer hunting zones. Bear season is closed when 1,500 bears are reported taken or on the last Sunday in December. Dogs can only be used for the pursuit and take of bears during the general bear season and hunters are limited to using one dog per hunter in areas where the general deer season is open. There is not a separate dog training season and bait cannot be used. The current level of harvest is considered biologically conservative and allows for diverse hunting activities. Bear hunting presently provides recreation for 15,000 people in California. Bear hunters typically spend over 100,000 days hunting bears each year.

Hunting can contribute significant income for to local economies, especially in rural areas. In 1991, hunting for all species was estimated to generate over $530 million in California (Southwick Associates 1993). During a recent survey, it was determined that bear hunters spend over $8 million to hunt bears each year (California Department of Fish and Game 1995). In comparison, deer hunting and viewing were shown to contribute $230 million per year to the California economy (Loomis et al 1989).

Bears range throughout almost all of the mountainous regions and legal bear hunting is allowed in almost every portion of the state. Most hunters have the opportunity to hunt bears within 100 miles of their homes. Access to bear hunting areas can be gained through a variety of roads ranging from interstate highways to unpaved logging roads.

1.4 Wildlife Viewing Opportunities

Wildlife viewing recreation (direct observation and photography) has become increasingly popular. By nature, black bears are solitary and reclusive. The best bear viewing opportunities exist in areas with dense bear populations and where bears are less threatened by humans, such as State or National Parks. Regardless of location, black bear observations in the wild are sporadic and unpredictable.

Approximately 10 percent of the most productive bear habitat in California is either managed as a park or wilderness area where bears encounter large numbers of people. In general, these bears are less timid when compared to bears in heavily hunted populations. However, even in Yosemite National Park, where black bears are completely protected and commonly observed, nuisance black bears altered their foraging patterns to avoid human contact (Graber 1982). Additional bear viewing opportunities exist in areas with naturally high bear densities such as portions of northwestern California. The likelihood of viewing a black bear in these areas is correspondingly greater.

Under natural conditions, bears are most predictably encountered when they are seasonally attracted to limited seasonal resources such as meadows or berry patches. However, in some cases bears are lured into dumps or other unnatural food sources. The Department has emphasized, and will continue to emphasize, that bears not be baited in any manner for public viewing. This premise was reinforced in 1997 when the Commission adopted regulations prohibiting the feeding of bears and other large mammals. Bears which become habituated to humans are more likely to damage private property in the future or become public safety hazards. Furthermore, artificial food sources create unnatural conditions which are often detrimental to the species.

1.5 Research

Almost all of the research on black bears in California has been conducted during the past 30 years. Over this period, the Department has funded or conducted bear research in each of the three previously described subpopulations. Population, home range, diet, range expansions, denning, and habitat preferences have all been studied. Similar studies have been conducted independently in Redwood, Yosemite, and Sequoia National Parks.

The Department has funded or participated in long term studies in three areas; Trinity County, Placer/El Dorado County, and San Bernardino/Los Angeles County (Figure 2). The Trinity County study was conducted in the 1970s and 1980s while the bulk of research in the Placer/El Dorado and San Bernardino studies was conducted during the early 1980s. Currently, the Department is midway through a 10 year study on the Klamath National Forest in Siskiyou County. The data obtained in these studies is important for validating some of the assumptions in population models and for determining the status, distribution, and needs of California's black bear population.

Figure 2: Locations of Black Bear Studies in California (1970-1998)

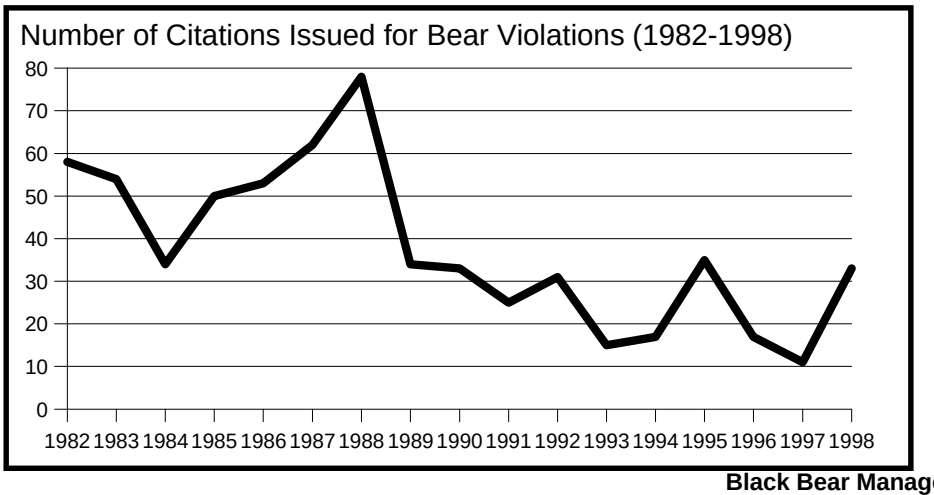
1.6 Law Enforcement

The illegal killing of black bears has been a problem in California as well as other western states. In the early 1980s, population modeling indicated that poaching was almost equal to the legal harvest in some areas (Sitton 1982). A demand for bear parts, particularly gallbladders, for use in traditional Asian medicines was thought to have contributed to illegal activity. Field investigations and computer modeling further suggested that poaching was occurring during spring and summer when bear hunting was illegal. Data indicated that the combination of poaching, natural mortality, road kills, and hunting mortality may have been approaching the level where the bear population could no longer perpetuate itself. Evidence which suggested that poaching was impacting bear populations in California included declines in harvest, hunter success, and median ages of hunter-killed bears; detection of bear poaching by undercover operations; and the killing of radio collared bears when bear season was closed.

In response to this problem, the Department recommended the adoption of several regulations and laws to reduce illegal bear hunting in California. One of the most important changes was the prohibition of the use of dogs in bear habitat from early April until the opening of deer season. Other effective changes which occurred at this time included upgrading the penalty for selling bear parts to a felony, considering the possession of more than one bear gall bladder evidence that bear parts were being offered for sale, mandatory skull presentation, and mandatory tag return for both successful and unsuccessful bear hunters. The implementation of these laws and regulations appears to be one of the factors which lowered combined mortality to a sustainable level and has resulted in the current health of California's black bear population. While black bears have been, and will continue to be, killed illegally, it appears this activity is not limiting statewide black bear populations anywhere in the western United States (McCracken et al 1995).

In 1992, the American black bear was listed under Appendix 2 of the Convention for International Trade in Endangered Species (CITES). The listing occurred because the gallbladder of the North American black bear is very difficult to distinguish from the gallbladders of several endangered Asian bear species. Under the authority of this listing, American black bear parts can only be legally transported over international borders with an appropriate permit. In the two years following the CITES listing, there were only three permit applications and no seizures of illegal gallbladders (McCracken et al 1995). Chemical analysis of bear bile from Asia further indicates that while bear gallbladders from North America do end up on domestic markets, they rarely end up on overseas markets (Espinoza et al 1995). Therefore, demand for exported bear parts appears to be negligible at this time.

The illegal trade in bear parts has been documented for almost 20 years in California. Over this period, black bear populations have flourished. If poaching rates were as high as those presented in the press, California's black bear resource would have been eliminated. After extensive study, McCracken et al (1995) concluded that under current conditions, it is unlikely that "large-scale harvest of black bears would be prompted by demand for gallbladders alone". Given the potential demand within California and Asia, the Department recognizes that the illegal take of bears could increase. This situation warrants continued monitoring of both bear populations and illegal activity.



1.7 Depredation

Black bears cause thousands of dollars in property damage each year and occasionally injure people. Bear/human conflicts can be expected to increase as more people move into bear habitat. Between 1987 and 1997, personal property and structure damage were the reasons indicated in almost 40 percent of the depredation permits issued. Depredation in this category has risen significantly since the early 1980s when property damage accounted for only 10 percent of depredation cases.

Black bears are being observed more frequently in suburban areas creating potentially dangerous situations. To help alleviate these situations, the Department has developed a black bear depredation policy which emphasizes the removal of bear attractants prior to issuing a depredation permit. Each reported depredation incident is investigated by Department employees and corrective measures are urged before a depredation permit is issued. In some cases, permits are not issued until artificial food sources are removed or secured. Removing bear attractants (garbage, compost piles), securing residences, and storing garbage properly, are usually encouraged. Other successful methods for alleviating bear damage include adverse conditioning and electric fencing. However, these methods are only successful when attractants are made unavailable.

Trapping and relocating bears, which has been shown to be largely unsuccessful, is rarely attempted. If killing a bear is necessary, responsibility for killing a problem bear is placed with the land owner. A notable exception exists if a bear becomes a public safety hazard. In this situation, the bear may be killed immediately by a Department employee or public safety officer.

1.8 Public Information

The Department publishes two periodicals, *Outdoor California* and *Tracks*. *Outdoor California* is a bimonthly magazine. Black bear stories are occasionally featured in this magazine. *Tracks* is published annually and is specifically oriented towards large mammal hunting. Black bear hunting prospects and stories are featured in each edition.

The Department's brochure "Living With California Black Bears" was first printed in 1996. The brochure provides the general public with some basic black bear ecology and gives helpful suggestions about avoiding depredation problems and unwanted visits by bears.

Information regarding black bears is provided to the media upon request or when warranted by specific incidents. Press releases on methods for avoiding conflicts with bears, bear hunting season, and season closures are issued annually. Black bears are a high profile species and Department officials are available to answer the public's questions.

The environmental impact of hunting is analyzed and alternatives are presented in the DED which is prepared annually by the Department. Specifically, the impacts of bear hunting on bear populations, human recreation, the general environment, and the effects of hunting on individual bears are examined. After completion, the DED is made available to each library in a county seat for a 45 day public review. At the end of this period, the Department responds to public comments and the Fish and Game Commission certifies the document.

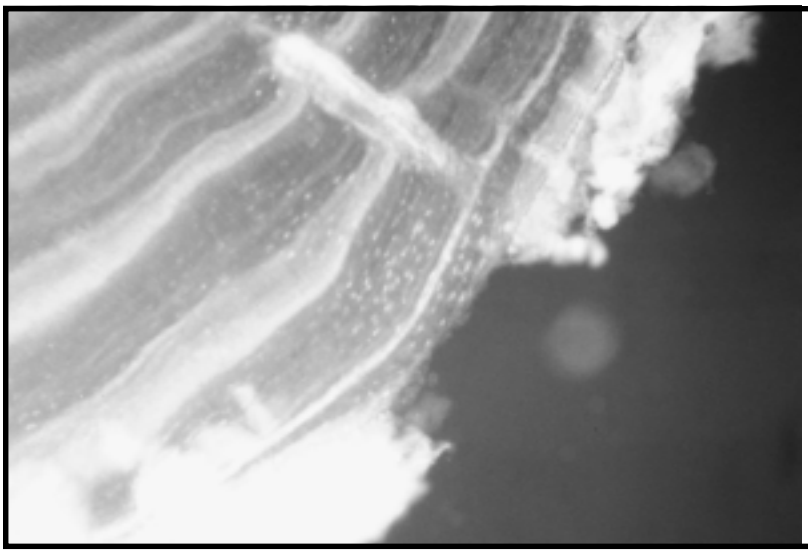
2.0 Monitoring Procedures

2.1 Population

Black bears are relatively secretive and solitary. Therefore, it is difficult to detect trends in their populations. All of the methods used to derive population estimates and trends have an inherent bias or limitation. Therefore, it is important to use several population monitoring techniques to evaluate population trends (Garshelis 1993). The Department monitors black bear population trends using cementum annuli analysis, hunter surveys, and harvest data. The use of bait station surveys to monitor population trends is currently being evaluated.

2.1.1 Cementum Annuli Analysis

Successful bear hunters are required to present the skull of their harvested bear to a Department employee so that a premolar tooth can be removed. Premolars are also collected from live trapped bears during ongoing studies. These teeth are then processed for cementum annuli analysis to determine age and reconstruct female reproductive histories. Ultimately, this data is used to verify models, to determine the age structure of harvested bears, and to provide course estimates of population trends.



The ages of bears are determined by sectioning and staining a premolar. Annular rings are counted under a microscope to determine the age of the animal. DFG file photo.

2.1.2 Sex Ratio

Successful bear hunters are required to return a “report card” after their hunt. The report card includes requests for information regarding the hunter’s name and address, the date, time and location of kill, sex of the harvested bear, and hunting method. The number of days spent hunting (hunter effort) and whether or not the bear was killed on private or public land were recently added to the report card. Unsuccessful bear hunters have been required to return their unused bear tags at the end of each bear season since 1985.

Although sex ratios for black bears are approximately equal at birth (Department of Fish and Game 1993, Koch 1983, Graber 1982, Sitton 1982, Piekielek and Burton 1975), male bears are typically more susceptible to hunting mortality because they move over larger areas and are generally preferred by hunters (Litvaitis and Kane 1994, Kane 1989). Harvest data over the past 40 years indicate that males typically constitute approximately 60 percent of the reported kill.

2.1.3 Hunter Take Survey

Over the past 35 years, a random sample of sportsmen have been selected to participate in an annual survey regarding hunter success and effort. While bear hunters are included in this sample, the primary focus of this survey is to summarize hunter effort for all hunted species. These data, used in conjunction with other trend data, provide valuable long term information on black bear population trends. The recent addition of the hunter effort question on the bear take report card will be used, in part, for comparison with data from the hunter take survey.

2.1.4 Population Trend Estimates

Population estimates are derived by a method which projects the percent of the population harvested from the sex and age composition of harvested bears (Frasier 1982, 1984). This analysis is based on differential hunting pressure and hunter selectivity by sex. These estimates have been determined to be conservative (Miller 1989). Determining population trends from changes in these estimates can be suspect because relatively minute changes in a single age cohort can result in major changes to population estimates. Therefore, these estimates should only be used in conjunction with other trend analysis methods for making management decisions.

2.1.5 Decision Matrix

The following decision matrix (Table 2) is based on a wide array of methods used to monitor black bear population trends. When the threshold is exceeded for two or more monitoring techniques, the Department will recommend that hunter kill of bears be reduced in some manner. When significant changes are listed as part of the “threshold for concern”, data obtained in a particular year will be compared to data from the previous three year average. This analysis will be used on a statewide basis.

Kill per hunter effort and population estimates have been combined as a single monitoring category. Both of these methods, considered individually, are susceptible to dramatic fluctuations in results based on small changes at a single data point. Used in combination, these data sources provide valuable information on the status of the bear population.

Administrative actions (i.e.-regulation changes, season closures) have the potential for biasing data in particular categories. For example, reducing the in season closure mechanism from 1,500 to 1,250 bears would probably result in a significant reduction in bear harvest. This reduction in harvest would reflect a regulation change, not a decline in the bear population. Therefore, data trends influenced largely on administrative actions will not be considered when making recommendations for regulation changes.

While the above criteria are intended for statewide application, data can be compiled and examined at the level of subpopulations. However, small sample sizes in some areas make definitive conclusions about that population suspect. Therefore, the above matrix will be used as a general monitoring technique and will not be used as the sole source for making decisions on a regional basis.

The effects of different harvest levels are modeled using a computer program, POPMOD (Barrett 1986). Changes in population, sex ratio, and age structure can be predicted using different harvest scenarios. The results of the model run are then compared to existing data to determine which scenario best reflects actual conditions. The assumptions contained in this model are based on previous studies or the scientific literature. However, any model is only as good as the data it is based upon and efforts should be made to validate the assumptions in the model. This model is used as one tool in determining harvest levels and for estimating the number of bears poached each year.

Table 2. Decision Matrix for Monitoring the Black Bear Population.

Monitoring Technique	Threshold of Concern
Median Ages of Hunter-Killed Bears	Female ages < 4.0 years old; or significant reduction in median age for combined sexes
Percent Females in Harvest	> 40 percent
Total Harvest	< 1,000 or significant reduction; Only if reduction is independent from administrative action.
Kill Per Hunter Effort & Population Trend	Significant change in both kill per hunter effort and population index.

2.2 Habitat

Black bear habitat is monitored by estimating habitat conversion trends derived from the Forest and Rangeland Resources Assessment Program (FFRAP). Another computer model, the California Wildlife Habitat Relationships Program (CWHR), is used to predict the overall value of a habitat type and the potential effects of habitat changes on each species. It is anticipated that both of these programs will be refined over the next few years making them more valuable. Local biologists consistently review proposed projects in their area which have the potential to impact wildlife habitat. Timber allotments, grazing allotments, and housing developments are examples of typically reviewed projects.

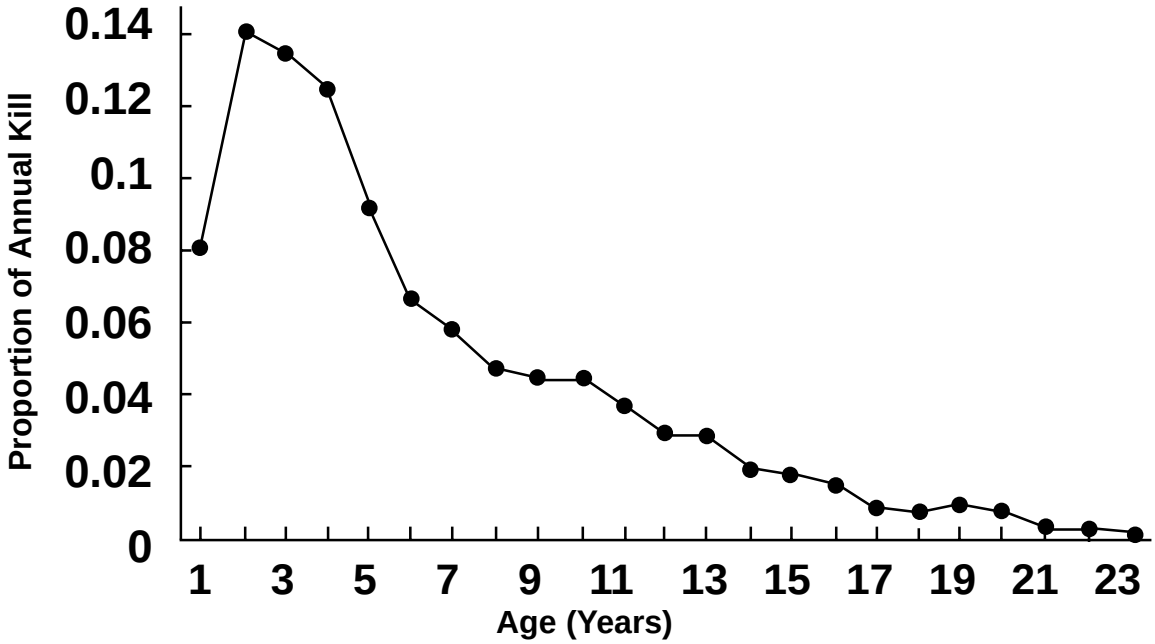
2.3 Hunting Recreation

The Department uses bear tag sales, bear tags, and the Game Take Hunter Survey to monitor bear hunting trends on a statewide and regional basis. The number of tags sold in combination with the number of bears taken is used to determine the overall success rate. In addition, bear tags from successful hunters provide valuable information concerning hunting method, location of kill and hunter effort (days spent hunting). All of these variables, either singly or in combination, are used to evaluate hunter opportunity.

Tags from successful bear hunters provide valuable information on hunting success in localized areas. However, the sole use of bear tag information from successful hunters is problematic because over 80 percent of all bear hunters are unsuccessful and data from these individuals is not obtained from tags. The Game Take Hunter Survey provides county specific data on hunting effort and includes results from unsuccessful bear hunters. These data are used to determine long term hunting trends.

In addition to the Game Take Hunter Survey, the Department surveyed bear hunters in 1994 and 1997 to determine trends in hunting methods and hunter effort. Questions were aimed at providing information which was not available from bear tags or the Game Take Hunter Survey. These data have been valuable in assessing regulation changes over recent years.

Average Age of Harvested Bears
(1992 - 1997)



2.4 Wildlife Viewing Opportunities

Black bear viewing opportunities are currently maintained by urging land owners and managers (see Section 2.2) to preserve bear habitat as well as by ensuring that bear populations are stable. To this extent, bear viewing opportunities are monitored by continuously evaluating changes in the aforementioned criteria. The monitoring techniques for both habitat and the population have been detailed in the previous sections. Department biologists, at both the local and state level, further monitor changes in viewing opportunities by coordinating with representatives and biologists from the State and National Parks.

2.5 Research

Most of the data used to assess population trends in California are obtained from hunter killed bears. These data alone are sufficient for monitoring bear populations. However, predicting the effects of future harvest scenarios is accomplished through the use of the computer program, POPMOD (Barrett 1986). Several assumptions within this population model were based on data from other states. While the use of published scientific data from other states has been extremely valuable, within state studies are needed to confirm the assumptions made in the computer model.

In 1992, the Department initiated a 9-year study of juvenile recruitment and age specific reproductive rates for female black bears on the Klamath National Forest. Black bears are captured, tagged, and sometimes radio collared. The radio collared bears (females and subadults) are being followed to determine mortality and natality rates. The results of this study have, and will be, used to model California bear populations.

An evaluation of the use of bait stations for detecting changes in black bear populations was initiated on the Central Coast in 1994. This study was initiated with the objectives of identifying potential problems in the use of this technique and for documenting the extent of black bear range expansions in the Central Coast and Transition Mountain ranges. Ultimately, the evaluation of this technique will be based on utility and cost effectiveness.

2.6 Law Enforcement

The Department's Wildlife Protection Branch (WPB) is responsible for enforcing fish and game laws. Even though numerous factors effect bear associated violations, general trends in illegal activity are determined by comparing the number of bear associated violations against the number in previous years. WPB personnel are also consulted to provide input on trends in the illegal killing of black bears.

The impacts of bear poaching on California's black bear population are estimated by using a predictive computer model. Under this model, both legal and illegal harvest are input as separate variables and the model predicts demographic and population changes over a fixed year period. These results are then measured against actual data.

Symposia on the trade in bear parts were held in 1994 and 1997. Perspectives and data on the extent and impact of the trade were presented from across the United States, Canada, and several Asian countries. The diverse efforts to combat this problem were also profiled. Quantifiable data on the extent of the gall trade in California are not available. However, the results of studies from other states and countries have allowed the Department to better estimate the illegal bear trade in California.

2.7 Depredation

If a black bear damages private property, the property owner may request a depredation permit for killing the bear. In these cases, a Department employee, usually the local warden or biologist, reviews the event to determine if a bear was responsible for the damage and whether or not the property owner had taken reasonable precautions to prevent the damage. The land owner is given recommendations on how to avoid further damage and often, a depredation permit is not needed after appropriate actions are taken. If reasonable efforts are taken and property damage continues, a depredation permit shall be issued for the property owner, or his agent, to kill the bear within a specified time period. A Department employee or public safety officer can kill a black bear threatening public safety at any time.

The property location, date, method of kill, method of carcass disposal, reason for issuing the permit, and measures taken to avoid damage, are all documented on the permit. If and when the bear is killed (roughly 3 permits are issued for every bear killed), a separate kill card is filled out and submitted to the Department. Both the permit and kill card are correspondingly numbered and therefore easily traced. The sex of the bear, date of kill, and the person killing the bear are indicated on the separate kill card. Black bear depredation trends are determined from these permits and cards.

In addition to the depredation process, the Department also uses a Wildlife Incident Report Form for cases when depredation permits were not issued (i.e. garbage was left out or measures were not taken to prevent damage). Since public safety bears are technically not depredation bears, incidents regarding black bears endangering public safety are usually recorded in this manner.

2.8 Public Information

Public information on black bears is usually released for three basic reasons; public requests, ongoing incidents, and public need. With the exception of press releases on preventative measures to avoid human/bear conflicts and hunting season details, most information is disseminated through public requests and/or specific incidents. The Department's ultimate goal concerning black bear information will be to increase the information flow for public need. To accomplish this goal, the Department recently produced a pamphlet aimed at reducing bear/human conflicts. While the Department annually examines black bear issues in the DED on bear hunting, this document is cumbersome and therefore not a good candidate for large scale public education activities.

Camper survives encounter with bear

Bloodied at Lake Shasta

By Larry D. Hatfield
OF THE EXAMINER STAFF

Like a lot of hungry teen-agers, this one was looking for junk food and poking around where he wasn't supposed to be.

Problem was, this teen-ager was a 600-pound bear and his potential food was 32-year-old camper David Marc Semenero.

The encounter scared the bejabbers out of both of them.

"It may sound funny, but my life pretty much flashed in front of me," Semenero said of his Tuesday morning encounter with the bear at the Holiday Harbor Campground at Lake Shasta.

The bear skedaddled just as fast as Semenero wanted to.

Semenero, a union carpenter, escaped with a head wound.

"It's fine," he said Wednesday morning from his Belmont home. "It's just a big gash from his claw. There's six staples in it. There was a lot of blood but I didn't know that until later (because) my head was just numb like when you get slapped real hard."

Semenero was camping without a tent about 2:30 a.m. when he "felt like a drop on the back of my neck."

"I thought it was rain, but I put my head up and it was this bear, drooling on me. I kind of startled

[*See BEAR, A-12*]

The black bear's interaction with humans ranges from a regular trip to the local dump (photo below) to a close encounter with a camper (newspaper story, left). All have one thing in common: the bear's desire for food.

Bears again savor civilization's fruits

By Tori Richards
STAFF WRITER

MONROVIA — If you see your trash can knocked over, it could mean the bears are back in town.

Fruit trees in the foothills of Monrovia and Arcadia have been attracting a family of bears in recent weeks, the latest sighting being Thursday night, police said.

So far there is no cause for alarm — the bears haven't attacked any animals or humans, said Monrovia police Sgt. Bill Crawford.

"You know a bear is around when you drive up the street and trash cans are knocked over," Crawford said. "Almost all the officers who have worked at night have seen them. It's kinda spooky, you keep your windows up."

The Thursday sightings happened about 10:30 p.m. in the 1200 block of North Canyon Boulevard and then half an hour later in the 800 block of Norumbega Road. The first bear was an adult, the second a cub, Crawford said.

"I was up there a few weeks ago around Cloverleaf and one ran right in front of my car," Crawford said. "I think it was as scared of me as I was of it. It ran up into the mountains."

The new family unit has moved into the old stomping grounds of Monrovia's most famous ursine celebrity — Samson — who fed off avocado trees and took dips in hot tubs before he was captured by state officials a year ago.

Originially slated for death, Sam-

Please turn to BEARS / A8

3.0 Recommendations

3.1 Population

Due to the large number of bears killed by hunters in California, some of the most reliable information for monitoring bear populations comes from hunter killed bears. Black bear populations should be monitored to determine their status. The following recommendations are intended to insure that the data regarding bear populations in California continue to be sufficient.

1. Mandatory tag return should be continued. Data gathered from these tags should include sex, location of kill, date of kill, and hunter effort.

2. Mandatory presentation of hunter killed bears should be continued to allow collection of a premolar for determining the bear's age.

3. The decision matrix should be used to monitor the statewide black bear population and to recommend regulation changes when necessary.

4. Data from the Game Take Hunter Survey should continue to be utilized for hunter trend information. Survey results should be compared with hunter effort data collected from bear tags.

5. Populations should be estimated annually for comparison purposes.

6. Population modeling should continue to be conducted with POPMOD (Barrett 1986).

7. The use of bait stations for monitoring population trends should be continued.

3.2 Habitat

The following recommendations should be implemented to decrease habitat loss and degradation in bear habitat.

1. The Department should continue to provide input for land management and lead agencies concerning activities which may be detrimental to black bears or their habitat. This input should include analysis of the size of logging operations as well as recommendations on ways to reduce or eliminate impacts to high quality bear habitat such as wet meadows and riparian zones.

2. The Department should encourage land management agencies to maintain or improve existing foraging and denning sites for black bears. Where appropriate, land management practices which enhance the quantity and quality of mast producing vegetation should be encouraged. Mast producing vegetation areas should be protected from extensive conversion to other vegetation types.

3. The Department should continue to recommend that open road densities be managed.

3.3 Hunting Recreation

Bear hunting has been found to be valuable in both an economic and recreational sense. As long as bear populations are determined to be healthy, bear hunting opportunities should be provided. The following recommendations are intended to accomplish this goal.

1. Increases in bag limits, season lengths and hunting methods should be considered if these changes are supported by biological data and a reasonable demand exists.

2. Bear hunters should be surveyed at least once every five years to determine trends in hunting methods and to evaluate hunter opportunity.

3.4 Wildlife Viewing Opportunities

Black bear viewing opportunities will be maintained by following the recommendations for population and habitat monitoring. Department personnel should continue to consult with National and State Park officials regarding black bear viewing opportunities.

3.5 Research

Research on black bear production and survival in California will be needed to evaluate model assumptions. Available data suggest that black bear ecology and population dynamics differ according to subpopulation. Data from the Sierra Nevada, which receives significant hunting pressure, is also needed for evaluating the assumptions in POPMOD.

The secretive nature and long life of black bears necessitates long term studies for determining population parameters. These studies can be expensive and permanent funding sources are necessary for continued study of this valuable resource.

1. The Klamath juvenile recruitment study should be continued. The overall duration of the study will be nine years, or two bear generations.

2. A parallel study of juvenile recruitment should be initiated in the Sierra Nevada. The duration of this study should also be nine years.

3. Recently developed techniques for monitoring bear populations with DNA from hair or scats should be investigated.

4. Black bear habitat needs to be assessed and preferences should be tested and used to update the Department's CWHR model. High resolution, statewide habitat assessment and mapping is needed.

5. The use of bait station surveys as an indicator of population trends should be investigated in an area with a denser bear population.

6. The bait station survey of the Central Coast should be continued with reduced effort.

3.6 Law Enforcement

Efforts to prevent and monitor black bear poaching should be continued. The following recommendations should be implemented to increase the effectiveness of law enforcement activities.

1. The number of citations issued for violations regarding bear hunting should be summarized each year. These figures should be compared with the parameters described in Section 2.1 to determine the scope and magnitude of illegal activity.

2. Wardens and deputies should receive periodic training on the status of bears, illegal hunting practices and new law enforcement techniques. Enforcement efforts should be directed towards illegal bear kill including the use of baits and night hunting.

3. If current regulations are found to be ineffective in preventing significant impacts to California's black bear resource, regulation changes should be considered to make these regulations more effective.

4. Personnel from both WPB and Wildlife Management should attend any further conferences in the illegal trade of bear parts.

5. The Department should develop an effective program to communicate with bear hunters about the biological information used to establish laws and regulations. The Department should provide opportunities for bear hunters to prevent illegal activities.

6. WPB should continue to include detection and prevention of bear related violations in annual priority enforcement plans.

3.7 Depredation

The Department's ultimate goal regarding black bear depredation is to minimize these conflicts and to take actions which will benefit both black bears and property owners. The following recommendations will help to achieve this goal.

1. The current black bear depredation policy should be continued.

2. Coordinated efforts between the Department and the land management agencies should be conducted to establish uniform practices concerning bear depredation. If, after appropriate measures have been taken, situations exist where black bears are a chronic problem, the Department should consider recommending that the land management agency close the facility.

3. Public education on black bear depredation, as described in the next section, should be implemented as soon as possible.

Above: People who leave food and bear attractants out can unintentionally cause conflicts with bears. Photo by Jon Kinney.

Right: Bear-proof trash containers can alleviate bear depredation, but only if there is public awareness of the problem. Public education is a necessity wherever bears and humans coexist. Photo by Bob Stafford.

3.8 Public Information

Currently, information on black bears is distributed indiscriminately by individual Department employees and a standardized program has not yet been developed. Thus far, providing information in this manner has been sufficient. However, as more people come into contact with black bears, a mass media approach will be necessary to provide public information.

To meet this challenge, the following recommendations are offered.

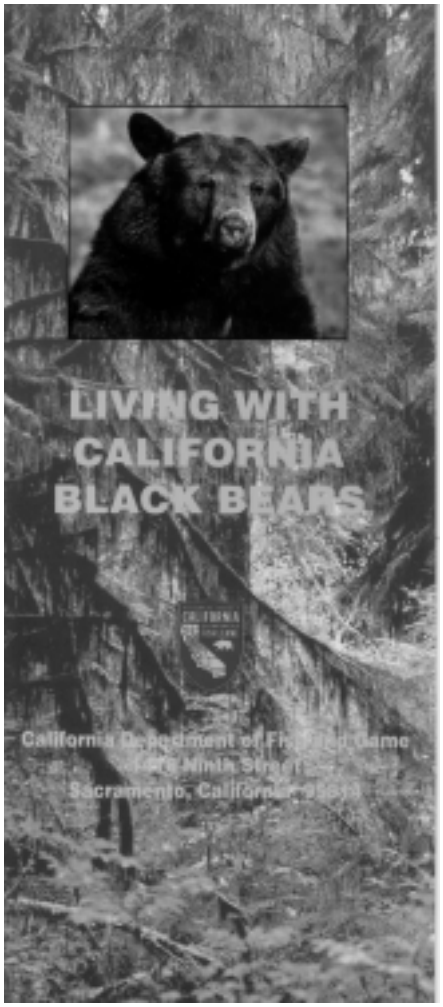
1. A standardized program, including a brochure, should be developed to educate the public on how to avoid conflicts with bears.

2. The Department should develop a video regarding ways to avoid conflict with bears. This video should then be made available to Department employees, land management agencies, schools and homeowner associations.

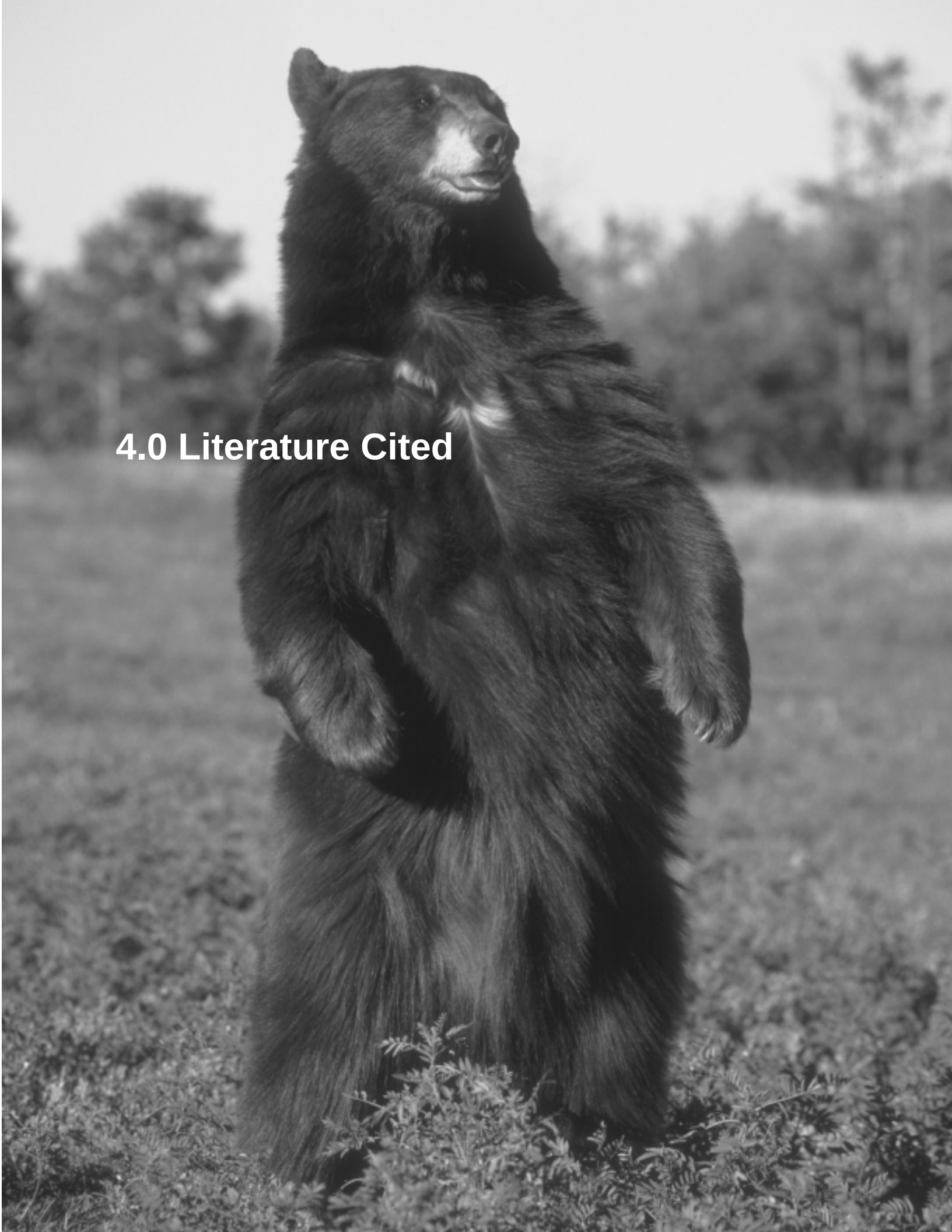
3. The Department should produce a poster aimed at reducing bear/human conflicts. The poster would be displayed on rental properties in rural communities.

4. The Department should develop a brochure on black bear management in California including general life history and hunting and viewing opportunities.

5. The Department should routinely inform the public on black bear population trends.



The brochure "Living With California Black Bears" was first printed in 1996. More than 250,000 copies have been distributed. The brochure is intended to provide the general public with some basic black bear ecology and give helpful suggestions about how to avoid unwanted visits by bears.



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