

**DRAFT
ENVIRONMENTAL DOCUMENT**

Sections 265, 365, 366, 367.5, 401, 708
Title 14, California Code of Regulations

Regarding



JANUARY 27, 2010

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

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INITIAL STUDY

1. Project title: **2010 Bear Hunting**

2. Lead agency name and address:

California Department of Fish and Game
Wildlife Branch
1812 Ninth Street
Sacramento, CA 95811

3. Contact person and phone number:

Dr. Eric Loft
(916) 445-3405

4. Project location:

The project area is statewide.

5. Project sponsor's name and address:

California Department of Fish and Game
Wildlife Branch
1812 Ninth Street
Sacramento, CA 95811

6. General Plan Designation: N/A 7. Zoning: N/A

8. Project Description:

The primary objective sought by the proposed action is to maintain the State's black bear population in a healthy and viable condition for the enjoyment and use of all Californians and to continue providing limited public sport hunting opportunities. The proposed action being considered by the Fish and Game Commission (Commission) is to modify Title 14, California Code of Regulations (CCR), Sections 365, 366 and 265, respectively, to:

Section 365 - Bear

1. Modify the bear hunting zones by including additional areas of the state. Options provided to the Commission for inclusion are:
 - a. The portions of Modoc and Lassen County currently designated as deer hunt zone X3b would be incorporated into the Northern California Black Bear Hunt Zone.

- b. The portion of Inyo County encompassed by Highway 395 on the south and west, Highway 6 on the east and the Inyo-Mono County line on the north would be incorporated into the Southeastern Sierra Black Bear Hunt Zone.
 - c. The Portion of San Luis Obispo County encompassed by Highway 1 on the west and the Salinas River and Highway 58 on the east would be incorporated into the Southern California Black Bear Hunt Zone.
2. Modify the statewide black bear harvest. Options provided to the Commission are:
- a. Eliminate the in-season closure mechanism and close general bear hunting season the last Sunday in December.
 - b. Increase statewide harvest quota to harvest up to 2,500 bears.
 - c. Eliminate in-season closure mechanism, institute quota of up to 30,000 bear tags issued statewide, and close the hunting season the last Sunday in December.

Section 366 – Archery Bear Hunting

- 3. The bear archery season would be opened concurrent with deer archery in respective hunt zones.

Section 265 - Use of Dogs for Pursuit/Take of Mammals or for Dog Training

- 4. Modify dog control zones by removing areas of the state from the existing dog control zones..
 - 5. Allow global positioning system (GPS) collars and treeing switches on dogs while bear hunting.
9. Surrounding land uses and setting:
The project area encompasses a mixture of private and public land. Private land owners who do not want hunting on their property maintain the right to preclude hunting on their property.
10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)
None.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- | | | |
|---|--|--|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture Resources | <input type="checkbox"/> Air Quality |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology /Soils |
| <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Hydrology / Water Quality |
| <input type="checkbox"/> Land Use / Planning | <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Noise |
| <input type="checkbox"/> Population / Housing | <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Transportation/Traffic | <input type="checkbox"/> Utilities / Service Systems | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

- I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

Printed Name

For

Evaluation of Environmental Impacts

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| I. AESTHETICS -- Would the project: | | | | |
| a) Have a substantial adverse effect on a scenic vista? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Substantially degrade the existing visual character or quality of the site and its surroundings? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>DISCUSSION</p> <p>The project will not erect any structures or remove any visually appealing resources and therefore will not have an effect on scenic vistas or other scenic resources and will not degrade the existing visual character or create any light or glare such as to adversely affect existing viewsheds.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-----------|
| <p>II. AGRICULTURAL RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland.</p> <p>-- Would the project:</p> | | | | |
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | ☐ | ☐ | ☐ | ☑ |
| b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? | ☐ | ☐ | ☐ | ☑ |
| c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use? | ☐ | ☐ | ☐ | ☑ |
| <p>DISCUSSION</p> <p>As current agricultural practices will continue on affected lands, no adverse impacts to agriculture are foreseen, and no mitigation measures are required for this category.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| <p>III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.</p> <p>-- Would the project:</p> | | | | |
| a) Conflict with or obstruct implementation of the applicable air quality plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Expose sensitive receptors to substantial pollutant concentrations? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Create objectionable odors affecting a substantial number of people? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>DISCUSSION</p> <p>Since the project will not involve any construction, land alteration, or land use changes, this project will not conflict with or obstruct implementation with any applicable air quality plans, nor will it violate air quality standards or contribute substantially to any existing air quality violations, nor will it result in a cumulatively considerable net increase of any criteria pollutants. Furthermore, the project will not release cumulatively considerable pollutants nor will it alter population distribution or patterns of human activity or release any odors or expose people to odor sources.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| IV. BIOLOGICAL RESOURCES -- Would the project: | | | | |
| a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-----------|
| IV. BIOLOGICAL RESOURCES -- Would the project: | | | | |
| f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? | ☐ | ☐ | ☐ | ☑ |
| <p>DISCUSSION</p> <p>The project will have no impact or substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. The project will not involve any construction, land alteration, or land use changes. As such, riparian habitats, wetland habitats and other sensitive natural communities will not be affected by the project. Furthermore, it will not interfere with the movement of native fish and wildlife species or interfere with wildlife movement corridors, nor will it conflict with any local policies or ordinances protecting biological resources. Lastly, it will not conflict with the provisions of any approved local, regional, state, or federal habitat conservation plans.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| V. CULTURAL RESOURCES -- Would the project: | | | | |
| a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Disturb any human remains, including those interred outside of formal cemeteries? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>DISCUSSION</p> <p>The project will not involve any construction, land alteration, or land use changes. As such, it will not affect any historical resources, archaeological resources, paleontological resources or unique geological features, nor will it disturb any human remains.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| VI. GEOLOGY AND SOILS -- Would the project: | | | | |
| a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| ii) Strong seismic ground shaking? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| iii) Seismic-related ground failure, including liquefaction? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| iv) Landslides? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| v) Wildland fires, including where wildlands are adjacent to urbanized areas and where residences are intermixed with wildlands? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Result in substantial soil erosion or the loss of topsoil? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| VI. GEOLOGY AND SOILS -- Would the project: | | | | |
| c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>DISCUSSION</p> <p>a) The project will not involve any construction or land alteration. Hence, it will not result in the increased exposure of people or structures to seismic and landslide risks, nor will it result in soil erosion or the loss of topsoil, or an increased risk to people or property risk from any type of soil instability. Furthermore, it will not create risks to life or property resulting from the movement of expansive soils, and no septic tanks or waste water disposal systems will be utilized or installed as part of the project.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-----------|
| VII. GREENHOUSE GAS EMISSIONS -- Would the project: | | | | |
| a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, based on any applicable threshold of significance? | ☐ | ☐ | ☐ | ☑ |
| b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases? | ☐ | ☐ | ☐ | ☑ |
| <p>DISCUSSION</p> <p>a) The project would permit outdoor recreational activities beyond currently described boundaries. As such, this project increases the opportunity for the public to participate in these activities, but does not necessarily increase the occurrence of public participation. Furthermore, since this project expands current boundaries for public participation in outdoor recreation, individual members of the public may not find it necessary to travel as far to participate as in recent years. Since the public generally travels via vehicles to locations in which these recreational activities are allowed, and since average distances traveled may be lessened resulting from this project, the Department concludes this project will not result in a net increase in greenhouse gas emissions.</p> <p>b) This project will regulate bear hunting and dog training activities in California, therefore it not preclude the applicability of any plan, policy or regulation of any agency for the purpose of reducing greenhouse gas emissions.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| VIII. HAZARDS AND HAZARDOUS MATERIALS -- Would the project: | | | | |
| a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-----------|
| VIII. HAZARDS AND HAZARDOUS MATERIALS -- Would the project: | | | | |
| f) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? | ☐ | ☐ | ☐ | ☑ |
| <p>DISCUSSION</p> <p>a, b, c) The project will not involve the transport, use, or disposal of hazardous materials.</p> <p>d) The project will not be located on a hazardous material site.</p> <p>e) The project will not involve any construction, land alteration, or land use changes. It will thus not interfere with the implementation of emergency response or evacuation plans.</p> <p>f) The project will not involve any construction, land alteration, or land use changes. It will not expose people or structures to a significant risk of loss, injury, or death related to wildfire.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| IX. HYDROLOGY AND WATER QUALITY -- Would the project: | | | | |
| a) Violate any water quality standards or waste discharge requirements? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| IX. HYDROLOGY AND WATER QUALITY -- Would the project: | | | | |
| e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Otherwise substantially degrade water quality? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| j) Inundation by seiche, tsunami, or mudflow? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-----------|
| IX. HYDROLOGY AND WATER QUALITY -- Would the project: | | | | |

DISCUSSION

- a) The project will not involve any construction, land alteration, water use, or water discharge.
- b) The project will not involve any construction, land alteration, or groundwater use.
- c) The project will not involve any construction or land alteration, and thus will not alter drainage patterns in the project area.
- d) The project will not involve any construction or land alteration, and thus will not alter drainage patterns in the project area.
- e) The project will not involve any construction or land alteration, and thus will not have any impact on runoff within the project area.
- f) The project will not involve any construction or land alteration, and thus will not have any adverse impacts on water quality.
- g) The project will not involve any construction or land alteration. No new housing will be constructed.
- h) The project will not involve any construction or land alteration. No new structures will be associated with the project.
- i) The project will not involve any construction, land alteration, or land use changes. No people or structures will be exposed to new risks related to flooding as a result of the project.
- j) The project will not involve any construction, land alteration, or land use changes. The risks of inundation due to seiche, tsunami, or mudflow will not change as a result of the project.

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| X. LAND USE PLANNING -- Would the project: | | | | |
| a) Physically divide an established community? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Conflict with any applicable habitat conservation plan or natural community conservation plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>DISCUSSION</p> <p>a) The project will not involve any construction, land alteration, or land use changes. Thus, no established communities will be physically divided.</p> <p>b) The project will not involve any construction, land alteration, or land use changes. The project will not conflict with the land use plans, policies, or regulations of the agencies with jurisdiction over the project.</p> <p>c) The project will not involve any construction, land alteration, or land use changes. The project will not conflict with any habitat conservation plans or natural community conservation plans.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| XI. MINERAL RESOURCES -- Would the project: | | | | |
| a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>DISCUSSION</p> <p>a) The project will not involve any construction, land alteration, or land use changes. Mineral resources will not be affected by the project.</p> <p>b) The project will not involve any construction, land alteration, or land use changes. Mineral resources will not be affected by the project.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| XII. NOISE -- Would the project result in: | | | | |
| a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| XII. NOISE -- Would the project result in: | | | | |
| b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>DISCUSSION</p> <p>a) The project will not involve construction or physical alteration of land, and its implementation will not involve the generation of noise levels in excess of agency standards.</p> <p>b) Implementation of the project will not result in groundborne vibration or substantial groundborne noise levels. Groundborne noise associated with the project will only involve occasional vehicular traffic on existing public and private roads.</p> <p>c) The project will not involve construction or physical alteration of land, or the creation of any permanent noise sources.</p> <p>d) The project will not substantially increase ambient noise levels.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-----------|
| XII. POPULATION AND HOUSING -- Would the project: | | | | |
| a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | ☐ | ☐ | ☐ | ☑ |
| b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☐ | ☑ |
| c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☐ | ☑ |
| <p>DISCUSSION</p> <p>a) The project will not involve any construction, land alteration, or the creation of new infrastructure. It will not induce population growth in or adjacent to the project area.</p> <p>b) The project will not involve any construction, land alteration, or land use changes. No existing housing units will be displaced or affected.</p> <p>c) The project will not involve any construction, land alteration, or land use changes. No residents of the project area or its vicinity will be displaced by the project.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| XIV. PUBLIC SERVICES | | | | |
| a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: | | | | |
| Fire protection? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Police protection? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Schools? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Parks? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Other public facilities? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| DISCUSSION | | | | |
| a) The project will not involve any construction, land alteration, or land use changes. Public services will not be affected by the project. | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| XV. RECREATION | | | | |
| a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>DISCUSSION</p> <p>a) The project will not involve any construction, land alteration, land use changes, or population changes. The use of existing parks and recreation facilities within or adjacent to the project area will not be affected. Hunting is not allowed in local, State or National parks.</p> <p>b) The project will not involve any construction, land alteration, or land use changes. No recreational facilities will be utilized or constructed as a result of the project.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| XVI. TRANSPORTATION/TRAFFIC -- Would the project: | | | | |
| a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Result in inadequate emergency access? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Result in inadequate parking capacity? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Conflict with adopted policies plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-----------|
| XVI. TRANSPORTATION/TRAFFIC -- Would the project: | | | | |

DISCUSSION

- a) The project will not involve any construction, land alteration, land use changes, or population changes.
- b) The project will not involve any construction, land alteration, land use changes, or population changes. Its implementation will not result in traffic service level standards being exceeded.
- c) The project will not involve the use of aircraft.
- d) The project will not involve any construction or land alteration, including road construction. It will occur on rural timberland. The project will not affect or increase traffic and road hazards.
- e) The project will not involve any construction or land alteration, and will occur on rural timberland. Emergency access within or adjacent to the project area will not be affected by the project.
- f) The project will not involve any construction or land alteration, and will occur on rural timberland. Parking capacity within or adjacent to the project area will not be affected by the project.
- g) The project will not involve any construction or land alteration, and will occur on rural timberland. It will not conflict with adopted policies, plans, or programs supporting alternative transportation.

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| XVII. UTILITIES AND SERVICE SYSTEMS -- Would the project: | | | | |
| a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-----------|
| XVII. UTILITIES AND SERVICE SYSTEMS -- Would the project: | | | | |
| g) Comply with federal, state, and local statutes and regulations related to solid waste? | ☐ | ☐ | ☐ | ☑ |

DISCUSSION

- a) The project will not involve any construction or land alteration. Wastewater treatment requirements will not be exceeded.
- b) The project will not involve any construction or land alteration, including the construction or expansion of water or wastewater treatment facilities.
- c) The project will not involve any construction, land alteration, or the creation of new infrastructure. No storm water drainage facilities will be constructed or expanded as a result of the project.
- d) The project will not involve any construction, land alteration, or the creation of new infrastructure. No new or expanded water supply entitlements will be needed in order to implement the project.
- e) The project will not involve any construction, land alteration, or the creation of new infrastructure. The project area consists of rural timberland, and little or no wastewater will be produced as a result of the project.
- f) The project will not involve any construction, land alteration, or the creation of new infrastructure. The project area consists of rural timberland, and little or no solid waste will be produced as a result of the project.
- g) The project will not involve any construction, land alteration, or the creation of new infrastructure. The project area consists of rural timberland, and its implementation will be in compliance with applicable statutes and regulations related to solid waste.

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|-------------------------------------|--|------------------------------|-------------------------------------|
| XVIII. MANDATORY FINDINGS OF SIGNIFICANCE | | | | |
| a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Does the project have impacts that are individually limited, but cumulatively considerable ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <p>DISCUSSION</p> <p>a, b) This project involves the expansion of the current black bear hunt zone and increases the area of the state allowable to the training of dogs. Furthermore, this project will remove an in-season closure mechanism which currently functions to limit the statewide take of black bears. This project will also allow the use of GPS collars and tip switches on dogs while hunting bears.</p> | | | | |

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-----------|
| XVIII. MANDATORY FINDINGS OF SIGNIFICANCE | | | | |

Although the California black bear resource is managed on a statewide level in accordance with a Commission-approved Black Bear Management Plan, this project may have an effect on the statewide black bear resource because it may result in the increased take of black bears. Furthermore, this project includes many parts, the cumulative effects of which need to be examined to investigate potential impacts on the statewide bear resource. As such, the Department of Fish and Game (Department) will develop an environmental document pursuant to CEQA requirements that will examine the effects of this project on the statewide black bear resource.

The Department has previously prepared environmental documents under State certified regulatory program addressing the following:

1. Loss of individual bears is a significant environmental impact;
2. Loss of individual bears may have an impact on the social structure of bear populations;
3. Bear hunting is intrinsically cruel and inhumane;
4. The use of archery equipment to hunt bears is cruel and inhumane;
5. The use of dogs while hunting bears is cruel, inhumane, and unethical;
6. Hunting adversely affects the genetic integrity of bear populations;
7. The illegal take of bears is increasing and a major factor regulating bear populations;
8. Total bear numbers are declining and hunting is contributing to this decline;
9. Providing additional areas for dog training/exercising or reducing the period of the dog training closure will have no effect on the bear population;
10. Bear hunting is unsafe and public safety warrants closure of the bear hunting season;
11. Allowing night hunting during bear season predisposes bears to illegal harvest by making existing regulations harder to enforce;
12. The use of electronic equipment (radio-telemetry devices on dogs) for bear hunting gives the hunter an unfair advantage and is, therefore, unethical;
13. Increases in season length will result in impacts to bear populations;
14. Pursuit of bears by dogs results in physiological stresses to bears which impacts individual bears and bear populations;

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-----------|
| XVIII. MANDATORY FINDINGS OF SIGNIFICANCE | | | | |
| <p>15. Opening bear season earlier restricts hunting opportunity for bear hunters using dogs;</p> <p>16. The majority of California oppose hunting of black bears, and bear hunting has a negative effect on non-consumptive wildlife use activities;</p> <p>17. Defining cubs as bears weighing less than 50 pounds will still result in the killing of cubs-of-the-year during the hunting season;</p> <p>18. Wildfires effects on bear populations;</p> <p>19. Black bear populations in California do not exhibit compensatory mortality; and</p> <p>20. Lead from hunters causes lead poisoning in California Condors</p> <p>These topics have been specifically addressed in the 1990, 1996, 1998, 1999, 2000, 2001, 2002 and 2004 Final Environmental Documents Regarding Bear Hunting and therefore shall not be addressed in the 2010 Environmental Document Regarding Bear Hunting.</p> <p>The effects on the statewide black bear population that shall be addressed in the 2010 Environmental Document Regarding Bear Hunting include:</p> <ol style="list-style-type: none"> 1. Increasing the regulated annual harvest up to 2,500 bears; 2. Incorporating portions of San Luis Obispo, Modoc, Lassen and Inyo counties into the black bear hunt zones; 3. Eliminating the in-season closure mechanism; 4. Altering the dog control use boundary; 5. Modifying the dates for archery bear season; and 6. Allowing hunters to use GPS and treeing switches while bear hunting. <p>c) This project will involve the killing of American black bears. Some members of the public may find this offensive and this project may have an emotional effect on them. Although the loss of an individual black bear is tragic, the Department has concluded in the 2004 Final Environmental Documents regarding bear hunting that this activity does not constitute a substantial adverse effect on human beings.</p> | | | | |

CHAPTER 1 SUMMARY

PROPOSED PROJECT AND ALTERNATIVES

The proposed regulatory package Initial Statement of Reasons for Regulatory Action (ISOR, Pre-publication of Notice) describes the proposed project and options, alternatives or exemptions that the Fish and Game Commission (Commission) will consider in their regulatory decision process. This Environmental Document (ED) categorizes those options, alternatives and exemptions into alternatives that may be considered by the Commission. The primary objective sought by the proposed action is to maintain the State's black bear population in a healthy and viable condition for the enjoyment and use of all Californians and to continue providing limited public sport hunting opportunities.

The proposed action being considered is to modify Title 14, California Code of Regulations (CCR), Sections 365, 366 and 265, respectively, to:

Section 365 – Bear

1. Modify the bear hunting zones by including additional areas of the state. Options are (the Commission may select any, all or none of the three):
 - a. Incorporate the portions of Modoc and Lassen County currently designated as deer hunt zone X3b into the Northern California Hunt Zone as depicted in Figure 1-1.
 - b. Incorporate the portion of Inyo County encompassed by Highway 395 on the south and west, Highway 6 on the east and the Inyo-Mono County line on the north into the Southeastern Sierra Hunt Zone as depicted in Figure 1-1.
 - c. Incorporate the portion of San Luis Obispo County encompassed by Highway 1 on the west and the Salinas River and Highway 58 on the east into the Southern California Hunt Zone as depicted in Figure 1-1.
2. Modify the statewide black bear harvest. Options are (the Commission may select one or none of the three):
 - a. Eliminate the in-season closure mechanism and close general bear hunting season the last Sunday in December.

Figure 1-1. Proposed 2010 Bear Hunt Zones



- b. Increase statewide harvest quota to harvest up to 2,500 bears.
- c. Eliminate in-season closure mechanism, institute quota of up to 30,000 bear tags issued statewide, and close the hunting season the last Sunday in December.

Section 366 – Archery Bear Hunting

- 3. Modify the bear archery season by opening the season concurrent with deer archery in respective hunt zones as described in Appendix 1.

Section 265 – Use of Dogs for Pursuit/Take of Mammals or for Dog Training

- 4. Modify dog control zones by removing areas of the state from the existing dog control zones as depicted in Figure 1-2 and described in Appendix 1.
- 5. Allow collars specially equipped with global positioning system (GPS) technology and treeing switches (otherwise known as “tip switches”) on dogs while hunting bear.

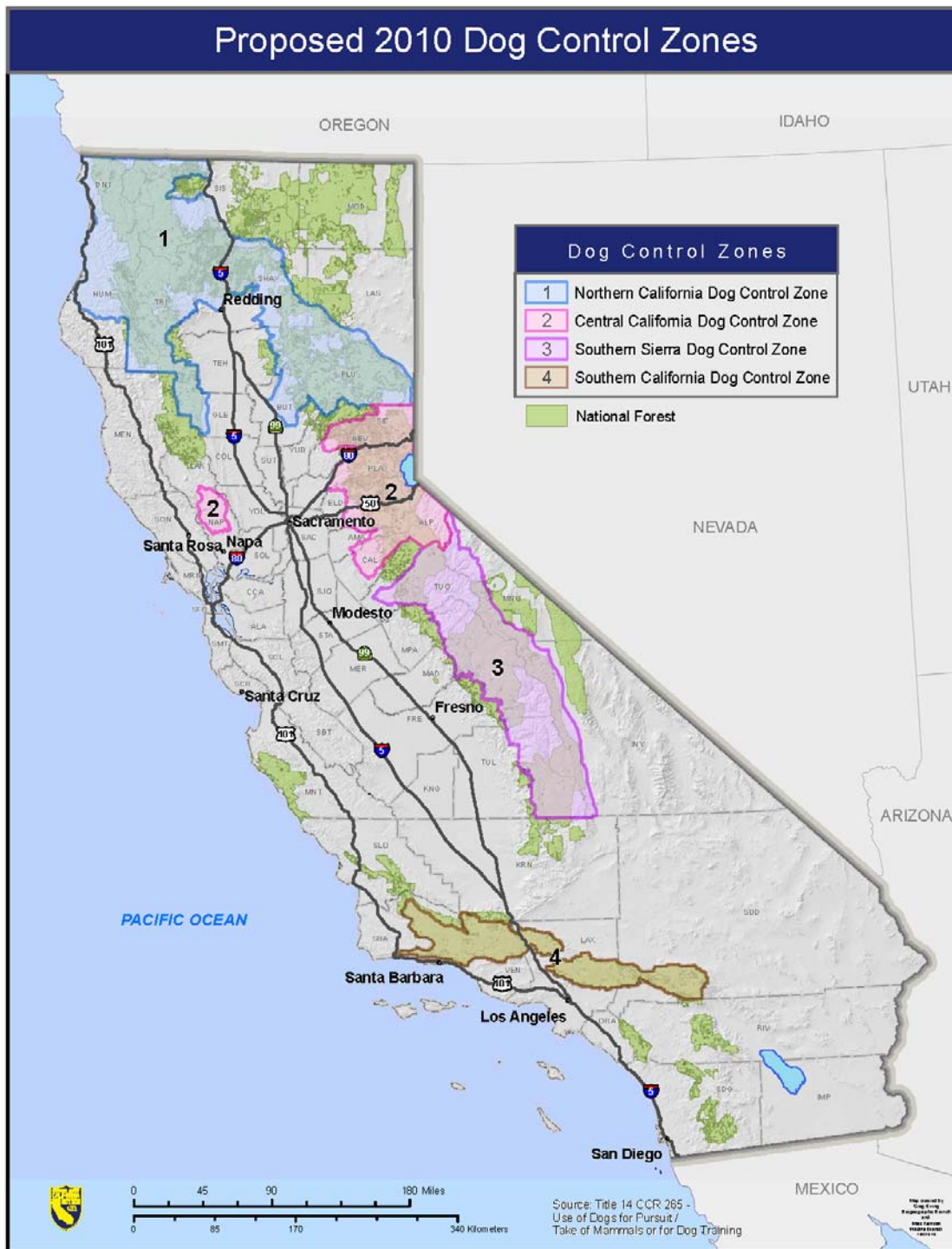
Alternatives

The California Department of Fish and Game (Department) is also providing the Commission a range of alternatives to the proposed project that could feasibly attain the basic objectives of the project. In addition to the range of alternatives which could feasibly attain the basic objectives of the project, the no project alternative, which would allow the Commission to maintain the 2008 bear hunting regulations, is also considered.

- 6. Alternative 1: No Project would maintain existing bear hunting, bear archery hunting and use of dogs for pursuit/take of mammals or for dog training regulations in Title 14, CCR, Sections 365, 366 and 265, respectively, without change.
- 7. Alternative 2: Manage bears according to bear management units (BMUs) would modify Section 365, Title 14, CCR to create four BMUs based solely upon genetic similarity (Brown et al 2009) and defined by county (Table 3-1) to facilitate accurate record keeping from bear hunter tag returns. Each BMU would be monitored according to the black bear monitoring matrix (Appendix 2), wherein season dates and lengths, bag and possession limits and tag quotas would be adjusted by the Commission when needed relative to the matrix indices. Season dates and lengths, bag and possession limits and tag quotas would be initially established to reflect the

2009-2010 season regulations (Table 3-1). These BMUs would be created to ensure the preservation of black bear genetic integrity.

Figure 1-2. Proposed 2010 Dog Control Zones



SUMMARY OF IMPACTS

In light of the evidence presented before the Department at the date of this draft, the Department concludes that the actions pursuant to the proposed project will not result in a significant adverse impact to the statewide black bear population as analyzed in this document and as previously analyzed in the 1990, 1996, 1998, 1999, 2000, 2001, 2002 and 2004 Final Environmental Documents Regarding Bear Hunting (FED). This is primarily because the Department monitors the bear population relative to a decision matrix (see Appendix 2) which provides specific safeguards to prevent any unforeseen adverse impacts to the bear resource as part of an adaptive management process (Walters 1986). Moreover, the regulatory process as followed by the Commission provides mechanisms to adjust harvest quotas and/or hunter opportunity as needed to protect the statewide bear resource. No mitigation measures or alternatives to the proposed project are required, since the Department manages the bear resource at a statewide level. Table 1-1 summarizes Department findings associated with the proposed project and alternatives.

Table 1-1. Summary of Impacts

| Alternative | Description | Significant Impact | Nature of Impact |
|-----------------------------------|--|--------------------|------------------|
| <p>Project as Proposed</p> | <p>Modify the black bear hunt zone by (choose one, all or none):</p> <p>OPTION 1. Incorporate additional portions of Modoc and Lassen Counties (deer hunt zone X3b) into the Northern California Black Bear Hunt Zone.</p> <p>-OR-</p> <p>OPTION 2. Incorporate an additional portion of Inyo County into the Southeastern Sierra Black Bear Hunt Zone</p> <p>-OR-</p> <p>OPTION 3. Incorporate a portion of San Luis Obispo County into the Southern California Black Bear Hunt Zone.</p> <p>Modify the black bear hunting season by (choose one or none):</p> <p>OPTION 1. Eliminate the in-season closure mechanism and close general bear hunting season the last Sunday in December.</p> <p>-OR-</p> <p>OPTION 2. Increase statewide harvest quota to harvest up to 2,500 bears.</p> <p>-OR-</p> <p>OPTION 3. Eliminate in-season closure mechanism, institute quota of up to 30,000 bear tags issued statewide, and close the hunting season the last Sunday in December.</p> <p>Modify the bear archery season by opening the season concurrent with deer</p> | <p>NO</p> | <p>NONE</p> |

| | | | |
|--|---|----|------|
| | <p>archery in respective hunt zones.</p> <p>Modify the Dog-use control zones to permit the training of dogs during from April 1 to the day preceding the general deer season in additional areas of the state;</p> <p>Modify dog-use and training regulations to permit GPS collars and treeing switches to be used on dogs while bear hunting.</p> | | |
| <p>Alternative 1: No Project</p> | No change from the 2009-2010 bear hunting and dog use regulations | NO | NONE |
| <p>Alternative 2: Manage bears according to Bear Management Units</p> | Define Bear Management Units (BMUs) reflecting genetic sub-populations; outline new hunt zone boundaries; and provide unique bag/possession limits | NO | NONE |

PUBLIC INPUT AND AGENCY CONSULTATION

The Legislature has delegated authority to the Commission, whose members are appointed by the Governor, to regulate the take and possession of wildlife. The Legislature has further directed the Commission to hold no fewer than three public meetings for the purpose of considering and adopting revisions to regulations relating to hunting and trapping of mammals (Section 207, Fish and Game Code (FGC)). Recommendations and comments from the Department, other agencies, and the public are to be received and considered at these meetings. The Commission may then, after considering public input, adopt regulations relating to any recommendations received at the initial meeting it deems necessary to preserve, properly utilize, and maintain each species or subspecies.

The California Environmental Quality Act (CEQA) encourages public input. One of the primary purposes of the environmental document review process is to obtain public comment, as well as to inform the public and decision makers. It is the intent of the Department to encourage public participation in this environmental review process.

Prior to preparing this environmental document, the Department developed a Notice of Preparation (NOP). On November 23, 2009, the NOP was provided to the State Clearinghouse for distribution, as well as to land management agencies in California that have an interest, or play a key role, in bear management [including the U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), National Park Service (NPS) and U.S. Forest Service (USFS)]. The NOP was also provided to individuals and/or organizations which expressed an interest in bear management in the past. The NOP requested that any comments regarding input to this environmental document be submitted to the Department within 30 days of receipt of the NOP.

In addition, this environmental document is available for public review for 45 days (Section 15087, Title 14, CCR). During the review period, the public is encouraged to provide written comments regarding the document to the Department of Fish and Game, Wildlife Branch, 1812 Ninth Street, Sacramento, California 95811. Comments must be received by the Department no later than 5:00 pm on March 13, 2010.

AREAS OF CONTROVERSY

The Department has encouraged public input into the environmental document by holding a scoping session to discuss documents prepared in support of mammal

hunting and trapping regulations. This scoping session was held in Davis, CA on November 18, 2009. In addition to that meeting, the Department has received letters both supporting and opposing various aspects of the proposed project (Department files). The following areas of controversy have been identified relating to the proposed actions addressed by this document:

1. Bear population estimates in San Luis Obispo County are insufficient to warrant opening a hunting season;
2. Statewide bear harvest quotas should be lowered;
3. The method of notifying hunters when the in-season quota has been met should be improved;
4. Bear harvest quotas should be developed on a 'bear management unit' basis; and

Furthermore, additional areas of controversy have been identified related to bear hunting in general. These items have been specifically addressed in the 2004 Final Environmental Document Regarding Bear Hunting and are made reference to therein. These items include:

1. Loss of individual bears is a significant environmental impact;
2. Loss of individual bears may have an impact on the social structure of bear populations;
3. Bear hunting is intrinsically cruel and inhumane;
4. The use of archery equipment to hunt bears is cruel and inhumane;
5. The use of dogs while hunting bears is cruel, inhumane, and unethical;
6. Hunting adversely affects the genetic integrity of bear populations;
7. The illegal take of bears is increasing and a major factor regulating bear populations;
8. Total bear numbers are declining and hunting is contributing to this decline;
9. Providing additional areas for dog training/exercising or reducing the period of the dog training closure will have no effect on the bear population;
10. Bear hunting is unsafe and public safety warrants closure of the bear hunting season;
11. Allowing night hunting during bear season predisposes bears to illegal harvest by making existing regulations harder to enforce;
12. The use of electronic equipment (radio-telemetry devices on dogs) for bear

- hunting gives the hunter an unfair advantage and is, therefore, unethical;
13. Increases in season length will result in impacts to bear populations;
 14. Pursuit of bears by dogs results in physiological stresses to bears which impacts individual bears and bear populations;
 15. Opening bear season earlier restricts hunting opportunity for bear hunters using dogs;
 16. The majority of California oppose hunting of black bears, and bear hunting has a negative effect on non-consumptive wildlife use activities;
 17. Defining cubs as bears weighing less than 50 pounds will still result in the killing of cubs-of-the-year during the hunting season;
 18. Wildfire effects on bear populations;
 19. Black bear populations in California do not exhibit compensatory mortality; and
 20. Lead from hunters causes lead poisoning in California Condors.

ISSUES TO BE RESOLVED

As provided by existing law, the Commission is the decision-making body (lead agency) for the proposed project. The primary issues for the Commission to resolve are 1) whether or not to change public hunting of black bears as an element of bear management in California and 2) whether or not to change dog use restrictions as an element of bear management in California. If such changes are authorized, decisions are needed to specify the areas, seasons, bag and possession limits, number of bears taken, and other appropriate special conditions. This document includes a review and discussion of the proposed project as well as alternatives.

INTENDED USES OF THE ENVIRONMENTAL DOCUMENT

This environmental document has been prepared to assess the potential impacts of altering the regulations governing sport hunting of bears and the use/training of dogs for hunting in California. It has been prepared pursuant to the CEQA (Section 21080.5, Public Resource Code) and the CEQA Guidelines (Section 15250, Title 14, CCR). This document is an informational item to aid the Commission in the decision making process and to inform the public of the potential effects of the proposed action of sport hunting of bears. Although the analysis of the proposed project and the alternatives to the proposed project address a wide range of bear management issues, this document is intended to act as the environmental document analyzing the potential effects of the

proposed project, the existing bear hunting regulations, as well as related factors.

Analysis of future bear hunting projects may refer to, and incorporate by reference, information contained in this document. Future proposed bear hunting regulations may not involve the preparation of environmental documents similar to this, but may include updates to this document. If substantial changes occur in the project itself or in the environmental conditions affected by the regulations, a supplemental or subsequent environmental document would be prepared (*Wildlife Alive et al. vs. Chickering et al.* (1976) 18 Cal.3d 190 [132 Cal. Rptr. 377, 553 P.2d 537]).

THE FUNCTIONAL EQUIVALENT

CEQA requires all public agencies in the State to evaluate the environmental impacts of projects that they approve or carry out that may have a potential to significantly impact the environment. Most agencies satisfy this requirement by preparing an environmental impact report (EIR) or negative declaration (ND). However, an alternative to the EIR/ND requirement has been created for State agencies whose activities include the protection of the environment within their regulatory programs. Under this alternative, an agency may request certification of its regulatory program from the Secretary for Resources, after which the agency may prepare functionally equivalent environmental documents in lieu of EIRs or NDs.

The regulatory program of the Commission has been certified by the Secretary of Resources. Therefore, the Commission is eligible to submit this environmental document in lieu of an EIR or ND (Section 15252, CEQA Guidelines).

This environmental document contains a description and potential effects of the proposed project (Chapter 2), cumulative impacts of the proposed project (Chapter 2), reasonable alternatives to the proposal (Chapter 3), and a discussion of adverse environmental effects related to the proposal and alternatives (Chapters 2 and 3). In addition, it considers relevant policies of the Legislature and Commission (Chapter 1). This environmental document presents information to allow a comparison of the potential effects of various actions considered by the Commission relative to the proposed project, as well as a range of alternatives. Although a given alternative may not achieve the project's objectives, it is considered to provide the Commission and the public with additional information related to the options available. Both the full project and no project alternatives are considered.

POLICY CONSIDERATIONS

Existing State law (Section 3950, FGC) designates black bear as a game mammal in California. Section 203 of the FGC provides the Fish and Game Commission (Commission) authority to alter hunting seasons, areas, bag and possession limits and methods, and restrictions based on physical distinction pursuant to game mammal regulations. Section 203.1, FGC, requires the Commission to consider populations, habitat, food supplies, the welfare of individual animals, and other pertinent facts when establishing hunting regulations for black bear.

State law (Section 207, FGC) requires the Commission to review regulations and the Department of Fish and Game (Department) to present recommendations for regulatory changes to the Commission at a public meeting. Existing mammal hunting regulations adopted by the Commission provide for hunting black bear in specific areas of the State (Sections 365 & 366, Title 14, CCR). Furthermore, Section 265, Title 14, CCR defines the use of dogs in pursuit/take of mammals or for dog training.

The proposed project will make changes to the current regulations that provide for limited hunting of black bears in designated areas of the State. In adopting regulations providing for limited sport hunting of black bears, the Commission would be acting pursuant to Sections 203, 203.1, 3950, FGC. The proposed project would also be consistent with the wildlife conservation policy adopted by the Legislature (Section 1801, FGC), which, among other things, contains an objective of providing hunting opportunities when such use is consistent with maintaining healthy wildlife populations. An adaptive management approach, as described by Walters (1986), is the basis for any Departmental recommendation regarding black bear hunting. It involves analyzing available information and applying a management action, followed by a thorough evaluation and adjustment of management programs as needed. The project being considered is described as a proposal to alter the regulations governing sport hunting of bears and the use/training of dogs for hunting in California. The objectives of the proposal are to maintain the State's black bear population in a healthy and viable condition for the enjoyment and use of all Californians, and to provide public sport hunting opportunities as an element of black bear management.

Periodically, the Commission reviews the mammal hunting regulations pursuant to Section 207, FGC. During any year, the Commission may receive proposals from the Department for changes in the mammal hunting regulations where take quotas are based on population performance, changes of an urgent nature for the good of the

resources, and changes for clarity. Following receipt of public input, the Commission utilizes the authority of Section 220, FGC, to adopt the regulations.

CHAPTER 2 PROPOSED ACTION

The proposed action being considered is to change Title 14, CCR, Sections 365, 366 and 265 (see Appendix 1), respectively, to:

Section 365 – Bear

1. Modify the bear hunting zones. Options for inclusion are:
 - a. The portions of Modoc and Lassen County otherwise designated as deer hunt zone X3b would be incorporated into the Northern California Hunt Zone as depicted in Figure 1-1.
 - b. The portion of Inyo County encompassed by Highway 395 on the south and west, Highway 6 on the east and the Inyo-Mono County line on the north would be incorporated into the Southeastern Sierra Hunt Zone as depicted in Figure 1-1.
 - c. The Portion of San Luis Obispo County encompassed by Highway 1 on the west and the Salinas River and Highway 58 on the east would be incorporated into the Southern California Hunt Zone as depicted in Figure 1-1.

Existing black bear hunting regulations (Section 365, Title 14, CCR) define bear hunting zones which encompass much of California's documented black bear range (see Appendix 4 for range map). The preferred changes would incorporate all options (Appendix 1) and are intended to allow additional hunting opportunity and distribute hunters across a larger area for recreational activity while defining easily discernible and enforceable boundaries. Based on habitat models coupled with population models, this action may result in the additional annual harvest of 50-100 bears, statewide. Furthermore, this action is expected to lessen black bear depredation and vehicle-bear collisions in currently non-hunted areas.

2. Modify the annual black bear harvest. Options are to:
 - a. Eliminate the in-season closure mechanism and close general bear hunting season the last Sunday in December.
 - b. Increase statewide harvest quota to harvest up to 2,500 bears.
 - c. Eliminate in-season closure mechanism, institute quota of up to 30,000 bear tags issued statewide, and close the season the last Sunday in December.

Existing black bear hunting regulations (Section 365, Title 14, CCR) require the Department to close the hunting season on the last Sunday in December or when 1,700 bears have been reported harvested, whichever occurs first. The preferred option (option a), as detailed in Appendix 1, will eliminate the in-season closure mechanism. This is intended to reduce Departmental costs and logistics associated with closing the season earlier than the last Sunday in December deadline. For example, the Department spent approximately \$11,856 to notify all bear hunters of the early 2009 season closure. Furthermore, based upon historic harvest reporting trends, this action is expected to result in the additional annual harvest of 50-100 bears and allow additional hunting opportunity.

Section 366 – Archery Bear Hunting

3. Modify the bear archery season by opening the season concurrent with deer archery in respective hunt zones.

Existing black bear hunting regulations (Section 366, Title 14, CCR) define season dates for archery bear hunting. The proposed changes, as detailed in Appendix 1, will open the bear archery season concurrently with the opening of the deer archery season in respective hunt zones. This action is intended to reduce confusion about method of take permissible while hunting either bear or deer. Based upon method of take reports (Table 2-6), this proposed action is expected to result in the additional annual harvest of 10-20 bears, statewide. Furthermore, this action is expected to allow additional hunting opportunity.

Section 265 – Use of Dogs for Pursuit/Take of Mammals or for Dog Training

4. Modify dog control zones.

Existing dog use regulations (Section 265, Title 14, CCR) define areas of the state in which the use of dogs for the take/pursuit of mammals or for dog training purposes is prohibited from the first Saturday in April through the day preceding the opening of the general deer season (i.e. dog control zones). The proposed changes, as detailed in Appendix 1 and Figure 1-2, are intended to provide increased access to public lands for dog training purposes while defining easily recognized and enforceable boundaries and to provide clerical corrections to current regulations.

5. Allow global positioning system (GPS) collars and treeing switches on dogs while bear hunting.

Existing dog use regulations (Section 265, Title 14, CCR) prohibit the use of GPS equipment and treeing switches while dogs are employed in the pursuit/take of mammals. The proposed changes, as detailed in Appendix 1, would eliminate these prohibitions. The proposed changes are intended to provide for increased care and monitoring of dogs while engaged in hunting activities.

SUMMARY OF PROPOSED REGULATIONS

A summary of the preferred proposed regulations are as follows: the general bear season would open concurrently with the opening day of deer season in the A, B, C, D, X-8, X9a, X-9b, X-10 and X-12 deer hunting zones. In the remaining portions of the State where bear hunting is allowed, the general bear season would open on the second Saturday in October. The general bear season will close on the last Sunday in December. Additionally, persons possessing a valid bear tag would be able to hunt during a 23-day archery-only season beginning concurrently with the opening day of deer archery season in the respective deer hunt zone. There would be no limit on bear tag sales. The use of more than one dog to take bear would be prohibited in areas where the general deer season is open. The use of dogs to take bear would be closed during the bear archery season. The bag and possession limit would be one bear per hunter per license year. Bear cubs (less than 50 pounds) and females with cubs would be prohibited from harvest. Dogs used for trailing bears during the general season may be equipped with VHF or GPS collars which may also be equipped with tip switches. The use of dogs during the archery season is prohibited.

PROJECT OBJECTIVES

The objectives of the proposed action are to maintain the State's black bear population in a healthy and viable condition for the enjoyment and use of all Californians and to continue providing limited public sport hunting opportunities. The health and viability of both hunted and unhunted (e.g., Redwood and Yosemite national parks) populations have been assessed by monitoring trends in bear numbers, sex ratios, age class structure, and reproductive rates. These objectives are consistent with those contained in the Black Bear Management Plan (Appendix 2), developed in 1998.

BACKGROUND AND EXISTING CONDITIONS

Early Management and Regulations

Prior to 1948, black bears were unprotected or classified as furbearers under

State law. During this period, bears could be killed by any means and in any number, at any time. In 1948, the black bear was classified as a game mammal by the Legislature. In order to manage this resource according to goals established by the Legislature, seasons and bag limits were instituted and hunters were required to possess a hunting license. In 1957, hunters were required to purchase bear tags as a means of monitoring the hunting kill through a report card system. The take of bears by trapping was prohibited in 1961. The statewide bag limit was reduced from two bears per year per hunter to one bear per year per hunter in 1968. The take of bears weighing less than 50 pounds or females accompanied by bears weighing less than 50 pounds was prohibited beginning in 1972.

The initiation of a bear tag reporting system in 1957 enabled the Department to monitor the number of bears killed by hunters, the sex of the bears taken, date of kill, and location of kill. Table 2-1 displays the reported bear harvest in California since the initiation of the bear tag law in 1957. The increase in reported take of black bears in 1985 was primarily the result of changes in the hunting regulations which prevented the pursuit of bears with dogs during spring and summer. This activity formerly resulted in the illegal and unreported take of bears. Therefore, the 1985 regulation change did not increase total bear kill but merely directed it into legal reported take.

Reported take, to a degree, has been used as an indicator of the bear population status and hunting effort. However, as indicated in Table 2-1, there have been significant changes in bag limits, season lengths, methods of take, and the reporting system. Because these changes have had a major effect on the numbers of bears reported taken, it is not appropriate to rely on reported take as the sole measure of long-term trends in bear populations.

In order to provide an additional source of information regarding bear kill and hunting effort, the Department developed and implemented the Game Take Hunter Survey in 1962. The survey samples approximately four percent of hunting license buyers. Questions are asked regarding the species of wildlife hunted, the number taken, the areas of the State hunted, and the amount of hunting effort (time hunted).

Table 2-1. Reported Black Bear Take in California (1957 - 2008)

| Year | Total Harvest | Males | Females | Gender Unknown | Tags Sold | Percent female |
|-------------|----------------------|--------------|----------------|-----------------------|------------------|-----------------------|
| 1957 | 920 | 551 | 359 | 10 | 20,158 | 39.02% |
| 1958 | 653 | 371 | 280 | 2 | 23,057 | 42.88% |

| Year | Total Harvest | Males | Females | Gender Unknown | Tags Sold | Percent female |
|-------------------|----------------------|--------------|----------------|-----------------------|------------------|-----------------------|
| 1959 | 1,016 | 583 | 427 | 6 | 25,594 | 42.03% |
| 1960 | 925 | 472 | 442 | 11 | 28,643 | 47.78% |
| 1961 | 841 | 409 | 425 | 7 | 27,246 | 50.54% |
| 1962 | 594 | 322 | 268 | 4 | 26,635 | 45.12% |
| 1963 | 685 | 357 | 328 | 0 | 25,618 | 47.88% |
| 1964 | 670 | 361 | 307 | 2 | 27,408 | 45.82% |
| 1965 | 1,281 | 692 | 580 | 9 | 30,461 | 45.28% |
| 1966 | 1,054 | 608 | 441 | 5 | 35,424 | 41.84% |
| 1967 | 935 | 537 | 396 | 2 | 34,485 | 42.35% |
| 1968 ^a | 638 | 347 | 289 | 2 | 32,838 | 45.30% |
| 1969 | 871 | 482 | 383 | 6 | 35,335 | 43.97% |
| 1970 | 555 | 305 | 248 | 2 | 32,437 | 44.68% |
| 1971 | 559 | 343 | 214 | 2 | 24,735 | 38.28% |
| 1972 ^b | 626 | 373 | 251 | 2 | 25,126 | 40.10% |
| 1973 | 767 | 471 | 292 | 4 | 30,585 | 38.07% |
| 1974 | 632 | 373 | 256 | 3 | 29,677 | 40.51% |
| 1975 | 553 | n/a | n/a | n/a | 26,950 | |
| 1976 | 486 | 260 | 223 | 3 | 26,232 | 45.88% |
| 1977 | 451 | 271 | 179 | 1 | 26,273 | 39.69% |
| 1978 | 655 | 412 | 243 | 0 | 19,537 | 37.10% |
| 1979 | 731 | 460 | 265 | 6 | 22,557 | 36.25% |
| 1980 | 592 | 324 | 268 | 0 | 27,366 | 45.27% |
| 1981 | 767 | 469 | 297 | 1 | 31,777 | 38.72% |
| 1982 ^c | 783 | 527 | 256 | 0 | 27,745 | 32.69% |
| 1983 | 601 | 377 | 222 | 2 | 14,401 | 36.94% |
| 1984 | 770 | 475 | 293 | 2 | 11,064 | 38.05% |
| 1985 ^d | 1,138 | 688 | 448 | 2 | 11,875 | 39.37% |
| 1986 | 1,040 | 592 | 428 | 20 | 10,176 | 41.15% |
| 1987 | 1,448 | 947 | 486 | 15 | 12,235 | 33.56% |
| 1988 | 1,359 | 829 | 508 | 22 | 13,016 | 37.38% |
| 1989 ^e | 0 | | | | 561 | |
| 1990 ^f | 1,187 | 730 | 444 | 13 | 8,530 | 37.41% |
| 1991 | 1,493 | 944 | 531 | 18 | 12,160 | 35.57% |

| Year | Total Harvest | Males | Females | Gender Unknown | Tags Sold | Percent female |
|-------------------|---------------|-------|---------|----------------|-----------|----------------|
| 1992 | 1,266 | 775 | 457 | 34 | 11,918 | 36.10% |
| 1993 | 1,426 | 860 | 536 | 30 | 11,175 | 37.59% |
| 1994 ^g | 1,607 | 986 | 609 | 12 | 12,089 | 37.90% |
| 1995 | 1,484 | 892 | 585 | 7 | 12,003 | 39.42% |
| 1996 | 1,714 | 978 | 727 | 9 | 14,799 | 42.42% |
| 1997 | 1,677 | 1,006 | 670 | 1 | 15,045 | 39.95% |
| 1998 ^h | 1,676 | 940 | 734 | 2 | 18,706 | 43.79% |
| 1999 | 1,838 | 1,095 | 742 | 1 | 18,170 | 40.37% |
| 2000 ⁱ | 1,796 | 1,052 | 738 | 6 | 20,325 | 41.09% |
| 2001 | 1,667 | 971 | 696 | 0 | 20,993 | 41.75% |
| 2002 ^j | 1,768 | 1,068 | 696 | 4 | 21,483 | 39.37% |
| 2003 | 1,397 | 837 | 558 | 2 | 22,325 | 39.94% |
| 2004 | 1,848 | 1,166 | 681 | 1 | 22,653 | 36.85% |
| 2005 | 1,418 | 847 | 566 | 5 | 23,771 | 39.92% |
| 2006 | 1,822 | 1,109 | 708 | 5 | 24,602 | 38.86% |
| 2007 | 1,861 | 1,086 | 756 | 19 | 25,133 | 40.62% |
| 2008 | 2,028 | 1,202 | 758 | 68 | 22,906 | 37.38% |

a = one bear bag limit instituted

b = 50 pound weight limit instituted

c = mandatory tag return and premolar tooth collection instituted

d = spring/summer dog pursuit season eliminated

e = no season

f = archery equipment not a legal method of take

g = in-season closure quota increased from 1,250 to 1,700 bears

h = tag sale quota increased from 15,000 to 18,000

i = tag sale quota eliminated

j = in-season closure quota increased from 1,500 to 1,700 bears

By comparing the reported bear kill obtained from the Game Take Hunter Survey with the number of bear tags returned to the Department by successful hunters, an estimate of nonreported bear kill was obtained. The estimate of the rate of nonreporting by successful hunters was as high as 65 percent in some years, prior to 1982. The relatively high rate of nonreporting by successful hunters tended to increase the variability in reported kill from year to year (Table 2-1) and, hence, reduced the reliability of those data. In order to increase the reliability of the data, the Department recommended that the Commission require both successful and unsuccessful bear hunters to return their bear tags to the Department. As a result of the Commission adopting a mandatory bear tag return regulation in 1982. Subsequently, the rate of

nonreported legal bear kill has declined significantly.

In the early 1970s, the development of safe and reliable bear immobilization drugs, as well as advances in sophisticated radio-telemetry equipment, resulted in a tremendous increase in the amount of black bear research in North America, particularly in the western United States. This increase in black bear research has resulted in a vast amount of information in the scientific literature regarding black bears.

The scientific literature includes black bear research conducted in California regarding bear population dynamics, food habits, physical characteristics, habitat requirements and utilization, denning behavior, and physiological characteristics. Moss (1972), Boyer (1976), Novick (1979), Siperek (1979), Novick and Stewart (1982), Stubblefield (1992), Braden (1992), and Brinkhaus (2000) gathered information on black bear populations in southern California. Piekielek and Burton (1975), Kellyhouse (1977), Sitton (1982), Schroeder (1986), Burton and Schmalenberger (1995), and Stafford (1995) studied bears in northwestern California. Harms (1980), Graber (1982,1989), Sitton (1982), Grenfell and Brody (1983), Koch (1983), Jessup and Koch (1984), Hastings and Gilbert (1987), and Keay (1990) collected information on black bears in the Sierra Nevada. The scientific literature plays an important role in bear management. The information presented in the scientific literature has provided wildlife biologists throughout North America with accepted techniques for collecting data on bear populations as well as accepted criteria by which to assess the health and condition of black bear populations.

Prior to 1982, the results (age class data, radio telemetry, bear tag return, and other information) of some of these California studies as well as information collected by law enforcement personnel related to illegal take of bears indicated that there were areas of the State where bear populations were experiencing a higher level of mortality than could be explained by reported hunting take. When data collected from the bear population regarding hunting mortality, and nonhunting mortality such as disease, depredation kill, and accidents were examined it was apparent that some other mortality factor was operating on the bear population. Evidence from law enforcement investigations as well as biological data from hunter-killed bears indicated that illegal take (poaching) was a major mortality factor. These studies indicated that a more reliable system for reporting hunter take and monitoring the age structure of the bear population was needed.

As noted previously, in 1982 the Commission adopted regulations that required

all bear hunters to return their bear tags to the Department whether they were successful or not. This regulation resulted in more reliable data regarding legal black bear take. It also corresponded with a reduction in the number of bear tags sold annually (Table 2-1). At that same time, the Commission also adopted regulations that required all successful bear hunters to retain the skull of the bear they killed so the Department could collect a premolar tooth from the bear. The premolar tooth can be sectioned and the cementum rings counted with the aid of a microscope to determine the bear's age. This technique is analogous to counting the "growth rings" on a tree that has been cut down to determine its age. The procedure, referred to as dental cementum analysis, is a proven and accepted technique for accurately determining the age of black bears (Stoneberg and Jonkel 1966, Johnston et al. 1987, McLaughlin et al. 1989, Keay 1990).

Since 1982, the Department has collected bear teeth, which are then sent to a commercial laboratory in Montana for age determination. The same laboratory is used by the majority of the western states (those states that do not use this laboratory usually do their analyses "in-house"). Information collected from bears killed in some areas of California prior to 1985 indicated that the median age of the population, especially the female portion, was lower than desired. For example, in 1983, the median age of female bears killed was 2.5 years, which means that one-half of the bears killed were older than 2.5 years and one-half were younger than 2.5 years. In California, female black bears normally are successful in producing cubs for the first time at 4.5 years of age. A bear population with a low female median age could lead to a situation where more bears in the population die than can be replaced by the reproducing females.

During the period 1980-1984, law enforcement efforts demonstrated that there was a significant illegal take of black bears in California. The concerns of the law enforcement officers were substantiated by information collected during radio-telemetry studies where bears were being "lost" from the population which could not be accounted for in the bear hunting season. The Department conducted an analysis of the status of the State's bear population in late 1984, in an effort to assemble information collected from field studies in California, results reported in the scientific literature, information collected from bears taken by hunters, and information collected from law enforcement efforts. The analysis relied in part on computer simulation modeling that was developed by an independent researcher (Barrett, 2000). In summary, the results of this analysis indicated that prior to 1985, approximately four to seven percent of the statewide bear population was killed annually by sport hunters.

Based on computer simulation, all nonhunting mortality ranged from six percent for cubs to eight percent for adults and illegal kill approximately equaled the reported hunting take (four to seven percent). When modeled, this scenario most closely approximated the conditions being observed in the bear population prior to 1985. The analysis also indicated that the majority of illegal take was occurring during the period from April through September. This period corresponded with the time during which individuals could use dogs, primarily trailing hounds, to pursue mammals. Despite the intent that bears were not to be killed or injured during this period, evidence from law enforcement and biological investigations indicated that bears were being killed. It became obvious that the regulation was difficult to enforce. Although the total mortality the bear population was experiencing was relatively high, it was within the sustained-yield capabilities of the population. In terms of reducing the level of mortality, the 1984 evaluation indicated that shortening the bear season would not reduce the level of hunting harvest. Data from California and other states indicate that shorter seasons result in an increase bear kill per day, and that increasing season length (within reason) resulted in a lower kill per day (Miller 1989). Additionally, information collected from bear hunters in California demonstrated that they are highly mobile and that restricting hunting pressure in one area would likely increase hunting pressure in other areas.

In 1985, the Department provided the Commission with a series of recommendations for changes in bear hunting regulations that were intended to improve the condition of the bear population and to increase reporting of hunter-killed bears. Specifically, the regulation proposals were designed to reduce the illegal take of black bears, improve the reliability and increase the amount of information collected from legally killed black bears, and improve the Department's ability to collect data on the age structure of the bear population (Burton et al. 1994).

As a result of the Department's evaluation and recommendations, the Commission adopted regulations in 1985 which included the following:

1. Prohibited the use of dogs for the pursuit and/or hunting of mammals in bear habitat from the first Saturday in April (time when bears are emerging from their dens) until the opening of the general deer season (Section 265, Title 14, CCR);
2. Required that all successful bear hunters present the skull of their bear to the Department within 10 days;
3. Required that only Department employees validate bear tags;
4. Required that additional information regarding the method of take be provided on

the bear tag; and

5. Increased the length of the bear season and made the season later in some areas of the State.

Additionally, the Legislature added Section 12005 (1982) and amended Section 4758 (1988), FGC. Section 4758, prohibits the sale of any bear parts in California and provides that the possession of more than one bear gall bladder is prima facie evidence that the bear gall bladders are possessed for sale. Section 12005 provides that violation of Section 4758 is a felony under California law. This combination of laws and regulations (with a few minor editorial changes) have been in effect, except for the lack of a 1989 black bear hunting season, since 1985. As indicated in Table 2-1, the reported bear take increased after 1984. This increase can be explained primarily by a shift from illegal take (therefore unreported) into the legal reported take during the hunting season. Changes in the median age of harvested bears, as well as other observed bear population trends since 1984, such as higher reported bear kill with fewer bear hunters expending less effort to be successful and no indication of a decrease in bear production, support this conclusion. However, based on a CEQA procedural challenge, Commission regulations providing for bear hunting were set aside by a superior court order in August 1989. In 1990, a black bear season was reinstated following a superior court ruling that the Department's environmental document related to a general hunting season for black bears was adequate (Koch 1994).

Beginning in 1994, several changes were enacted regarding black bear hunting and hunting in general. First, mammal hunting regulations, and the regulatory process, became a two year process, and public recommendations for regulation changes are considered biannually. The next regulation approval process, including public input, is being considered in 2010. This environmental document, and the analysis that comprises it, will still be conducted on an annual basis. The annual analysis on the status of the bear population will be utilized by the Department to make recommendations for emergency regulation changes if unforeseen circumstances result in significant changes to California's black bear population.

The most important regulation change specifically regarding black bear hunting in 1994 was the increase of the in-season closure mechanism from 1,250 to 1,500 bears. This level of harvest, did not result in negative impacts to the black bear population. Other changes adopted by the Commission in 1994 included prohibitions on the use of "tip switches" and GPS technology on dog radio collars. These restrictions were enacted in an effort to ease concerns about potential unfair advantages that this

equipment may provide.

The only change between regulations adopted in 1995 and those adopted in 1996, concerned the opening dates for the general bear season. In an effort to increase hunting opportunity, the Commission adopted regulations which opened the general bear season concurrently with deer season in the A, B, C, and D deer hunting zones. In the most extreme case (the deer hunting A zone), the general bear season opened in mid August. The use of multiple dogs for bear hunting would be prohibited until the close of the general deer season and bear season would continue to be closed when 1,500 bears are reported taken.

In 1998, the Commission promulgated regulations to increase the maximum number of black bear hunting license sales from 15,000 to 18,000. The early season closure mechanism remained in place, closing the season when 1,500 bears were reported taken by hunters. In 2000 the Commission eliminated the bear tag quota of 18,000. In 2002, the in-season closure mechanism was changed from 1,500 to 1,700 bears. The most recent change to the bear hunting regulations occurred in 2004, when the Commission expanded the bear hunt area to include the area in Mono County east of Highway 395. None of these regulation changes resulted a significant impact to the statewide black bear resource (Table 2-1).

Population Status (2009)

In 1995, the Department developed a monitoring matrix (Appendix 2) for evaluating the health of California's bear resource. This matrix was based on the recommendation by Garshelis (1993) that several monitoring techniques be employed together for monitoring bear populations. The results of the matrix using 2008 bear harvest data indicate no negative impacts to the population (Table 2-2). The bear population would be considered to be negatively impacted if the threshold for concern was met or exceeded in two or more of the monitoring categories.

Table 2-2. Resulting Matrix for Monitoring California's 2008 Black Bear Population.

| Monitoring Technique | Threshold of Concern | 2008 Data | Threshold Exceeded |
|---|--|---|--------------------|
| Median Ages of Hunter Killed Bears | Female ages <4.0 years old; -or- statistically significant reduction in median age for combined sexes. | Females 6.71 Total 4.75 | NO |
| Percent Females in Harvest | >40 percent. | 37.4 percent | NO |
| Total Harvest | <1,000 or statistically significant reduction; only if reduction is independent of administrative action. | 2,028 | NO |
| Kill per Hunter Effort and Population Index | Statistically significant decline in both kill per hunter effort and in population index. | No significant changes in kill per hunter effort and an increase in population index. | NO |

The median age of hunter-killed female bears has increased since 1983, when the median age of hunter-killed bears was 2.5 years. It should also be noted that the present median age of hunter-killed bears in California is similar to the median age of bears trapped in unharvested areas of the State. For example, in northern California, the median age of bears trapped in Redwood National Park was 4.3 years (Hofstra 1989). In Yosemite National Park, in the central Sierra Nevada, the median age of trapped bears was 3.6 years, 4.9 years if cubs are excluded (Graber 1982, Keay 1990). The median age, in years, of all California bears harvested in 2008 was 4.8 and 6.7 for females.

The sex ratio of the bear harvest is another important indicator of the health of the bear population. Male bears are killed at a higher rate than they occur in the population as a result of hunter selectivity (Litvaitis and Kane 1994) and because male bears have larger home ranges and a correspondingly higher probability of being encountered by hunters (Jonkel and Cowan 1971, Kemp 1976, Sitton 1982, Koch 1983,

Elowe and Dodge 1989). Therefore, sex ratios will be biased towards males until fewer males are available for harvest. The threshold for concern in the monitoring matrix is greater than 40 percent females in the harvest. In 2008, females comprised 37.4 percent of the harvest (Table 2-2). Hence, the monitoring technique threshold was not exceeded.

The number of bears harvested in a season also reflects the condition of the bear population. Reductions in bear populations would make it more difficult to find bears and hence to harvest a bear. However, year-to-year variability in the bear harvest is inevitable because of changes in weather which also effect bear harvest. For instance, an early winter would make it more difficult for hunters to kill a bear, especially hunters using dogs. Changes in regulations can artificially result in decreases in bear harvest. Reducing the number of bears at which the season is closed is an obvious example. For this reason, the threshold identified in the matrix will not be considered in years following regulation changes which restrict harvest or hunter opportunity. The matrix threshold for this criteria is a harvest of less than 1,000 or a significant reduction compared to the previous three years. As demonstrated in Figure 2-1 and Table 2-2, the harvest threshold has not been exceeded.

Information obtained from the mandatory return of bear tags indicates that reported hunter kill has increased, overall, since 1982. Bear kill per hunter effort (bear killed per days hunted) as determined by Game Take Hunter Survey information indicated a similar trend until 1992 when hunter effort almost tripled, thereby significantly reducing bear kill per day hunted. The kill per hunter effort estimate was determined by dividing the number of bears killed (derived from bear tags) by the number of days hunted (extrapolated from Game Take Hunter Survey data). The 1991 estimate fell from 0.024 bears killed per day hunted to only 0.008 bears killed per day hunted in 1992. Declines in hunter effort may potentially signify a corresponding decline in the bear population. However, these results were in sharp contrast to those of other population monitoring methods which indicated high median ages, hunter success, population estimates, and a stable sex ratio.

In an effort to determine the accuracy of the Game Take Hunter Survey data, bear hunters were requested to indicate the number of days that they hunted bears on their bear tags beginning in 1993. This data differed significantly with the results of the 1993 Game Take Hunter Survey. With over 1,500 bear hunters responding (1,284 successful and 269 unsuccessful) to the query on the bear tag, 0.02 bears were estimated to be killed for each day hunted. In 1994, bear tags (n=1,659) indicated that

0.023 bears were killed for each day hunted while the estimate from the 1994 Game Take Hunter Survey derived by the method described above was 0.011 bears killed per day hunted. Finally, a separate survey of bear hunters was conducted for the 1994 hunting season and again approximately 0.02 bears were killed per day hunted.

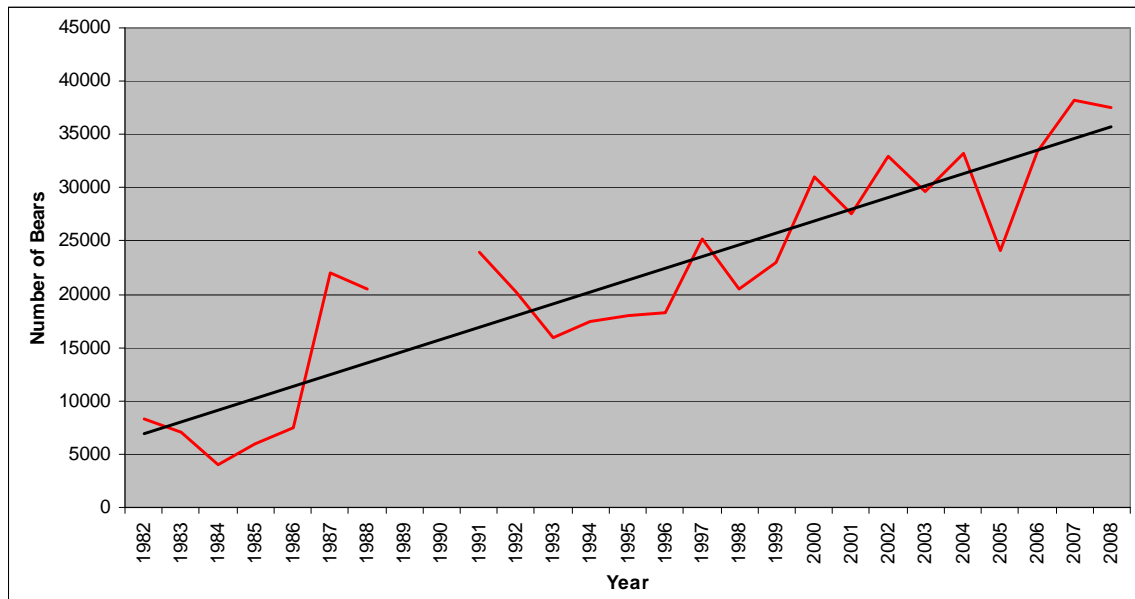
The data from the Game Take Hunter Survey was then re-examined to determine if the source of the change could be detected based on the methodology used to estimate kill per days hunted. The number of days hunted derived from the Game Take Hunter Survey was calculated by dividing the number of days hunted (from survey participants) by the percentage of all hunters surveyed (only some of which are bear hunters). This factor is also used to estimate harvest in the Game Take Hunter Survey. Determining the bear take per day hunted by dividing the number of bears projected killed in the Game Take Hunter Survey by the days hunted from the same survey canceled the bias in the survey's correction factor. The results correlated well with the other two estimates of kill per hunter effort as determined from bear tags and the survey of bear hunters in 1994. As a result, kill per hunter effort is calculated solely using data from the Game Take Hunter Survey (Table 2-3). The threshold for the kill per hunter effort/population index category was not met because there was an insignificant increase in the population index.

Table 2-3. Bear Take Reports (1996 - 2008; Game Take Hunter Survey)

| Year | Bear Kill per Hunter Effort |
|-------------|------------------------------------|
| 1996 | 0.016 |
| 1997 | 0.018 |
| 1998 | 0.018 |
| 1999 | 0.014 |
| 2000 | 0.016 |
| 2001 | 0.012 |
| 2002 | 0.014 |
| 2003 | 0.012 |
| 2004 | 0.011 |
| 2005 | 0.011 |
| 2006 | 0.014 |
| 2007 | 0.009 |
| 2008 | 0.016 |

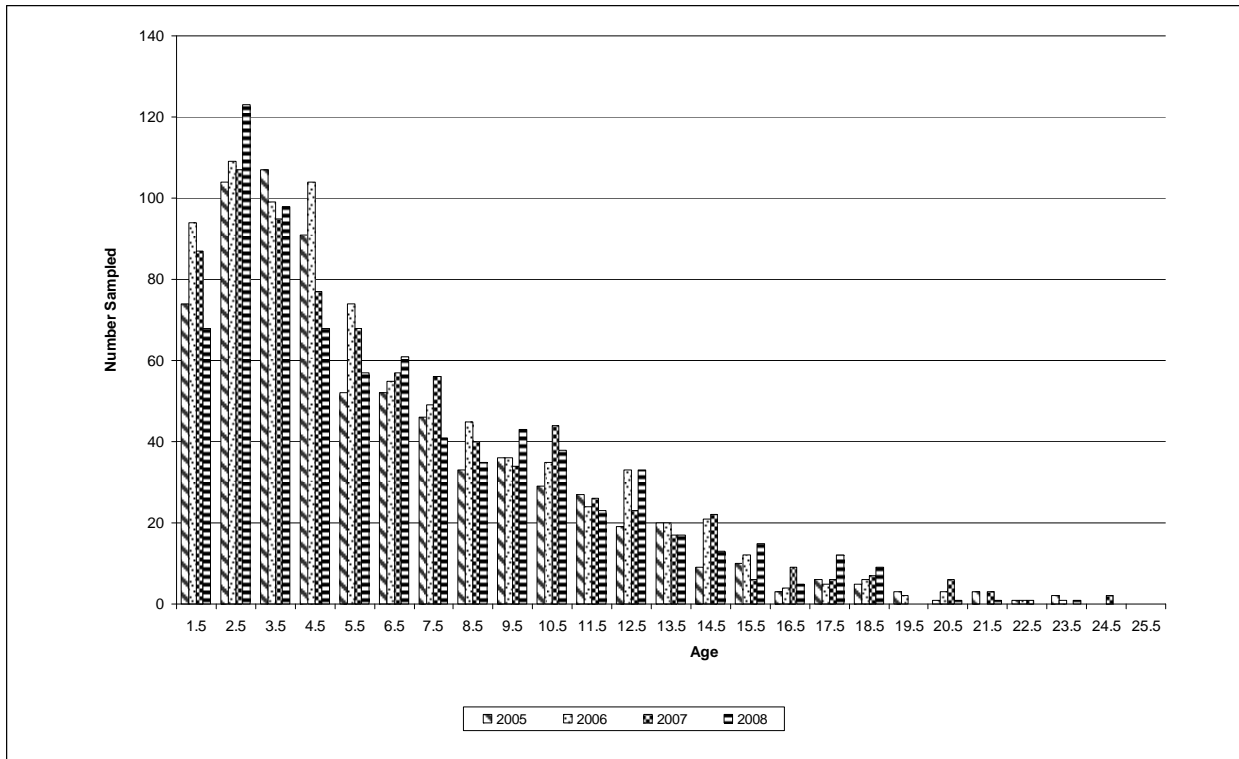
California's statewide bear population has been exhibiting positive growth since 1984 (Figure 2-1). Statewide bear population estimates have been determined since 1982 following Fraser (1982, 1984) using tooth cementum annuli analyses. Lack of harvest data from 1989 and 1990 (Table 2-1) preempted the Department from estimating population sizes during those years.

Figure 2-1. California Black Bear Population Estimates (1982 - 2008)



California's statewide bear population approximates a stable age distribution. The number of individuals in each age class in a population at a given point in time determines the population's age distribution. Wildlife populations are considered stable if the age class proportions remain unchanged through time (Lotka 1925, p .110). As mentioned previously, the age of harvested black bears have been determined by examining cementum annuli of extracted teeth since 1982. When plotted by year, California's bear population nearly approximates a stable age distribution (Figure 2-2). Since survival and reproduction rates are highly unlikely to remain constant through time, natural populations rarely exhibit purely stable age distributions (see Caughley 1977 and Eberhardt 1988 for discussion). This is reflected in California's population by annual variation in age distribution.

Figure 2-2. Age Structure of Hunter-Harvested Black Bears (2005 – 2008).



Modeling the statewide black bear resource

Wildlife management techniques often incorporate models to analyze, understand, and predict the outcomes and complex interactions of the natural environment. Like many other technical fields that affect everyday life, such as chemical engineering, aerospace technology, and climatology, the science of wildlife management has found that the use of models is invaluable for predicting the effects of man-caused and natural events on wildlife and their habitat.

Models can be as simple as word association or as complex as abstract mathematical expressions. Nevertheless, the goal of a model is to aid in analyzing known facts and relationships that would be too cumbersome or time consuming to analyze manually. Some of these models describe specific systems in a very detailed way, and others deal with general questions in a relatively abstract fashion. All share the common purpose of helping to construct a broad framework within which to assemble an otherwise complex mass of field and laboratory observations. Though we often think of models in terms of equations and computers, they can be defined more generally as any physical or abstract concept of the structure and function of "real systems" or natural occurrences.

The models used in this document have been developed based on field observation, published literature, and/or expert opinion. Ideally, they are tested against known results and, therefore, represent reality. In the case of California black bears, data from previous and ongoing field studies, hunter-killed bears, and observations of both hunted and unhunted populations have been used to construct habitat, population and climate change models (Appendices 3 and 4) to understand the current state of and the potential effects of proposed projects to the statewide black bear resource.

Computer Simulated Population Model

The potential effects of the proposed project on the dynamics of the State's bear population were analyzed with the aid of a computer model (Appendix 3). Computer modeling has become an important tool for wildlife managers as well as for wildlife researchers. The dynamics of large mammal populations such as deer, black bears, pronghorn antelope, and elk exhibit many similarities. For example, all large mammals have a minimum breeding age and each species has measurable reproductive rates. These observed rates of recruitment and survival can be used to model how a given population will behave under a given set of circumstances. Numerical values for these parameters are species, sex, and age specific. As an example, it is common for female black bears to come into estrus at 2.5 to 3.5 years of age, however, they generally do not successfully reproduce until they are 4.5 years old (Piekielek and Burton 1975, Sitton 1982, Department of Fish and Game 1996). Bears four years and older normally produce an average of 1.6 cubs in alternate years. Thus, a black bear population model would assign reproductive values and survival patterns that would reflect these unique capabilities.

For a population model to provide reliable predictions, it must account for significant biological phenomena. Users of simulation models must recognize the assumptions made in developing the model and the mechanical structures used in the model must not violate those assumptions (Conely 1978). As an example, black bears suffer differential hunting mortality because males are larger and more desirable to hunters. Males also move over larger areas than females and have a higher chance of encountering a hunter (Beecham and Reynolds 1977, Koch 1983, Rogers 1987, Litvaitis and Kane 1994). Therefore, it is important that survival coefficients (the number of young that survive) be developed for males and females in any model used for analyzing hunted black bear populations. In 1986, the Department contracted with Dr. Reginald Barrett, Associate Professor in Wildlife Management at the University of California at Berkeley, to develop a black bear population simulation model. In 2000, Dr.

Barrett reworked the original model to remove the assumption of compensatory mortality. Dr. Barrett's credentials and qualifications can be obtained through the College of Natural Resources, Department of Forestry and Resource Management, 145 Mulford Hall, University of California, Berkeley, California 94720. Dr. Barrett was selected to develop the model because he is a nationally recognized expert in large mammal ecology and in the use of microcomputer simulation models for analyzing wildlife populations.

Population Modeling Results

Empirical data collected during the past five years suggest the bear population in California is stable. These data were incorporated as inputs to the model to determine "benchmark" population parameters for analyzing the impacts of the proposed project and the alternatives (Appendix 3). The model output that most closely approximated the empirical data collected on the State's bear population was used as the starting point for future analysis. Using this "benchmark model", various levels of hunter take allowed with the proposed project and alternatives were evaluated relative to its effect on population size and structure. Individual model outputs of these various scenarios are provided in Appendix 3.

As indicated in the model description (Barrett 1986), the model requires that estimated illegal kill be input as a percentage of legal take. While ascertaining the benchmark population parameters, model results indicate that illegal kill approximated 12 percent of the legal take. However, in order to be biologically conservative, all model iterations assumed that the illegal kill was 25 percent of the legal take per year.

Results of computer modeling efforts indicate that in California, bear populations greater than or equal to the 2010 bear population can sustain a statewide hunter harvest of 3,100 (Appendix 3) and an illegal take of 25 percent (775 bears), without negative impacts. With a combined legal and illegal harvest of 3,875 bears, total hunting mortality will be approximately 10 percent of the statewide population. This is below its maximum-sustained yield level of 14.2 percent. These modeling results, which are based on actual observed data, indicate that with any level of legal harvest below 3,100 bears, the proposed project will not have significant negative effects on the State's bear resource (Appendix 3).

Habitat Suitability Index Model

Wildlife Habitat Suitability Index (HSI) models are commonly used for resource

planning, mitigation modeling, and environmental impact assessments (Schamberger and Krohn 1982, Cole and Smith 1983, Morrison et al. 1992). They are widespread and among the most influential tools available to resource managers (Morrison et al. 1992). These models categorize habitats relative to species' annual or seasonal life requisites, such as food production and cover availability (U.S. Fish and Wildlife Service 1981). Furthermore, these models provide a cost-effective and efficient approach to assessing wildlife populations.

To help understand California's black bear distribution, the Department's Biogeographic Data Branch recently developed a Geographic Information System (GIS) HSI model (Donovan et al. 1987) for black bears using an expanded dataset of the California Wildlife Habitat Relationships (CWHR) model (Appendix 4). Habitats were categorized as unsuitable, low, medium and high relative to black bear life requisites. The results of this model estimates 56,110 square miles of suitable or better habitat occurring throughout the 2009 black bear hunt zone. This model has been validated with observed data (Appendix 4) and therefore may serve as a benchmark for future modeling efforts, such as modeling the distribution of bear habitat relative to predicted global climate change.

Habitat Climate Change Model

Climate changes caused by increasing atmospheric concentrations of greenhouse gases are expected to result in marked changes in climate throughout the world (deVos and McKinney, 2007). Although many wildlife habitats in North America have become progressively warmer and drier in the last 12,000 years, the greatest rate of change has occurred during the last 150 years (Fredrickson et al. 1998). Predicted changes due to continued warming include increased frequency and severity of wildfires, increased frequency of extreme weather events, regional variation in precipitation, northward and upward shifts in vegetative communities, and replacements of biotic communities. These changes are expected to affect abundance, distribution and structure of animal and vegetative communities.

Local and specific regional changes in climate and associated changes in vegetative communities will be the determining factors regarding the distribution and abundance of black bear in California. Although research specific to bear responses to climate change is limited, what information does exist indicates that both adverse and beneficial effects - depending on a variety of local/regional factors such as latitude, elevation, topography, and aspect – can be expected to result.

To better understand the effects of climate change on California black bear distribution, the Department partnered with researchers from the University of California, Berkeley to predict changes in bear habitat distribution over the next 100 years (Appendix 4). Six plant species were selected to represent current HSI categories. Distribution changes for these species were predicted using the Geophysical Fluids Dynamic Laboratory Climate Model 2.1 (GFDL_CM2_1.1) by researchers from the Ackerly Lab at UC Berkeley. This model assumes a 100-year mean temperature increase of 3.3 °C and an 18 percent reduction in precipitation in California. The predicted plant distributions were cross-referenced with the HSI model to predict changes in statewide distribution of HSI categories.

Results indicate a shift in oak woodlands and riparian woodlands away from the valleys and foothills towards the coast. There would be significant constriction of upper elevation montane conifer forests (indicated by *Abies magnifica*) throughout the state. These would be extreme in the southern California mountains and in the north coast ranges. There would be a significant northward shift of southern California coastal scrub habitat (*Malosma laurina*) to central coastal California, and there would be major upward shifts in chaparral (*Q. wislizeni* var. *frutescens*) away from lower foothill areas. Cool temperate forests like coastal redwood, would diminish, but would likely maintain some relict populations as far south as Monterey County - its' current southern range limit (T. Keeler-Wolf pers. com.). Although optimal bear habitat is predicted to shift toward the coast ranges, much of the current bear range will still be considered suitable habitat and should support a viable and healthy bear population (Appendix 4).

PROPOSED CHANGES AND ANALYSIS

Section 365, Title 14, CCR:

1. Modify the bear hunting zones to incorporate the following (note: the Commission may select any, all or none of the three):
 - a. The portions of Modoc and Lassen County otherwise designated as deer hunt zone X3b would be incorporated into the Northern California Hunt Zone (Figure 1-1).

The proposed action will allow limited sport hunting of black bears in the core of bear habitat situated in the Warner Mountains of Modoc and Lassen Counties. The area encompassed by this option is comprised of a mixture of public and privately-owned lands. This area also maintains a robust and viable

black bear population according to local biologists. Based on similar habitat types in neighboring Siskiyou County, this action is expected to result in the additional annual harvest of up to 50 bears. Relative to proposed regulations (item 2, below), this option is expected to increase the annual statewide harvest to 1,950 bears, which is lesser than the modeled maximum sustained annual hunter harvest of approximately 3,100 bears (Appendix 3).

Hunter-returned bear tags and the Game Take Hunter Survey provide data on the time of year bears are killed, the county and area within the county where bears are killed, the home address of the bear hunter, the sex of the bear killed, the age of the bear killed (beginning in 1982), and the method(s) of take used by successful bear hunters. This information indicates that bear hunters are highly mobile. It is not uncommon for a hunter to travel hundreds of miles from his or her residence to hunt bears. Data also indicate the most common method of take is the use of trailing hounds to tree bears and centerfire rifles or pistols to kill bears. Since the use of dogs to assist in taking bears is the most common method, bear populations that experience the most hunting pressure are those that exist in areas with good road access which can be used by hunters to locate fresh bear tracks. Location of kill data from bear tags and information from the Game Take Hunter Survey related to hunting effort in given counties indicate that bear hunting pressure is not constant in a given geographical area from year to year. Factors such as road access vary due to weather conditions or administrative closures by the landowner-management agency and distribution of forage items (mast crops) varies resulting in changes of locations where tagholders hunt bears.

Based on this information, it is possible that some populations of black bears receive higher hunting pressure than others. However, data collected over the past 50 years does not indicate that significant, negative environmental impacts have resulted from regulated, legal sport harvest of bears in any area of the State. The age composition of the statewide bear population for the years 2005 through 2008 are presented in Figure 2-2. These data indicate that bears taken in California are primarily in the 1.5 to 4.5 year age class and that the proportions of each age class represented in the harvest are similar from 2005 through 2008. This age structure results in positive population growth (Figure 2-1), and therefore, no evidence suggests the statewide population is being negatively impacted from regulated sport hunting.

The Black Bear Management Plan (Appendix 2) prepared by the California Department of Fish and Game contains a matrix for evaluating the health of California's bear resource. This matrix is based on the recommendation by Garshelis (1993) that several monitoring techniques be employed together for monitoring bear populations. The use of a matrix is expected to lessen the effects of biases which may manifest themselves on a technique used singly and to detect actual changes in the bear population. The bear population would be considered to be negatively impacted if the threshold for concern was met or exceeded in two or more of the monitoring categories. The Commission maintains the option to change season dates and lengths or adjust harvest quotas.

Advantages of This Option

This option would allow increased public recreation opportunity in additional areas of the state. Furthermore, it would potentially distribute bear hunters across a larger area of the state, thereby lessening localized hunting pressures.

Disadvantages of This Option

Black bear hunting regulations are inherently complicated. Changes to hunt zone boundaries may result in confusion by some members of the public.

Conclusions Regarding This Option

The action as proposed in this option has been determined to have no significant adverse effects to the statewide black bear population or the environment. This is because all indices suggest the statewide black bear population is robust enough to sustain this level of harvest, and the statewide bear genetic structure is not decreasing in heterozygosity and exhibits recent range expansion (Brown et al. 2009). Furthermore, the Department and the Commission maintain the ability to rapidly respond to population fluctuations (positive or negative) by annually increasing or decreasing hunter opportunity in accordance with guidelines established by the black bear management plan (Appendix 2).

- b. The portion of Inyo County encompassed by Highway 395 on the south and west, Highway 6 on the east and the Inyo-Mono County line on the north would

This option is administrative and is solely proposed to provide an easily discernible boundary by hunters and law enforcement officials. The area encompassed by this option is comprised of both local government and federal lands. The area considered by this option is poor black bear habitat (see Appendix 4) and does not necessarily maintain a substantial portion of the local bear population. As such, hunters are not anticipated to focus hunting effort in this location (Van Deelen and Etter 2003). Annual black bear harvest in the area considered by this option is anticipated to be negligible.

Advantages of This Option

Black bear hunting regulations are inherently complicated. Hunt zone boundaries, such as county lines, that are not clearly discernible while afield may result in illegal take of game or additional effort by law enforcement officials to patrol hunting activities. This option eliminates the use of an indiscernible county line as a hunt zone boundary.

Disadvantages of This Option

Black bear hunting regulations are inherently complicated. Changes to hunt zone boundaries may result in confusion by some members of the public.

Conclusions Regarding This Option

Land ownership in the area comprising and surrounding this option preempts potential impacts to private landowners. The statewide black bear population is adaptively managed according to a monitoring matrix (Appendix 2) which provides specific safeguards from negatively impacting the population. The annual analysis on the status of the bear population is utilized by the Department to make recommendations for emergency regulation changes if unforeseen circumstances result in significant changes to any two (2) of the monitoring matrix criteria. The low level of anticipated annual black bear harvest in the area considered by this option is negligible relative to the overall health and viability of the statewide black bear population. The administrative action as proposed in this option has been determined to have no significant adverse effects to the statewide black bear population or the environment.

- c. The Portion of San Luis Obispo County encompassed by Highway 1 on the west

and the Salinas River and Highway 58 on the east would be incorporated into the Southern California Hunt Zone (Figure 1-1).

The proposed action will allow limited sport hunting of black bears in the core of bear habitat situated in San Luis Obispo County. The area encompassed by this option is comprised of a mixture of public and privately-owned lands. The habitat which supports black bears is described as a mixed conglomeration of riparian, mixed oak woodland and chaparral communities with interspersed permanent and semi-permanent water sources. Optimal black bear habitat primarily occurs on the ridges and western slopes of the Santa Lucia and La Panza ranges. East of these ranges, water sources become less reliable and bear densities decrease as the vegetation transitions from blue oak woodland to juniper woodlands and grasslands.

San Luis Obispo County is not historic black bear range. The coast range was primarily grizzly bear habitat. However, since the extirpation of grizzlies from California in the 1920's due to unregulated hunting, the black bear has effectively expanded its range from the southern Sierra Nevada Mountains, across the Tehachapis, and into the Coast Ranges. Recent genetic evidence supports this conclusion (Brown et al 2009).

All indices available to the Department regarding the bear population in San Luis Obispo County suggest it is robust enough to sustain a hunting season. Anecdotal evidence obtained from local residents indicates the bear density is similar to densities in Santa Barbara and Ventura Counties, both of which currently sustain a bear hunt. According to Department records, the numbers of issued depredation tags and resultant bears administratively taken in San Luis Obispo County are similar to Santa Barbara County (Table 2-4), further suggesting similar bear densities.

The wide distribution of black bears over approximately 53,000 square miles and annual monitoring of the statewide population have not produced any evidence of subpopulations declining in any part of the State. On the contrary, evidence of range expansion by some subpopulations is being documented. Currently, bear sightings routinely occur as far north as Monterey and Santa Cruz Counties, suggesting the population in San Luis Obispo is substantial enough to function as a source population for regional radiation into neighboring habitats.

Table 2-4. Number of Bear-related Incident Reports and Depredation Permits Filed with the California Department of Fish and Game (2004 – 2008).

| Year | San Luis Obispo County | | | Santa Barbara County | | |
|------|------------------------|----------------------------|---------------------|----------------------|----------------------------|---------------------|
| | Incident Reports | Depredation Permits Issued | Depredation Removal | Incident Reports | Depredation Permits Issued | Depredation Removal |
| 2004 | | 1 | | 2 | 1 | |
| 2005 | 2 | 2 | | 1 | 1 | |
| 2006 | 1 | 1 | 1 | 1 | 1 | |
| 2007 | 2 | 2 | 2 | | 1 | 1 |
| 2008 | | 2 | 2 | | 4 | 4 |

Moreover, the habitat suitability index (HSI) model (Appendix 4) was used to construct a conservative population estimate for San Luis Obispo County. The Department has recorded locations of bear: 1) chance observations, 2) vehicle-induced mortalities, 3) depredation occurrence and mortalities, 4) scent station visits, and 5) camera trap observations in San Luis Obispo County since 2007. Only observations of uniquely identifiable individuals were input as parameters to the estimation model. These data were then used to calculate average bear density (bears/mi²) for each HSI category which occurs in the county. These densities were verified by comparing the results to data published in a scientific investigation (Brinkhaus 2000) and local expert opinion. The area for each HSI category which occurs in the county was then calculated. An estimate of the bear population in San Luis Obispo County was then attained by summing the product of bear density multiplied by its respective HSI (Table 2-5). The result is a conservative estimate of the bear population in the county because observations that could not be confirmed as unique bears were not considered in the model; however some observations were thought to be unique. The results of this model indicate that approximately 1067 bears occupy suitable habitats in San Luis Obispo County.

Table 2-5. San Luis Obispo Population Estimation

| | HSI Category | | |
|--|--------------|--------|---------|
| | High | Medium | Low |
| Acreage in SLO (mi ²) | 1188.98 | 668.06 | 3061.08 |
| Estimated bear density ¹ (bears/mi ²) | 0.50 | 0.25 | 0.10 |
| Estimated number of bears | 594 | 167 | 306 |

¹. Densities estimated from Brinkhaus (2000) and B. Stafford (pers. comm.)

Based on similar conditions in neighboring Santa Barbara County, this action is expected to result in the additional annual harvest of up to 50 bears, which is approximately 5% of the estimated county-wide black bear population. This is less than the 14.2% suggested maximum sustained yield of black bear populations (Miller 1989). Furthermore, Waddell (1984) suggested that harvesting less than 10% of populations in extremely limited habitats will likely result in population size increases. Relative to the proposed regulations (see item 2, below), the incorporation of this option is expected to increase the statewide harvest of black bears to 1,950 bears, well below the modeled maximum sustained annual hunter harvest of approximately 3,100 bears (Appendix 3).

Lead poisoning has been a chronic and significant cause of migratory bird (primarily waterfowl) mortality associated with hunting in some areas of North America. Birds ingest spent lead shotgun pellets and scavengers may ingest fragments of lead bullets in carcasses or gut piles (Fry 2003). The ingested lead is converted to soluble form and absorbed into tissues, which can have lethal effects. Secondary poisoning of predatory birds can also occur when they feed on birds carrying lead pellets embedded in body tissues (Fry 2003). The use of nonlead projectiles is required for the hunting of bears in San Luis Obispo County (Section 353, Title 14, CCR).

Although San Luis Obispo County is near major human population centers in California, the Department does not expect high demand for bear hunting in the county and therefore an insignificant impact to the long-term health and sustainability of the bear population. First, much of the proposed hunt zone addition is privately-owned and will be accessible to only a few select individuals. Furthermore, it is the Department's experience that despite all efforts, it is nigh impossible to remove all individuals from a population within a short amount of

time (Leopold et al 1951, see also Van Deelen and Etter 2003).

Hunter-returned bear tags and the Game Take Hunter Survey provide data on the time of year bears are killed, the county and area within the county where bears are killed, the home address of the bear hunter, the sex of the bear killed, the age of the bear killed (beginning in 1982), and the method(s) of take used by successful bear hunters. This information indicates that bear hunters are highly mobile. It is not uncommon for a hunter to travel hundreds of miles from his or her residence to hunt bears. Data also indicate the most common method of take is the use of trailing hounds to tree bears and centerfire rifles or pistols to kill bears. Since the use of dogs to assist in taking bears is the most common method, bear populations that experience the most hunting pressure are those that exist in areas with good road access which can be used by hunters to locate fresh bear tracks. Location of kill data from bear tags and information from the Game Take Hunter Survey related to hunting effort in given counties indicate that bear hunting pressure is not constant in a given geographical area from year to year. Factors such as road access vary due to weather conditions or administrative closures by the landowner-management agency and distribution of forage items (mast crops) varies resulting in changes of locations where tagholders hunt bears.

Based on this information, it is possible that some populations of black bears receive higher hunting pressure than others. However, data collected over the past 50 years does not indicate that significant, negative environmental impacts have resulted from regulated, legal sport harvest of bears in any area of the State. The age composition of the statewide bear population for the years 2005 through 2008 are presented in Figure 2-2. These data indicate that bears taken in California are primarily in the 1.5 to 4.5 year age class and that the proportions of each age class represented in the harvest are similar from 2005 through 2008. This age structure results in positive population growth (Figure 2-1), and therefore, no evidence suggests the statewide population is being negatively impacted from regulated sport hunting.

The Black Bear Management Plan (Appendix 2) prepared by the California Department of Fish and Game contains a matrix for evaluating the health of California's bear resource. This matrix is based on the recommendation by Garshelis (1993) that several monitoring techniques be employed together for monitoring bear populations. The use of a matrix is expected to lessen the effects

of biases which may manifest themselves on a technique used singly and to detect actual changes in the bear population. The bear population would be considered to be negatively impacted if the threshold for concern was met or exceeded in two or more of the monitoring categories. The Commission maintains the option to change season dates and lengths or adjust harvest quotas.

Advantages of This Option

This option would allow increased public recreation opportunity in additional areas of the state. Furthermore, it would potentially distribute bear hunters across a larger area of the state, thereby lessening localized hunting pressures.

Disadvantages of This Option

This option has recently generated public opposition and has been identified by the Department as an area of controversy (Chapter 1). Furthermore, bear hunting regulations are inherently complicated and any changes may result in confusion among some members of the public.

Conclusions Regarding This Option

The action as proposed in this option has been determined to have no significant adverse effects to the statewide black bear population or the environment. This is because all indices suggest the statewide black bear population is robust enough to sustain this level of harvest, and the statewide bear genetic structure is not decreasing in heterozygosity and exhibits recent range expansion (Brown et al. 2009). Furthermore, the Department and the Commission maintain the ability to rapidly respond to population fluctuations (positive or negative) by annually increasing or decreasing hunter opportunity in accordance with guidelines established by the black bear management plan (Appendix 2).

Summary

Existing black bear hunting regulations (Section 365, Title 14, CCR) define bear hunting zones which encompass much of California's documented black bear range. The Department recommends incorporating all options as analyzed above and detailed in Appendix 1 to allow additional hunting opportunity and distribute

hunters across a larger area for recreational activity while defining easily discernible and enforceable boundaries. Based upon habitat-association analyses, this action will result in an additional annual harvest of up to 100 bears. Relative to proposed regulations (item 2, below), this would increase the statewide annual harvest to nearly 2,000 bears, well below the modeled maximum sustained annual hunter harvest of approximately 3,100 bears (Appendix 3). These actions have been determined to have no significant adverse effects on the statewide black bear population or the environment.

The Black Bear Management Plan prepared by the California Department of Fish and Game contains a matrix for evaluating the health of California's bear resource (Appendix 2). This matrix is based on the recommendation by Garshelis (1993) that several monitoring techniques be employed together for monitoring bear populations. The use of a matrix lessens the effects of biases which may manifest themselves on a technique used singly and to detect actual changes in the bear population. The bear population would be considered to be negatively impacted if the threshold for concern was met or exceeded in two or more of the monitoring categories. If two or more of the thresholds for concern were met or exceeded resulting from this option, the Commission maintains the option to reduce the season length or institute a tag quota. The hunting bag limit of one bear per season restricts the take of bears and equitably allocates the take among the interested public. The prohibition against the take of cubs and females accompanied by cubs insures recruitment of young into the population and protects reproductive females from hunting mortality.

2. Modify black bear harvest (note: the Commission may select one or none of the following).
 - a. Eliminate the in-season closure mechanism and close general bear hunting season the last Sunday in December.

Existing black bear hunting regulations (Section 365, Title 14, CCR) require the Department to close the hunting season on the last Sunday in December or when 1,700 bears have been reported harvested, whichever occurs first. Existing bear hunting regulations do not specify a maximum number of bear tags to be issued. Regardless, the Department has sold an average of 23,200 bear tags annually since 2002. The bear hunting season has been closed early only three times in the same timeframe (2007, 2008 and 2009). This option would

eliminate the in-season closure mechanism and require the season to close on the last Sunday in December, regardless the harvest. This option is intended to reduce Departmental costs and logistics associated with closing the season earlier than the last Sunday in December deadline. For example, the Department spent approximately \$11,856 to notify all bear hunters of the early 2009 season closure.

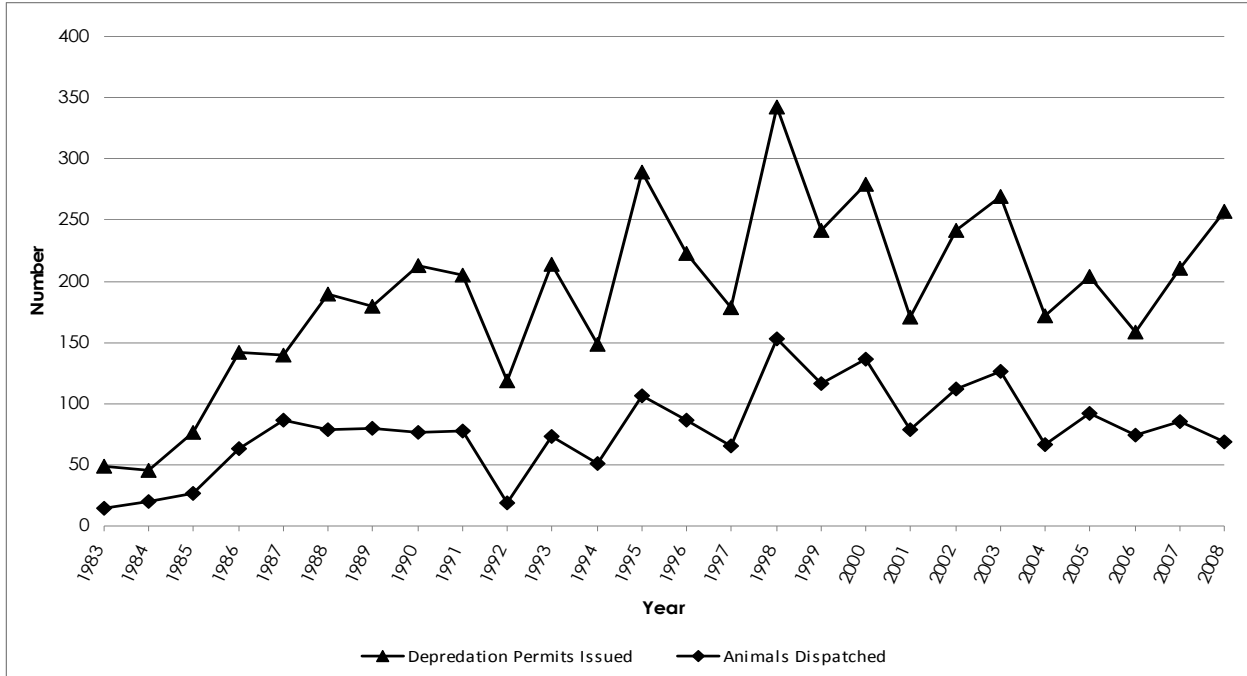
Based upon historic harvest reporting trends, this action is expected to result in the additional annual harvest of 50-100 bears and allow additional hunting opportunity. Based on the results of modeling the population and expected increased hunter effort, the actions considered in this option would likely result in the annual take of up to approximately 2,150 bears, well below the modeled maximum sustained annual hunter harvest of approximately 3,100 bears (Appendix 3).

Bear season has been closed early in seven of the past twelve seasons. During each of these seasons, bear harvest exceeded the number established to trigger the bear season closure. However, this mechanism was designed to stop the bear season before the harvest reached damaging levels and not to limit the harvest to a specific number. Despite these early closures, statewide population estimates have continued to increase (Figure 2-1), the age structure of harvested black bears is stable (Figure 2-2), the genetic variation in the statewide population is stable (Brown et al 2009), black bear depredation issues have remained stable (Figure 2-3), and the bear population has not been negatively impacted according to the black bear monitoring matrix.

The Black Bear Management Plan prepared by the California Department of Fish and Game contains a matrix for evaluating the health of California's bear resource (Appendix 2). This matrix is based on the recommendation by Garshelis (1993) that several monitoring techniques be employed together for monitoring bear populations. The use of a matrix lessens the effects of biases which may manifest themselves on a technique used singly and to detect actual changes in the bear population. The bear population would be considered to be negatively impacted if the threshold for concern was met or exceeded in two or more of the monitoring categories. If two or more of the thresholds for concern were met or exceeded resulting from this option, the Commission maintains the option to reduce the season length or alter tag quotas. The hunting bag limit of one bear per season restricts the take of bears and equitably allocates the take

among the interested public. The prohibition against the take of cubs and females accompanied by cubs insures recruitment of young into the population and protects reproductive females from hunting mortality. Consequently, the in-season closure regulatory language to end the bear season when 1,700 bears are reported killed is unnecessary and insignificant to the bear population.

Figure 2-3. Black Bear Depredation in California (1983 - 2008)



Advantages of This Option

This option increases public opportunity, decreases Department costs, lessens public confusion regarding harvest quotas. This option will also eliminate any controversy regarding the need to improve the system of notifying hunters of an early season closure.

Disadvantages of This Option

Black bear hunting regulations are inherently complicated. Changes to hunting regulations may result in confusion by some members of the public.

Conclusions Regarding This Option

The action as proposed in this option has been determined to have no

significant adverse effects to the statewide black bear population or the environment. This is because all indices suggest the statewide black bear population is robust enough to sustain this level of harvest, and the statewide bear genetic structure is not decreasing in heterozygosity and exhibits recent range expansion (Brown et al. 2009). Furthermore, the Department and the Commission maintain the ability to rapidly respond to population fluctuations (positive or negative) by annually increasing or decreasing hunter opportunity in accordance with guidelines established by the black bear management plan (Appendix 2).

- b. Increase statewide harvest quota to harvest up to 2,500 bears.

Under this option, the Department would close the black bear hunting season once it receives report of up to 2,500 bears taken or on the last Sunday in December, whichever occurs first. Based on the results of modeling the population and expected increased hunter effort, the actions considered in this option would likely result in the take of up to approximately 2,650 bears, well below the modeled maximum sustained annual hunter harvest of approximately 3,100 bears (Appendix 3). Hunting take will be limited to a specified level because bear season would be closed when 2,500 bears are reported taken. The bag limit of one bear per season will restrict the take of bears and equitably allocate the take among the interested public. The prohibition against the take of cubs and females accompanied by cubs is intended to insure recruitment of young into the population and to protect reproductive females.

Bear season has been closed early in seven of the past twelve seasons. During each of these seasons, bear harvest exceeded the number established to trigger the bear season closure. However, this mechanism was designed to stop the bear season before the harvest reached damaging levels and not to limit the harvest to a specific number. Despite these early closures, statewide population estimates have continued to increase (Figure 2-1), the age structure of harvested black bears is stable (Figure 2-2), the genetic variation in the statewide population is stable (Brown et al 2009), black bear depredation issues have remained stable (Figure 2-3), and the bear population has not been negatively impacted according to the black bear monitoring matrix.

The Black Bear Management Plan prepared by the California Department of Fish and Game contains a matrix for evaluating the health of California's bear

resource (Appendix 2). This matrix is based on the recommendation by Garshelis (1993) that several monitoring techniques be employed together for monitoring bear populations. The use of a matrix lessens the effects of biases which may manifest themselves on a technique used singly and to detect actual changes in the bear population. The bear population would be considered to be negatively impacted if the threshold for concern was met or exceeded in two or more of the monitoring categories. If two or more of the thresholds for concern were met or exceeded resulting from this option, the Commission maintains the option to reduce the season length or alter tag quotas. The hunting bag limit of one bear per season restricts the take of bears and equitably allocates the take among the interested public. The prohibition against the take of cubs and females accompanied by cubs insures recruitment of young into the population and protects reproductive females from hunting mortality. Consequently, the in-season closure regulatory language to end the bear season when 1,700 bears are reported killed is unnecessary and insignificant to the bear population.

Advantages of This Option

This option would be expected to increase hunter opportunity and reduce human-bear conflicts, such as depredation filings.

Disadvantages of This Option

Black bear hunting regulations are inherently complicated. Changes to hunting regulations may result in confusion by some members of the public. This option also maintains the in-season closure mechanism which is logistically cumbersome and incurs unnecessary expense to the Department.

Conclusions Regarding This Option

The action as proposed in this option has been determined to have no significant adverse effects to the statewide black bear population or the environment. This is because all indices suggest the statewide black bear population is robust enough to sustain this level of harvest, and the statewide bear genetic structure is not decreasing in heterozygosity and exhibits recent range expansion (Brown et al. 2009). Furthermore, the Department and the Commission maintain the ability to rapidly respond to population fluctuations (positive or negative) by annually increasing or decreasing hunter opportunity in accordance with guidelines established by the black bear management plan

(Appendix 2).

- c. Eliminate in-season closure mechanism, institute quota of up to 30,000 bear tags issued statewide, and close the hunting season the last Sunday in December.

Existing black bear hunting regulations (Section 365, Title 14, CCR) require the Department to close the hunting season on the last Sunday in December or when 1,700 bears have been reported harvested, whichever occurs first. Current bear hunting regulations do not specify a maximum number of bear tags to be issued. Regardless, the Department has sold an average of 23,200 bear tags annually between 2002 and 2008 (Table 2-1). The bear hunting season has been closed early only twice in the same timeframe (2007 and 2008). This option would eliminate the in-season closure mechanism, institute a quota of up to 30,000 bear tag issued annually and require the season to close on the last Sunday in December, regardless the harvest. This option is intended to reduce Departmental costs and logistics associated with closing the season earlier than the last Sunday in December deadline. For example, the Department spent approximately \$11,856 to notify all bear hunters of the early 2009 season closure

Furthermore, this option would provide an additional safeguard to overharvesting the bear population by limiting the number of bear tags available. Over the past ten years, an average of eight percent of all tags sold result in successful harvest of a bear (Table 2-1). Based on the results of computer modeling, the current bear population can sustain a maximum annual harvest of approximately 3,100 bears without negative impacts. Conservatively, the Department would expect up to ten percent of the available bear tags to result in the harvest of a bear. To account for variance in the annual harvest, the Department would recommend issuing up to 30,000 bear tags annually. The Commission would have the ability to alter the number of bear tags relative to the results of monitoring the bear population according to the black bear monitoring matrix (Appendix 3).

Bear season has been closed early in seven of the past twelve seasons. During each of these seasons, bear harvest exceeded the number established to trigger the bear season closure. However, this mechanism was designed to stop the bear season before the harvest reached damaging levels and not to limit the harvest to a specific number. Despite these early closures, statewide population estimates have continued to increase (Figure 2-1), the age structure of harvested

black bears is stable (Figure 2-2), the genetic variation in the statewide population is stable (Brown et al 2009), black bear depredation issues have remained stable (Figure 2-3), and the bear population has not been negatively impacted according to the black bear monitoring matrix.

The Black Bear Management Plan prepared by the California Department of Fish and Game contains a matrix for evaluating the health of California's bear resource (Appendix 2). This matrix is based on the recommendation by Garshelis (1993) that several monitoring techniques be employed together for monitoring bear populations. The use of a matrix lessens the effects of biases which may manifest themselves on a technique used singly and to detect actual changes in the bear population. The bear population would be considered to be negatively impacted if the threshold for concern was met or exceeded in two or more of the monitoring categories. If two or more of the thresholds for concern were met or exceeded resulting from this option, the Commission maintains the option to reduce the season length or alter tag quotas. The hunting bag limit of one bear per season restricts the take of bears and equitably allocates the take among the interested public. The prohibition against the take of cubs and females accompanied by cubs insures recruitment of young into the population and protects reproductive females from hunting mortality. Consequently, the in-season closure regulatory language to end the bear season when 1,700 bears are reported killed is unnecessary and insignificant to the bear population.

Advantages of This Option

This option increases public opportunity, decreases Department costs, lessens public confusion regarding harvest quotas. This option will also eliminate any controversy regarding the need to improve the system of notifying hunters of an early season closure.

Disadvantages of This Option

Black bear hunting regulations are inherently complicated. Changes to hunting regulations may result in confusion by some members of the public.

Conclusions Regarding This Option

The action as proposed in this option has been determined to have no significant adverse effects to the statewide black bear population or the

environment. This is because all indices suggest the statewide black bear population is robust enough to sustain this level of harvest, and the statewide bear genetic structure is not decreasing in heterozygosity and exhibits recent range expansion (Brown et al. 2009). Furthermore, the Department and the Commission maintain the ability to rapidly respond to population fluctuations (positive or negative) by annually increasing or decreasing hunter opportunity in accordance with guidelines established by the black bear management plan (Appendix 2).

Summary

Existing black bear hunting regulations (Section 365, Title 14, CCR) require the Department to close the hunting season on the last Sunday in December or when 1,700 bears have been reported harvested, whichever occurs first. The Department recommends option (a), as detailed in Appendix 1, to eliminate the in-season closure mechanism. This is intended to reduce Departmental costs and logistics associated with closing the season earlier than the last Sunday in December deadline. This action will also eliminate any controversy regarding the need to improve the system of notifying hunters of an early season closure. This action has been determined to have no significant adverse effects to the statewide black bear population or the environment.

Section 366, Title 14, CCR:

3. Modify the bear archery season by opening the season concurrent with deer archery in respective hunt zones.

This proposed change would modify Section 366, Title 14, CCR to open bear archery season concurrently with the opening of the deer archery season in the area of the state known as the deer A zone (Appendix 1). Currently, the A zone deer archery season opens the second Saturday in July and extends for 23 days. The A zone general deer season opens the second Saturday in August and extends for 44 consecutive days. Conversely, the bear archery season in the same geographic location opens the third Saturday in August and extends for 23 consecutive days. As such, the current regulations open the general bear season before the archery bear season. This proposed change would alleviate these potential problems by aligning the archery hunt dates.

The Department monitors the annual harvest of black bears by mandating the

return of all bear tags issued during the hunting season (Section 708(e)(6), Title 14, CCR). The mandatory return of bear tags was initiated in 1982. These returned tags provide the department a count of hunter harvested bears by county, as well as the method of take. Over the past seven years, an average of nine bears are harvested annually by archers in the counties that would be affected by this action (Table 2-6). Hence, this proposed action is expected to result in the additional annual harvest of 10-20 bears (0.03 - 0.05% of the estimated statewide population). As stated in previously, all demographic factors monitored by the Department indicate the statewide bear population is healthy, genetically diverse, increasing, and therefore robust enough to sustain this additional level of harvest.

Table 2-6. Archery Harvested Black Bears in Counties Encompassed by Deer A-Zone (2002 - 2008)

| County | Year | | | | | | | Average |
|---------------|-------------|-------------|--------------|-------------|--------------|--------------|--------------|-------------|
| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | |
| Colusa | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 |
| Lake | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.29 |
| Marin | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 |
| Mendocino | 3 | 5 | 8 | 2 | 8 | 4 | 7 | 5.29 |
| Napa | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 |
| Sacramento | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 |
| Solano | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 |
| Sonoma | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 |
| Yolo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 |
| Los Angeles | 1 | 1 | 4 | 2 | 3 | 6 | 7 | 3.43 |
| Santa Barbara | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.14 |
| Ventura | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.14 |
| Total | 4.00 | 6.00 | 12.00 | 4.00 | 11.00 | 11.00 | 17.00 | 9.29 |

Advantages of This Action

Black bear hunting regulations are inherently complicated. This action is expected to eliminate confusion regarding season dates. Furthermore, this action is expected to provide additional hunting opportunity.

Disadvantages of This Action

Black bear hunting regulations are inherently complicated. Changes to black bear archery regulations may result in confusion by some members of the public.

Conclusions Regarding This Action

The action as proposed in this option has been determined to have no significant adverse effects to the statewide black bear population or the environment. This is because all indices suggest the statewide black bear population is robust enough to sustain this level of harvest, and the statewide bear genetic structure is not decreasing in heterozygosity and exhibits recent range expansion (Brown et al. 2009). Furthermore, the Department and the Commission maintain the ability to rapidly respond to population fluctuations (positive or negative) by annually increasing or decreasing hunter opportunity in accordance with guidelines established by the black bear management plan (Appendix 2).

Section 265, Title 14, CCR:

4. Modify dog control zones.

The proposed action would alter dog use control boundaries as specified in Appendix 1 and as illustrated in Figure 1-2. This action would maintain the prohibition on the training of dogs between April 1 and the day preceding the general deer hunting season within specified areas of the state (Figure 1-2). The pursuit or take of mammals will still be unlawful outside of the general hunting season in those areas open to dog training.

Existing regulation (Section 265, Title 14, CCR) restricts the amount of public and private land made available to houndsmen for training dogs. This, in turn, concentrates dog training efforts in a few select locations of the state. This action would provide an increased amount of public land with easily identifiable boundaries for dog training.

California has allowed regulated bear hunting with dogs for almost 50 years. Since the dog-use restriction (Section 265, Title 14, CCR) was initiated in 1985, the bear population has increased nearly fivefold to approximately 38,000, statewide. The median age and sex ratio of harvested bears, as well as estimates of hunter success per day hunted, indicate that the bear population is healthy and not experiencing over-harvest. The statewide black bear population is adaptively

managed according to a monitoring matrix (Appendix 2) which provides specific safeguards from negatively impacting the population. The bear population would be considered to be negatively impacted if the threshold for concern was met or exceeded in two or more of the monitoring categories. The Commission maintains the option to change season dates and lengths or adjust harvest quotas. The current bear population is robust and is capable of sustaining minimal disturbances.

Advantages of This Proposed Action

This action would distribute dog training efforts more uniformly across bear range, thereby lessening any localized disturbance to wildlife. Furthermore, this action would provide easily discernible boundaries, thereby easing patrol efforts by law enforcement. This action would also allow for increased use of public lands.

Disadvantages of This Proposed Action

This action would increase the amount of area available to houndsmen for training dogs during a period when bear sows are raising young. Although it will still be unlawful to chase or pursue mammals between April 1 and the day preceding the opening of the general deer season, the presence of dogs may increase stress levels in bears. These increased stress levels may have short-term effects on individual bears (Massopust and Anderson 1984, Allen 1984, Elowe 1991), however, these short-term effects are not expected to negatively affect the statewide bear population.

Conclusions Regarding This Proposed Action

The action as proposed in this option has been determined to have no significant adverse effects to the statewide black bear population or the environment. This is because all indices suggest the statewide black bear population is robust enough to sustain this level of harvest, and the statewide bear genetic structure is not decreasing in heterozygosity and exhibits recent range expansion (Brown et al. 2009). Furthermore, the Department and the Commission maintain the ability to rapidly respond to population fluctuations (positive or negative) by annually increasing or decreasing hunter opportunity in accordance with guidelines established by the black bear management plan (Appendix 2).

5. Allow global positioning system (GPS) collars and treeing switches on dogs while bear hunting.

The proposed action would allow dogs to be fitted with GPS collars and tip switches (a.k.a. “treeing switches”) while employed in the take of mammals. Tip switches provide an indication to the houndsman when the dog has raised its head, as if looking up a tree. Radio telemetry equipment is similar to GPS equipment and is already widely used by houndsmen for bear hunting. Over the past 30 years, GPS equipment has become relatively inexpensive. Bear hunters using dogs routinely place radio collars on their dogs. Houndsmen indicate that these collars are used to quickly locate lost or injured dogs and for training young dogs. Houndsmen also state that radio telemetry equipment is an indispensable tool which allows them to retrieve their dogs in a timely manner before the dog is potentially injured after venturing onto a road (Elowe 1991). Current GPS collars available for purchase intended for similar purposes are factory-equipped with tip switches. Hence, permitting tip switches is necessary concurrent with permitting the use of GPS collars.

Advantages of This Proposed Action

This action would allow hunters who use dogs to monitor the safety their property and quickly retrieve lost or injured dogs.

Disadvantages of This Proposed Action

Some members of the general public may misunderstand the intent of this action as providing bear hunters who use hounds an unfair advantage. However, as discussed in prior environmental documents regarding bear hunting, the Department has determined this to not be the case.

Conclusions Regarding This Proposed Action

The use of GPS technology in lieu of radio telemetry would not constitute any additional or unfair advantage to bear hunters. Therefore, any negative impacts to the bear population associated with the use of GPS equipment would be detected as originating with the use of dogs. As stated in prior environmental documents relating to bear hunting, there is no evidence to suggest that the use of dogs (or dogs with radio collars) for hunting bears is negatively impacting the bear resource. The proposed action has been determined to have no significant adverse effects to the statewide black bear population or the environment.

CUMULATIVE EFFECTS

Impacts on the Gene Pool

Brown et al (2009) report the population genetics of black bears in California. They suggest that bears in San Luis Obispo County have genetic composition similar to bears in the southern Sierra Nevada Mountains. This suggests a past radiation of bears from the Sierra Nevada to the Tehachapi Mountains. Brown, et al (2009) found no significant difference in allelic richness between bears in the central coast region, including San Luis Obispo County, and bears in the southern Sierra Nevada Mountains. Further, they state that bears in the central coast region show levels of genetic diversity on par with other bear populations (Clarke et al. 2001, Paetkau and Strobeck 1994, Paetkau et al. 1998).

The black bear in California has experienced sport hunting removal as a game mammal since 1948. In these hunted areas, black bears display high levels of genetic diversity (Brown, et al, 2009). Evidence suggests that sport hunters tend to select for larger male bears, and the harvested segment of the population is male biased in most years. It is reasonable to conclude that large male bears, typically older than 10 years, have had adequate opportunity to pass their genetic material prior to such animals being taken by sport hunters. In addition, State and Federal parks as well as remote wilderness areas, where sport hunting has little or no influence on the bear population, comprise over 10 percent of the best bear habitat in the State. In these unhunted populations, there would be no impact on the gene pool thereby retaining all the naturally occurring genetic variability. In the remainder of the State which is open to hunting, the season, bag limit, and access limitations prevent sport hunting from producing a negative effect on the genetic diversity in the black bear population.

Impacts on the Social Structure

Interactions with other bears (intraspecific competition) are probably a major source of nonhunting mortality, especially for subadult males. Black bears live solitary lives. Cubs are born in the winter den and remain with the mother through the first year of their life. They generally den with the female as yearlings. When they emerge from the den in spring, they disperse to new areas. Usually subadult females will remain in the general area, but do not associate with other bears. However, subadult males tend to disperse over large areas (Lee and Vaughan 2003). During this time, they are vulnerable to numerous mortality factors, including

aggressive behavior by adult bears (primarily males). Numerous researchers have documented adult males killing subadult males as they disperse (Swenson 2003, Swenson, et al 1997, Wielgus and Bunnell 1994, Jonkel and Cowan 1971, Poelker and Hartwell 1973, Kemp 1976, Rogers 1987). Intraspecific predation has also been found to be a significant mortality source for adult females (Garshelis 1994, Department of Fish and Game 1997, Stafford 1995). LeCount (1986) indicated that adult male bears were a significant source of mortality to young cubs in Arizona. However, other studies suggest that this is not the case (Graber 1982, Elowe and Dodge 1989). As Elowe and Dodge point out "social order was once thought to limit bear densities through establishment of territories, but it now appears to play a minor role." This also is the case in California and other western states where investigators have determined that bears do not establish and defend territories (Koch 1983).

LeCount (1993) and McLellan (1993) suggested that dispersing subadult bears may be responsible for infanticide. Therefore, killing larger resident male black bears may retard recruitment of cubs into the population because immigrating subadult male bears, which would normally be killed or run off by resident males, will kill more cubs. While this situation may occur in some populations, other studies have shown that black bear populations increased after the removal of adult males when subadult bears immigrated into the area (Kemp 1976, 1972, Ruff 1982, Young and Ruff 1982). The increase in the presence of subadult bears did not appear to effect cub survival. In a retrospective study of brown bears in Sweden, researchers (Swenson, et al. 1997) suggested that killing one adult male had a population effect of killing 0.5 to 1 adult female. This was suggested to be the result of immigrating males replacing those killed by hunters. A study of brown bears in Canada concluded that increased hunting mortality of older adult males coincided with an influx of younger immigrant males (Stringham, 1980, Wielgus and Bunnell, 1994). This apparently contributed to low reproductive rates and a population decline. However, Miller, et al (2003) showed increased cub survival in hunted brown bear populations compared to unhunted populations. McLellan (2005) concluded that the immigrant male hypothesis was not supported in brown bears.

The interval of breeding for brown bears in this study was three years, compared to two years in black bears in California. Also, the total reproductive rate of brown bears in this study (0.46 cubs /adult female/yr.) was about half that of California black bears (0.8 cubs/adult female/ yr.). The reduced reproductive rate of brown bears in the study made them more susceptible to population declines than California black bears. If the removal of adult bears through regulated hunting was

acting to limit California black bear populations, age cohorts would be expected to be missing in heavily hunted areas. Since all age cohorts are present at predictable levels, there is no evidence to suggest that this is occurring in California. If subadults are more responsible for cub killing, it is also important to recognize that almost half of the male black bears killed by hunters each year are nonbreeding subadults (less than four years old) thereby limiting any impacts.

Impacts on Habitat

No significant impacts on habitat are expected from the hunting of black bears in California. Hunter impacts on the habitat are reduced by the large range and solitary habits of the black bear as well as a defined maximum harvest and short hunting season. Although several hunting strategies exist, many hunters utilize existing roads to determine location of fresh bear signs, before initiating the hunt. Some hunters utilize dogs to assist in taking bears. Low intensity hunting strategies may reduce the impact on the habitat by decreasing the hunter's effort in a given area.

The harvest of up to 2,750 black bears from 53,000 square mile bear range has the potential to reduce the black bear population over a large area for less than one year. The reduction in the black bear population has the potential to provide for some improvement in black bear habitat. The black bear's diverse and seasonal forage preferences further reduce impacts of specific environmental changes. Furthermore, black bears are readily able to adjust to new food sources as alternate sources become available.

Effects on Recreational Opportunities

Hunting affects public recreational opportunities in a variety of ways. Many hunters plan their annual vacation times to correspond with bear hunting season, while other recreationalists plan their vacations to avoid being in the "woods" during hunting season.

Based on information from the Bear Take Report and the Game Take Hunter Survey, over 100,000 hunter-days of recreation are expended annually on bear hunting in California. Based on past bear tag sales and information from the Game Take Hunter Survey, the proposed project will provide approximately 100,000 days of recreational hunting opportunities for the expected 27,000 bear tag purchasers.

The proposed project also affects nonconsumptive-use of bears. Although black bears are shy and elusive by nature, the fact that bears will be hunted in the proposed project area may make them more wary of humans. It should be recognized that not all bear habitat is proposed to be available for bear hunting, and that large blocks of prime bear habitat exist in State parks and private land where hunting may be prohibited. Black bears have been hunted as game mammals annually in California since 1948 and there is still ample opportunity to observe black bears. Therefore, existing viewing opportunities are not expected to be affected by the proposed project.

In cases where people feel threatened as a result of bear hunting, there are potentials for conflict with nonhunting activities in hunt areas. This effect is expected to be insignificant since the majority of bear hunting will occur after Labor Day, well past the peak summer months when most nonhunting activities occur on public land. Additionally, there are large blocks of bear habitat that are closed to bear hunting (State and local parks, National Parks, etc.) nonhunters could use to view bears during the bear hunting season if they do not wish to use areas open to bear hunting.

Effects on Other Wildlife Species

Listed Species

The Commission has listed a number of plant and animal species as endangered, threatened, or rare. These species are listed in sections 670.2 and 670.5, Title 14, CCR. Based on the following information, no significant negative effect on any listed species or their habitat is expected from the proposed project. This includes the effects of using dogs for the pursuit and take of bear.

The black bear's range overlaps with several threatened and endangered species, including: the great grey owl, willow flycatcher, Sierra Nevada red fox, wolverine, and northern spotted owl. The black bear is a native omnivore with a large home range and diverse forage preferences and has evolved with other native species. Specific impacts by the black bear on threatened and endangered species in the proposed project area have not been identified.

The area proposed to be open to bear hunting is currently used for other outdoor recreational activities including, but not limited to, fishing, photography, hiking, camping, hunting, bird watching, and general nature viewing. Additionally,

the hunt area receives varying degrees of grazing by livestock. Due to the existing human- and livestock-use levels in the proposed project area, it is unlikely that the presence of bear hunters will individually or cumulatively have significant negative impacts on plants and/or wildlife in the project area.

Lead poisoning has been a chronic and significant cause of migratory bird (primarily waterfowl) mortality associated with hunting in some areas of North America. Birds ingest spent lead shotgun pellets and scavengers may ingest fragments of lead bullets in carcasses or gut piles (Fry 2003). The ingested lead is converted to soluble form and absorbed into tissues, which can have lethal effects. Secondary poisoning of predatory birds can also occur when they feed on birds carrying lead pellets embedded in body tissues (Fry 2003). The use of nonlead projectiles is required for the hunting of bears in San Luis Obispo County.

Other Species

The proposed regulation change is not expected to result in a change in statewide black bear population levels and, therefore, there are no expected impacts on other wildlife species. As indicated previously, regulated black bear hunting has occurred annually since 1948. Predator/prey relationships involving bears have remained intact since then. There is no available evidence to indicate that the proposed project will have any measurable impact (either negative or positive) on either bear prey species or other predators within the project area. Analysis of the proposed project does not indicate a potential to affect any threatened or endangered species or their habitats.

CHAPTER 3 CONSIDERATION OF ALTERNATIVES

The project alternatives evaluated herein are: 1) no project – no change from the 2009-2010 black bear hunting and dog-use regulations; and 2) manage the black bear resource relative to designated bear management units (BMUs).

Alternative 1. No Project – no change from the 2009-2010 bear hunting and dog-use regulations

This alternative provides a continuation of the 2009-2010 bear hunting and dog use regulations. Under this alternative, bear hunt zones would remain unchanged, the in-season closure mechanism would remain and provide a statewide harvest of 1,700 bears, the archery season dates would remain unchanged, the dog use restriction areas would remain unchanged, and GPS collars and treeing switches would continue to not be permitted on dogs while hunting bears.

Advantages of This Alternative

Black bear hunting and dog use regulations are inherently complicated and changes may result in confusion for some members of the public. Maintaining the 2009-2010 regulations for the 2010-2011 season may result in less confusion to some members of the public.

Disadvantages of This Alternative

The no project alternative provides less hunting and dog training opportunity than the proposed project. In addition, the Department would continue to incur financial costs associated with notifying hunters of seasons' closures resulting from maintaining the in-season closure mechanism. Furthermore, the Department's law enforcement division would continue to be strained by enforcing indiscernible county lines as hunt zone and dog control zone boundaries.

Conclusions Regarding This Alternative

It is unlikely that significant irreversible impacts would occur as a result of selecting the no project alternative. However, the no project alternative is not recommended because it does not provide hunting opportunities based on current bear resources and incurs unnecessary costs to the Department.

Alternative 2. Manage the Black Bear Resource Relative to Designated Bear Management Units (BMUs)

Recently, researchers have identified four genetically distinct sub-populations within the State's bear population (Brown et al 2009). These signatures have been defined regionally: North Coast/Klamath; Cascade/North Sierra Nevada; Central Sierra Nevada; and Southern Sierra Nevada/Central Coast (Brown et al 2009). Each region has its own interbreeding population with its own genetic variability well within the ranges of comparable bear populations (Brown and Ernest 2007). Each population fits the criteria for a management unit: regional groups of organisms with significantly different allele frequencies (Moritz 1994), suggesting that California black bear management be focused on individual management units encompassing these sub-populations, thereby maintaining relatively high allele frequency and overall genetic variability (Brown et al 2007).

Under this alternative, four BMUs would be developed based solely upon county to facilitate accurate record keeping and created to preserve genetic integrity (Table 3-1). Each BMU would be monitored according to the black bear monitoring matrix (Appendix 2), wherein season dates and lengths, bag and possession limits and tag quotas would be adjusted relative to the matrix indices. Season dates and lengths, bag and possession limits and tag quotas would be initially established to reflect the 2009 season regulations (Table 3-1).

Advantages of This Alternative

Adoption of this alternative would provide additional safeguards to black bear genetic viability.

Disadvantages of This Alternative

Black bear hunting regulations are inherently complicated. Hunt zone boundaries, such as county lines, that are not clearly discernible while afield may result in illegal take of game or additional effort by law enforcement officials to patrol hunting activities. Furthermore, changes to hunt zone boundaries, tag quotas and season dates may result in confusion by some members of the public.

Table 3-1. Suggested Bear Management Unit Descriptions and Possible Regulations

| Bear Management Unit | Counties | Season Dates | Season Lengths | Bag & Possession Limits | Tag Quota |
|-------------------------------|--|--|-------------------------------------|--|-----------|
| North Coast/ Klamath | Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Napa, Shasta, Siskiyou, Sonoma, Tehama, Trinity, Yolo | | | | 6250 |
| Northern Sierra | Butte, Nevada, Plumas, Sierra, Sutter, Yuba | Archery: September 11 - September 26; | Archery: 16 consecutive days; | 1 bear per hunter per license year | 3900 |
| Central Sierra | Alpine, Amador, Calaveras, El Dorado, Fresno, Los Angeles, Madera, Mariposa, Merced, Mono, Placer, Riverside, San Bernardino, Sacramento, Stanislaus, Tuolumne | General Season: October 9 - December 26. | General: 79 consecutive days | | 8425 |
| Southern Sierra/Central Coast | Inyo, Kern, Monterey, San Luis Obispo, Santa Barbara, Tulare, Ventura | | | | 2675 |

Conclusions Regarding This Alternative

The Department has evaluated a number of factors in response to concerns related to the potential effects of hunting on the black bear population's genetic structure. In general, the greatest concerns relate to populations which contain relatively few individuals. In the case of the California black bear, the total population size is relatively large (approximately 38,000) with animals distributed over more than 53,000 square miles of habitat. This large and widely dispersed population of animals (adapted to a wide variety of habitats) tends to be highly capable of adapting to changes. A concern for limited gene flow is not a problem in light of these factors. The scientific literature indicates species which have very narrow or specific habitat requirements and are unable to adapt to changes are most vulnerable to the negative effects of a limited gene pool. O'Brien et al (1986) discussed in detail potential problems faced by the cheetah in Africa, noting that it had very narrow, specialized habitat requirements and was unable to adapt to changes in the environment. Despite those potential limitations, these researchers noted that it was possible for 95 percent of the original genetic variation to be retained by as few as seven individuals. Based on experience in California with Tule elk the Department has documented a normal and healthy population resulting from an initial herd size of eight individuals at Grizzly Island. The statewide population of Tule elk numbering over 3,500 individuals is the offspring of less than 20 animals alive in the early 1900s (McCullough 1969, Botti and Koch 1988). Therefore, it is unlikely that a larger, free-roaming wildlife population, such as bears, would experience any genetic problem associated with the removal of a limited number of animals through sport hunting.

It is unlikely that significant irreversible impacts would occur as a result of selecting the BMU alternative. However, the Department concludes that basing California's black bear management on BMUs is unnecessary at this time. The black bear in California has experienced sport hunting removal as a game mammal since 1948. In these hunted areas, black bears display high levels of genetic diversity (Brown et al 2009). Furthermore, age structure analyses using annual cementum annuli data indicate no differential harvest of these sub-populations. This evidence does not predicate the necessity to alter California's black bear management from statewide basis to a BMU basis. The Department will continue to monitor the genetic variability, age structure and annual harvest of these sub-populations and may reconsider this alternative at some point in the future if demographic and genetic conditions imply the need. Accordingly, this alternative is not recommended.

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APPENDIX 1

REGULATORY LANGUAGE FOR PROPOSED PROJECT

Appendix 1 contains the 2010 proposed project regulatory language for Sections 265, 365 and 366, Title 14, California Code of Regulations. Recommended changes are provided in strikeout/underline format.

§265. Use of Dogs for Pursuit/Take of Mammals or for Dog Training.

(a) Prohibitions on the Use of dogs. The use of dogs for the pursuit/take of mammals or for dog training is prohibited as follows:

- (1) The use of dogs is prohibited during the archery seasons for deer or bear.
- (2) The use of dogs is prohibited for the take of elk, bighorn sheep and antelope.
- (3) Mountain lions may not be pursued with dogs except under the provisions of a depredation permit issued pursuant to Section 4803 of the Fish and Game Code. Dog training on mountain lions is prohibited.

(4) The use of dogs for the pursuit/take of mammals or for dog training is prohibited from the first Saturday in April through the day preceding the opening of the general deer season in the following dog control zones:

~~(A) Central California Dog Control Zone: Napa County north of Highway 128 and east of Highway 29; Lake County east of a line beginning at the Lake-Napa county line and Highway 29; northwest on Highway 29 to Highway 53. From Highway 53 turn northwest on Highway 20; northwest on Highway 20 to the Lake-Mendocino county line; north on the Lake-Mendocino county line to the Lake-Glenn county line; south on Lake-Glenn county line to the Lake-Colusa county line; south on the Lake-Colusa county line to the Lake-Yolo county line; southwest on the Lake-Yolo county line to the Lake-Napa county line; west on the Lake-Napa county line to the starting point. Mendocino County east of Highway 101, and north of Highway 20. Sierra and Alpine counties and those portions of Nevada, Placer, Amador and Calaveras counties east of Highway 49; and El Dorado County east of the following line: Beginning at the junction of Highway 49 and the Placer-El Dorado county line; south on Highway 49 to Highway 193 at Cool; east and south along Highway 193 to Highway 49 in Placerville; south on Highway 49 to the Amador-El Dorado county line; east on the El Dorado-Amador county line to the Alpine-El Dorado county line; east on the Alpine-El Dorado county line to the California-Nevada state line; north on the California-Nevada state line to the Placer-El Dorado county line; west on the Placer-El Dorado county line to the starting point.~~

(A) Central California Dog Control Zone: Those portions of Lake and Napa counties within a line beginning at the intersection of Main Street (Morgan Valley Road) and Highway 29 in the town of Lower Lake in Lake County; south along Highway 29 to Highway 128; east along Highway 128 to Berryessa-Knoxville Road; north along Berryessa-Knoxville Road to Morgan Valley Road; northwest along Morgan Valley road to the point beginning; and those portions of Alpine, Amador, Calaveras, El Dorado, Nevada, Placer, Sierra and Yuba counties within a line beginning at the intersection of

Highway 89 and the Plumas-Sierra county line; south along Highway 89 to Highway 49; west and south along Highway 49 to Highway 20 in Nevada City; east along Highway 20 to Interstate 80; southwest along Interstate 80 to Highway 49 in Auburn; south along Highway 49 to Highway 193; east and south along Highway 193 to Highway 49 (Coloma Street) in Placerville; south along Highway 49 to the El Dorado-Amador county line; east along the El Dorado-Amador county line to Highway 88; southwest along Highway 88 to Highway 49 in Jackson; south along Highway 49 to Highway 4 in Angels Camp; northeast along Highway 4 to the Calaveras-Alpine county line; southeast along the Calaveras-Alpine county line to Forest Route 6N06; east along Forest Route 6N06 to the Alpine-Tuolumne county line; east and south along the Alpine-Tuolumne county line to its intersection with the Mono county line; north along the Alpine-Mono county line to its intersection with the California-Nevada state line; north along the California-Nevada state line to its intersection with the Lassen county line, west along the Sierra-Lassen county line to its intersection with the Plumas county line; west along the Sierra-Plumas county line to the point beginning.

~~(B) Northern California Dog Control Zone:~~

~~Plumas and Trinity counties. Butte County east of the following line: Beginning at the junction of Highway 99 and the Butte-Tehama county line; south and east along Highway 99 to Highway 149; south and east along Highway 149 to Highway 70; south along Highway 70 to the Butte-Yuba county line; east on the Butte-Yuba county line to the Butte-Plumas county line; north on the Butte-Plumas county line to the Butte-Tehama county line southwest on the Butte-Tehama county line to the starting point. Del Norte County east of Highway 101. Glenn County west of a line beginning at the intersection of County Road 200 and the Glenn-Tehama county line; southeast on County Road 200 to County Road 306; south along County Road 306 to the Colusa-Glenn county line; west on the Colusa-Glenn county line to the Glenn-Lake county line; northwest on the Glenn-Lake county line to the Glenn-Mendocino county line; north on the Glenn-Mendocino county line to the Glenn-Tehama county line; east on the Glenn-Tehama county line to the starting point. Humboldt County north of Highway 36 and east of Highway 101. Siskiyou County south and west of the line defined as follows: Beginning at the Oregon-California state line at Interstate 5, proceed south on Interstate 5 to Highway 97 at the town of Weed; north on Highway 97 to Meiss Lake Road near the town of Macdoel; east on Meiss Lake Road to Old State Highway; south on Old State Highway to Redrock Road; east on the Redrock Road (forest service road 15[8Q03] to Willow Creek Red Rock Road; north on Willow Creek Red Rock Road to the Gold Digger Pass Road (N8U01); east on the Gold Digger Pass Road to the~~

western boundary of the Lava Beds National Monument; north and east on said boundary to the Siskiyou-Modoc county line; south on the Siskiyou-Modoc county line to the Siskiyou-Shasta county line; west on the Siskiyou-Shasta county line to the Siskiyou-Trinity county line; west on the Siskiyou-Trinity county line to the Siskiyou-Humboldt county line; northwest on the Siskiyou-Humboldt county line to the Siskiyou-Del Norte county line; north on the Siskiyou-Del Norte county line to the California-Oregon state line; east on the California-Oregon state line to the starting point. Shasta County south and west of Highway 89 and north of the line defined as follows: Beginning at the Shasta-Tehama county line and Highway 36 near the town of Beegum, go west on Highway 36 to County Road A16; north on County Road A16 to Pine Street in the city of Redding; north on Pine Street to Eureka Way (Highway 299); west on Eureka Way (Highway 299) to Highway 273; north on Highway 273 to Interstate 5; north on Interstate 5 to the south shore of Shasta Lake; east and north along the southern shore of Shasta Lake to Fender's Ferry Road; southeast on Fender's Ferry Road to Highway 299; southwest on Highway 299 to Oakrun Road; southwest on the Oakrun Road to Fern Road in the town of Oakrun; northeast on the Oakrun Road to Fern Road to the town of Fern; south and west on Fern Road to Whitmore Road; east on Whitmore Road to the town of Whitmore. From Whitmore Road turn south on Ponderosa Way to Innwood Road; Innwood Road to Highway 44 near Innwood; east on Highway 44 to Wilson Hill Road; south on Wilson Hill Road to Rock Creek Road; south on Rock Creek Road to the Shasta-Tehama county line; east along the Shasta-Tehama county line to Highway 89; North on Highway 89 to the Shasta-Siskiyou county line; west along the Shasta-Siskiyou county line to the Shasta-Trinity county line; southeast along the Shasta-Trinity county line to the Shasta-Tehama county line; east along the Shasta-Tehama county line to the starting point. The following portions of Tehama County: Those portions of Tehama County within the Mendocino National Forest and east of Ponderosa Way. Those portions of Tehama County within the Lassen National Forest. Those portions of Tehama County east of Ponderosa Way. Those portions of Lassen County north and west of the following line: North from the Lassen-Sierra county line on Highway 395 to Highway 36 east of Susanvill; northwest on Highway 36 to Highway 139; north on Highway 139 to the Lassen-Modoc county line; west along the Lassen-Modoc county line to the Lassen-Shasta county line; south along the Lassen-Shasta county line to the Plumas-Lassen county line; southeast along the Plumas-Lassen county line to the Lassen-Sierra county line; east along the Lassen-Sierra county line to the starting point.

(B) Northern California Dog Control Zone: Those portions of Butte, Del Norte, Glenn,

Humboldt, Lake, Lassen, Mendocino, Plumas, Shasta, Sierra, Siskiyou, Tehama, Trinity and Yuba counties within a line beginning at the intersection of Highway 101 and the California-Oregon state line; south along Highway 101 to Highway 36; east along 36 to the Humboldt-Trinity county line, south along the Humboldt-Trinity county line to its intersection with the Mendocino county line; south then east along the Trinity-Mendocino county line to its intersection with the Tehama county line; south along the Tehama-Mendocino county line to its intersection with the Glenn county line; south along the Mendocino-Glenn county line to its intersection with the Lake county line; east then south along the Glenn-Lake county line to the intersection with Forest Route 18N02 (Open Ridge Black Diamond Road); east along Forest Route 18N02 to County Road 306; north along County Road 306 to County Road 200; west along County Road 200 to the Glenn-Tehama county line; west along the Glenn-Tehama county line to the eastern Mendocino National Forest boundary; north along the eastern Mendocino National Forest boundary to its intersection with the Trinity National Forest boundary; west and north along the Mendocino-Trinity National Forest boundary to the Tehama-Trinity county line; north along the Tehama-Trinity county line to its intersection with the Shasta county line; north and east along the Trinity-Shasta county line to the Highway 299; east along Highway 299 to Highway 273, north along Highway 273 to Interstate 5; north along Interstate 5 to the southern shore of Shasta Lake; east and north along the southern shore of Shasta Lake to Fendler's Ferry Road; southeast along Fendler's Ferry Road to Highway 299; southwest along Highway 299 to Oakrun Road; south along Oakrun Road to Oakrun to Fern Road in town of Oakrun; northeast along Oakrun to Fern Road to East Fern Road in the town of Fern; south along East Fern Road to Whitmore Road in the town of Whitmore; west along Whitmore Road to Ponderosa Way; south along Ponderosa Way to Innwood Road; southwest along Innwood Road to Highway 44; east along Highway 44 to Wilson Hill Road; south along Wilson Hill Road to Rock Creek Road; south along Rock Creek Road to the Shasta-Tehama county line; east along the Shasta-Tehama county line to Ponderosa Way; south along Ponderosa Way to Lassen Trail; south along Lassen Trail to Ponderosa Way; south along Ponderosa Way to Cohasset Stage Road; south along Cohasset Stage Road to the Tehama-Butte county line; east and north along the Tehama-Butte county line to Highway 32; south along Highway 32 to Highway 99 in the town of Chico; south along Highway 99 to Highway 162; east and north along Highway 162 to Oroville-Quincy Highway; north along Oroville-Quincy Highway to the Butte-Plumas county line; south and east along the Butte-Plumas county line to its intersection with the Yuba county line; northeast along the Plumas-Yuba county line to its intersection with the Sierra

county line; east along the Plumas-Sierra county line to Highway 395; north along Highway 395 to Highway 36; north and west along Highway 36 to Highway 44 (Feather Lake Highway); northwest along Highway 44 to Highway 89 near Old Station; north and west along Highway 89 to Interstate 5; north along Interstate 5 to Highway 3 (Fort Jones Road); southwest along Highway 3 to Scott River Road in Fort Jones; north along Scott River Road to Highway 96; east along Highway 96 to Interstate 5; north along Interstate 5 to the California-Oregon state line; west along the California-Oregon state line to the point beginning.

(C) Southern Sierra Dog Control Zone:

~~These portions of Tuolumne, Mariposa, Madera, Fresno and Tulare counties east of the following line beginning at the intersection of Highway 49 and the Calaveras-Tuolumne county line; south on Highway 49 to Highway 108; southwest on Highway 108 to Highway 120; east on Highway 120 to the Smith Station Road (J20); south on the Smith Station Road (J20) to the Greeley Hill Road; east on the Greeley Hill Road to the Briceburg Road; east on Briceburg Road to the North Fork of the Merced River at Bower Cave; south on the North Fork of the Merced River to Road 3S15 (Black Mountain Road/Ponderosa Way); south on Road 3S15 (Ponderosa Way) to Forest Service Road 3S02 (Ponderosa Way) crossing the U.S. Forest Service-Bureau of Land Management property boundary in Section 28 located in Township 3S, Range 18E to Forest Service Road 2S05 (Bull Creek Road); south on Forest Service Road 2S05 (Bull Creek Road) to the Main Fork of the Merced River; west on the Main Fork of the Merced River to the southern boundary of Lake McClure; west on the southern boundary of Lake McClure to Highway 49; south on Highway 49 to Highway 140 at Mariposa; north on Highway 140 to the South Fork of the Merced River; east along the South Fork of the Merced River to Hite Cove Trail at Hite Cove. From Hite Cove south on the U.S. Forest Service Road (Hite Cove Trail) to Hite Cove Road; south on Hite Cove Road to Scott Road; south on Scott Road to Jerseydale Road; south on Jerseydale Road through Jerseydale Station and Darrah to the Darrah Road; south along Darrah Road to Highway 49; south along Highway 49 to Highway 41 at Oakhurst; north along Highway 41 to its intersection with the Bass Lake Road at Yosemite Forks; south along Bass Lake Road to Road 274; south on Road 274 past Bass Lake on the east side of the lake to the junction with the Mammoth Pool Road at North Fork; west on Mammoth Pool Road to Road 222 (Auberry Road); south on Road 222 (Auberry Road) to the San Joaquin River; east along the San Joaquin River to Italian Bar Road (Road 225) at the Italian Bar Bridge; south on Italian Bar Road (Road 225) to Jose Basin Road (County Road M2441); east on Jose Basin Road (County Road M2441) to its intersection with~~

Forestry Service Roads 8S08 (Railroad Grade Road) and 9S07 (Jose Basin Road); south on 9S07 (Jose Basin Road) to Jose Basin/Musick Farm Road; southeast on 9S07 to Auberry Road near Pine Ridge; east on Auberry Road to North Toll House Road; south on North Toll House Road to Peterson Road; east on Peterson Road to Big Creek Road; east on Big Creek Road (10S02) near Peterson Mill to Dinkey Trimmer Road (10S69 Trimmer Springs Road) at Haslett Basin; east on Dinkey Trimmer Road (10S69) to Sycamore Springs Road (11S02); east on Sycamore Springs Road (11S02) to Black Rock Road (11S12) at Balch Camp; east on the Black Rock Road (11S12) to the decommissioned 11S07 (the old Rodgers Ridge Road) at Black Rock Reservoir Dam; east along decommissioned 11S07 (old Rodgers Ridge Road) to Garlic Spur; south on Garlic Spur to the Kings River; west along the Kings River to Verplank Ridge; south on Verplank Ridge-Hoise Ridge to Forest Route 13S65; southeast on Forest Route 13S65 to Forest Route 13S03; southeast on Forest Route 13S03 to Highway 180 near Cherry Gap; south along Highway 180 to the north boundary of Kings Canyon/Sequoia National Park; south along the western boundary of Kings Canyon/Sequoia National Park to the northern boundary of Sequoia National Forest between Grouse Peak and Dennison Mountain; south along the common line between R29E and R30E, M.D.B.M. to the boundary of the Sequoia National Forest; east and south along that boundary to Balch Park Road; southeast along that road to the west boundary of Mountain Home Demonstration State Forest; south and east along that boundary to Forest Trail 30E14; southeast along 30E14 to the Doyle Springs Road (Wishon Drive); southwest along Doyle Springs Road (Wishon Drive) to Camp Wishon; southeast along the Alder Creek Grove-Hossack Meadow Road to Camp Nelson; east along Highway 190 to Coy Flat Road; south along Coy Flat Road to the boundary of the Tule River Indian Reservation; south along the east boundary of that reservation (County Highway J42) to Parker Peak; southeast through Upper Parker Meadow to Parker Pass. Parker Pass to Forest Route 22S81; south through Starvation Creek Grove on Forest Route 22S81 to M504 (Parker Pass); south on M504 to Forest Route 23S64; southeast on 23S64 to the southwest corner of Section 15, T23S, R31E, M.D.B.M, continuing to the northeast corner of Section 22, T23S, R31E, M.D.B.M.; south approximately 6 miles to Sugarloaf Winter Recreation Area.; southeast on Sugarloaf drive to Forest Road 24S23; northeast on Forest Route 24S23 to Forest Route 23S16; Southeast on Forest Route 23S16 to Portuguese Pass; southeast along Forest Route 23S16 (24S06) though Portuguese Pass to the Tulare-Kern county line; east along the Tulare-Kern county line to the Tulare-Inyo county line.; north along the Tulare-Inyo county line to Fresno-Inyo county line; north along the Fresno-Inyo county line to the Fresno-Mono county line; north

~~along the Fresno-Mono County line to the Mono-Madera county line; north along the Mono-Madera county line to the Mono-Tuolumne county line; north along the Mono-Tuolumne county line to the Alpine-Tuolumne county line; northwest along the Alpine-Tuolumne county line to the Calaveras-Tuolumne county line; southwest along the Calaveras-Tuolumne county line to the starting point. That portion of Kern County within a line beginning where the Tulare-Kern county line intersects the west boundary of the Sequoia National Forest; south along the said boundary to the Poso Flat Road; on Poso Flat Road to National Forest Route 25S03 (Rancheria Road); northeast along National Forest 25S03 (Rancheria Road) to National Forest 25S15 (Rancheria Road); north on National Forest 25S15 (Rancheria Road) to Rancheria Road; northeast along Rancheria Road through Shirley Meadow to Forest Highway 90 (Forest Route 23S16) at Greenhorn Summit; northeast on Forest Highway 90 (Forest Route 23S16) to Cow Creek; northeast on Cow Creek to Bull Run Creek; north on Bull Run Creek to the Tulare-Kern county line; west along said county line to the point of beginning. Those portions of Inyo and Mono counties west of Highway 395.~~

(C) Southern Sierra Dog Control Zone: Those portions of Alpine, Fresno, Inyo, Madera, Mariposa, Mono, Tulare and Tuolumne counties within a line beginning at the intersection of the California-Nevada state line and the Mono-Alpine county line; south along the Mono-Alpine county line to its intersection with the Tuolumne county line; west along the Alpine-Tuolumne county line to Clark Fork Road; southwest along Clark Fork Road to Highway 108; southwest along Highway 108 to Highway 120; west along Highway 120 to the western boundary of Yosemite National Park; south and east along the western boundary of Yosemite National Park to Highway 41 near the town of Fish Camp; south along Highway 41 to Bass Lake Road; southeast along Bass Lake Road to Malum Ridge Road; south along Malum Ridge Road to Mammoth Pool Road; west along Mammoth Pool Road to Road 222; south along Road 222 to Auberry Road; south along Auberry Road to the Madera-Fresno county line; east along the Madera-Fresno county line to Italian Bar Road (Road 225) at the Italian Bar Bridge; south along Italian Bar Road to Jose Basin Road (County Road M2441); east along Jose Basin Road to its intersection with Forest Service Road 8S08 (Old Railroad Grade Road); northeast along Old Railroad Grade Road to Dawn Road; south along Dawn Road to Highway 168 (Tollhouse Road); south along Highway 168 to Dinkey Creek Road; east along Dinkey Creek Road to Ross Crossing Road; south along Ross Crossing Road to Trimmer Springs Road (10S69); east along Trimmer Springs Road to Sycamore Springs Road (11S02); east along Sycamore Springs Road to Black Rock Road (11S12) at Balch Camp; east along Black Rock Road to the decommissioned 11S07 (Rodgers Ridge

Road) at Black Rock Reservoir Dam; east along Rodgers Ridge Road to Garlic Spur; south along Garlic Spur to the Kings River; west along the Kings River to Verplank Ridge-Hoise Ridge; south along Verplank Ridge-Hoise Ridge to Forest Route 13S65; southeast along Forest Route 13S65 to Forest Route 13S03; southeast along Forest Route 13S03 to Highway 180 near Cherry Gap; south along Highway 180 to the north boundary of Kings Canyon/Sequoia National Park; south along the western boundary of Kings Canyon/Sequoia National Park to the northern boundary of Sequoia National Forest between Grouse Peak and Dennison Mountain; south along the common line between R29E and R30E, M.D.B.M. to the boundary of the Sequoia National Forest; east and south along the boundary of the Sequoia National Forest to Balch Park Road; southeast along Balch Park Road to the west boundary of Mountain Home Demonstration State Forest; south and east along the west boundary of Mountain Home Demonstration State Forest to Forest Trail 30E14; southeast along Forest Trail 30E14 to the Doyle Springs Road (Wishon Drive); southwest along Doyle Springs Road to Alder Creek Grove-Hossack Meadow Road; southeast along Alder Creek Grove-Hossack Meadow Road to Highway 190 at Camp Nelson; east along Highway 190 to Coy Flat Road; south along Coy Flat Road to the boundary of the Tule River Indian Reservation; south along the east boundary of the Tule River Indian Reservation (County Highway J42) to Parker Peak; southeast from Parker Peak through Upper Parker Meadow to Parker Pass; south along Parker Pass to Forest Route 22S81; south along Forest Route 22S81 through Starvation Creek Grove to M504 (Parker Pass); south along M504 to Forest Route 23S64; southeast along 23S64 to the southwest corner of Section 15, T23S, R31E, M.D.B.M, continuing to the northeast corner of Section 22, T23S, R31E, M.D.B.M.; south approximately 6 miles to Sugarloaf Winter Recreation Area; southeast along Sugarloaf Drive to Forest Route 24S23; northeast along Forest Route 24S23 to Forest Route 23S16; southeast along Forest Route 23S16 to Portuguese Pass; southeast along Forest Route 23S16 (24S06) through Portuguese Pass to the Tulare-Kern county line; east along the Tulare-Kern county line to the intersection of the Tulare, Kern and Inyo county lines; east along the Inyo-Kern county line to Highway 395; north along Highway 395 to the California-Nevada state line near Topaz Lake; northeast along the California-Nevada state line to the point beginning.

~~(D) Southern California Dog Control Zone: Those portions of Los Angeles, Ventura and Santa Barbara counties within the Los Padres and Angeles National Forests; and those portions of San Bernardino County within the San Bernardino and Angeles National Forests.~~

(D) Southern California Dog Control Zone: Those portions of Los Angeles, Santa

Barbara and Ventura counties within the Los Padres and Angeles National Forests south and east of the line beginning at the intersection of Highway 33 and the Los Padres National Forest south of the town of Ventucopa; south along Highway 33 to Forest Route 7N04 (Tinta Trail); northwest along Forest Route 7N04 to Forest Route 8N19 (West Dry Road); northwest along Forest Route 8N19 to Forest Route 9N11 (Big Pine Road); west along Forest Route 9N11 to Forest Route 25S13 (Sierra Madre Road); northwest along Forest Route 25S13 to Forest Route 11N04 (Miranda Pine Road); south along Forest Route 11N04 to Forest Route 11N04.3 (La Brea OHV Road); south along Forest Route 11N04.3 to its intersection with the southeastern boundary of the Los Padres National forest; and those portions of San Bernardino County within the San Bernardino and Angeles National Forests.

(b) Authorized Use of Dogs. The use of dogs for the pursuit/take of mammals or for dog training is authorized as follows:

(1) Dog Control Zones. The use of dogs for the pursuit/take of mammals or for dog training is permitted in the dog control zones described in subsections 265(a)(4)(A), (B), (C) and (D) from the opening day of the general deer season through the first Friday in April.

(2) Areas of the State Outside the Dog Control Zones. The use of dogs for the pursuit/take of mammals or for dog training in areas outside of the dog control zones is permitted year-round, except for closures and restrictions described in this Section 265 and section 364, and the provisions of sections 3960 and 4800 of the Fish and Game Code which prohibit allowing any dog to pursue any big game mammal during the closed season on such mammal or mountain lions, elk or any fully-protected, threatened or endangered mammal at any time.

(3) Take of Depredating Mammals. The use of dogs is permitted for pursuing/taking depredating mammals by federal and county animal damage control officers or by permittees authorized under a depredation permit issued by the department.

(4) Take of Furbearers and Nongame Mammals. Furbearers and nongame mammals as specified in Section 472(a) may be taken with the aid of dogs during the appropriate open season, except for closures and restrictions described in subsections 265(a) and (b).

(5) Prohibition on Starting Pursuit Within 400 Yards of Baited Area. Pursuits may not be started within 400 yards of a baited area as described in Section 257.5 of these regulations.

(6) Dog Training. Except for the prohibitions of subsection 265(a), dog training is permitted pursuant to the following provisions:

(A) Dog Training Defined. For purposes of these regulations, dog training is defined as the education of dogs through "breaking" or "practicing" under strict provisions that preclude the injuring or take of animals. Training is distinguished from "pursuit", as used in Section 86 of the Fish and Game Code, in that the animal being chased shall not be killed, captured, or injured.

(B) Prohibition on Killing, Capturing or Injuring Mammals. No person shall kill, capture or injure any mammal, nor shall any person's dog be allowed to kill, capture or injure any mammal during dog training.

(C) Prohibition on Possession of Equipment. No firearm, archery gear, crossbow or other instrument capable of killing, injuring or capturing any animal may be possessed by any person training dogs during the seasons described in subsection 265(b)(6)(F) below. Possession of a firearm, archery gear, crossbow or other instrument capable of killing or capturing any animal is prohibited while training dogs, but such equipment may be transported to or from a campsite, transported to or from a residence or lawfully possessed by a person at a campsite provided all dogs are secured and under the control of the owner, agent or person training or transporting said dogs.

(D) Prohibition on Starting Dog Training Within 400 Yards of Baited Area. Dog Training may not be started within 400 yards of a baited area as described in Section 257.5 of these regulations.

(E) Prohibition on Training Dogs on Bear and Other Big Game Mammals or on Protected, Threatened or Endangered Mammals. It shall be unlawful to train any dog on any big game mammal or to train any dog on any fully-protected, threatened or endangered mammal at any time. A person in possession of a valid bear tag may utilize the general bear season for purposes of educating dogs for bear. A person in possession of a valid deer tag may utilize the general deer season for purposes of educating a dog for deer. Only one dog may be used for training in areas where the general deer season (as described in subsection 360(a) and (b)) is open.

(F) Seasons.

1. Gray Fox. Dogs may be trained on gray fox from March 1 through the day preceding the opening of the general gray fox season, except for closures and restrictions described in subsections 265(a) and (b).

2. Raccoon. Dogs may be trained on raccoon from April 1 through the day preceding the opening of the general raccoon season, except for closures and restrictions described in subsections 265(a) and (b).

3. Bobcat. Dogs may be trained on bobcat from the day following the close of the bobcat seasons through the day preceding the opening of the general bobcat seasons,

except for closures and restrictions described in subsections 265(a) and (b).

4. Other Mammals. Except for closures and prohibitions described in this Section 265 and sections 3960 and 4800 of the Fish and Game Code, dogs may be trained on mammals other than gray fox, raccoon and bobcat at any time.

(c) Restrictions on the Number of Dogs per Hunter.

(1) One Dog per Hunter Limitation During Deer Season. No more than one dog per hunter may be used in the area where the general deer season is open.

(2) Three Dogs per Hunter Limitation for the Take of Wild Pigs. Up to three dogs per hunter may be used for the purpose of taking wild pigs, pursuant to the following provisions:

(A) No more than one dog per hunter may be used in an area where the general deer season is open.

(B) No dogs may be used within the closures described in subsection 265(a).

(C) After the general deer season (as described in subsections 360(a) and (b)) closes, there is no limit on the number of dogs that may be used during the general bear season.

~~(d) Prohibition on Treeing Switches and Use of Global Positioning System Equipment.~~

~~(1) Treeing Switches. Electronic dog retrieval collars containing functioning treeing switches (devices consisting of a switch mechanism that results in a change in the transmitted signals when the dog raises its head to a treed animal) are prohibited on dogs used for the pursuit/take of mammals.~~

~~(2) Global Positioning System Equipment. Electronic dog retrieval collars employing the use of global positioning system equipment (devices that utilize satellite transmissions) are prohibited on dogs used for the pursuit/take of mammals.~~

Note: Authority cited: Sections 200, 202 and 203, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, 207 and 4756, Fish and Game Code.

§365. Bear.

Except as provided in Section 366, bear may be taken only as follows: (Note: See subsection 265(c)(1) for restrictions on the use of dogs.)

(a) Areas:

(1) Northern California: In the counties of Del Norte, Humboldt, Plumas, Shasta, Siskiyou, Tehama and Trinity; and those portions of Lassen and Modoc counties west of the following line: Beginning at Highway 395 and the Sierra-Lassen county line; north on Highway 395 to the junction of Highway 36; west on Highway 36 to the junction of Highway 139; north on Highway 139 to Highway 299; north on Highway 299 to County Road 87; west on County Road 87 to Lookout-Hackamore Road; north on Lookout-Hackamore Road to Highway 139; north on Highway 139 to the Modoc-Siskiyou county line; north on the Modoc-Siskiyou county line to the Oregon border; and those portions of Lassen and Modoc counties within a line beginning at the east shoreline of Goose Lake and the California-Oregon state line; east along this state line to the California-Nevada state line; south along the California-Nevada state line to the Clarks Valley-Red Rock-Tuledad Road (Lassen County Roads 512, 510 and 506); west along the Tuledad Red Rock-Clarks Valley Road to Highway 395 at Madeline; north along Highway 395 to Westside Road (Modoc County 48) in Davis Creek; west and north along Westside Road to the south shoreline of Goose Lake; east and north along the south and east shoreline of Goose Lake to the point of beginning.

(2) Central California: In the counties of Alpine, Amador, Butte, Calaveras, Colusa, El Dorado, Glenn, Lake, Mendocino, Nevada, Placer, Sacramento, Sierra, Sutter, Yolo and Yuba and those portions of Napa and Sonoma counties northeast of Highway 128.

(3) Southern Sierra: That portion of Kern County west of Highway 14 and east of the following line: Beginning at the intersection of Highway 99 and the Kern-Tulare county line; south on Highway 99 to Highway 166; west and south on Highway 166 to the Kern-Santa Barbara San Luis Obispo county line; and those portions of Fresno, Madera, Mariposa, Merced, Stanislaus, Tulare and Tuolumne counties east of Highway 99.

(4) Southern California: In the counties of Los Angeles, Santa Barbara and Ventura; that portion of Riverside County north of Interstate 10 and west of Highway 62; ~~and that~~ portion of San Bernardino County south and west of the following line: Beginning at the intersection of Highway 18 and the Los Angeles-San Bernardino county line; east along Highway 18 to Highway 247; southeast on Highway 247 to Highway 62; southwest along Highway 62 to the Riverside-San Bernardino county line; and that portion of San Luis Obispo county east of Highway 1 and west and south of the following line:

Beginning at the intersection of the Salinas River and the San Luis Obispo-Monterey county line; south along the Salinas River to its intersection with Highway 58; southeast along Highway 58 to the San Luis Obispo-Kern county line.

(5) Southeastern Sierra: Those portions of Inyo and Mono counties west of the following line: Beginning at the intersection of Highway 395 and the Inyo-Kern county line; north along Highway 395 to the intersection of Highway 6; north along Highway 6 to the Nevada state line.; and that portion of Madera County within the following line: ~~Beginning at the junction of the Fresno-Madera-Mono county lines; north and west along the Madera-Mono county line to the boundary of the Inyo-Sierra National Forest; south along the Inyo-Sierra National Forest boundary to the Fresno-Madera county line; north and east on the Fresno-Madera county line to the point of beginning. Also, that portion of Inyo county west of Highway 395; and that portion of Mono county beginning at the intersection of Highway 6 and the Mono county line; north along Highway 6 to the Nevada state line; north along the Nevada state line to the Alpine county line; south along the Mono-Alpine county line to the Mono-Tuolumne county line and the Inyo National Forest Boundary; south along the Inyo National Forest Boundary to the Inyo-Sierra Forest boundary; south along the Inyo-Sierra Forest boundary to the Fresno-Madera county line; north and east along the Fresno-Madera county line to the junction of the Fresno-Madera-Mono county line; south along the Mono-Fresno county line to the Mono-Inyo County line; east along the Mono-Inyo county line to the point of beginning.~~

(b) Seasons: Except in the deer hunt areas designated as zones X-1 through X-7b in subsection 360(b), the bear season shall open on the opening day of the general deer season as described in subsections 360(a) and (b) and extend until the last Sunday in December in the areas described in subsections 365(a)(1), (2), (3) (4) and (5) above. In those areas designated as deer hunting zones X-1 through X-7b, the bear season shall open on the second Saturday in October and extend until the last Sunday in December and extend for 79 consecutive days. ~~The bear season shall be closed when the department determines that 1,700 bears have been taken pursuant to the reporting requirement in section 708(e). The department shall notify the commission, the public via the news media and bear tag holders via the U.S. mail and the news media when implementing this closure.~~

(c) Bag and Possession Limit: One adult bear per season hunting license year. Cubs and females accompanied by cubs may not be taken. (Cubs are defined as bears less than one year of age or bears weighing less than 50 pounds.)

(d) No open season for bear in the balance of the state not included in subsection (a)

above.

(e) Bait: No feed, bait or other materials capable of attracting a bear shall be placed or used for the purpose of taking or pursuing a bear. No bear shall be taken over such bait. No person may take a bear within a 400-yard radius of a garbage dump ~~or bait~~.

Note: Authority cited: Sections 200, 202, and 203, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, and 207, Fish and Game Code.

§ 366. Archery Bear Hunting.

Bear may be taken with bow and arrow during the bear season as specified in section 365 and as follows:

(a) Areas: Those portions of the state as described in subsection (a) of section 365.

(b) Season: The archery bear season shall open ~~on the third Saturday in August~~ concurrent with the deer archery season in respective deer hunt zones and extend for 23 consecutive days. There is no open season for taking bear with bow and arrow in the balance of the state.

(c) Bag and Possession Limit: One adult bear per season ~~season~~ hunting license year. Cubs and female accompanied by cubs may not be taken. (Cubs are defined as bears less than one year of age or bears weighing less than 50 pounds.)

(d) The use of dogs is prohibited during the archery season for bear.

(e) Bait. No feed, bait or other materials capable of attracting a bear to a feeding area shall be placed or used for the purpose of taking or pursuing a bear. No bear shall be taken over such bait. No person may take a bear within a 400 yard radius of a garbage dump ~~or bait~~.

~~(f) No more than 15,000 bear tags shall be issued pursuant to section 367 (see subsection 365(b)).~~

Note: Authority cited: Sections 200, 202 and 203, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1 and 207, Fish and Game Code.

APPENDIX 2

Black Bear Management Plan July 1998

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California Department of Fish and Game
Wildlife Programs Branch
1416 Ninth Street, Room 1270
Sacramento, CA 95814
(916) 653-7203





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.



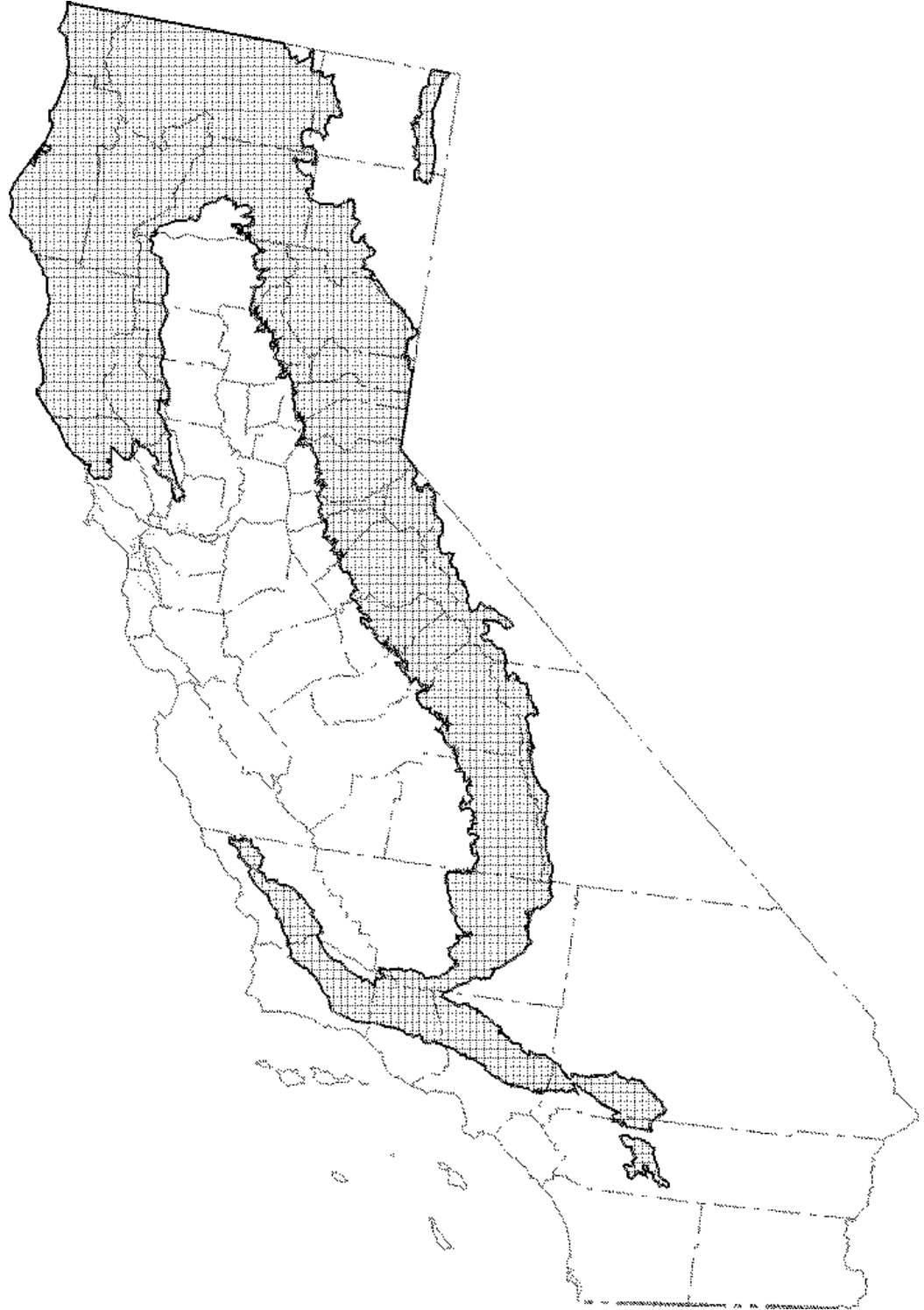
During the winter portion of the Department's black bear survival and production study, bear dens are located. Some bears den high, inside large coniferous trees, while others den in caves or large logs and stumps on the ground. A look inside one den reveals a sow nursing her cub while hibernating. Photos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

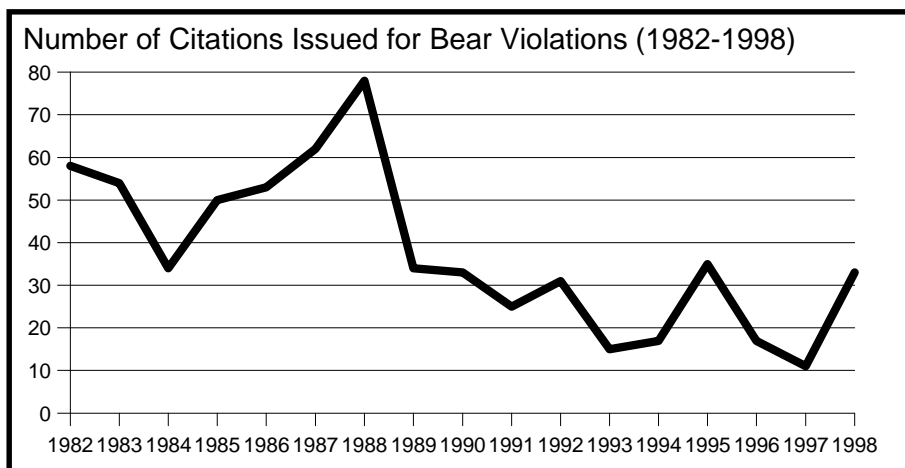
1.6 Law Enforcement

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

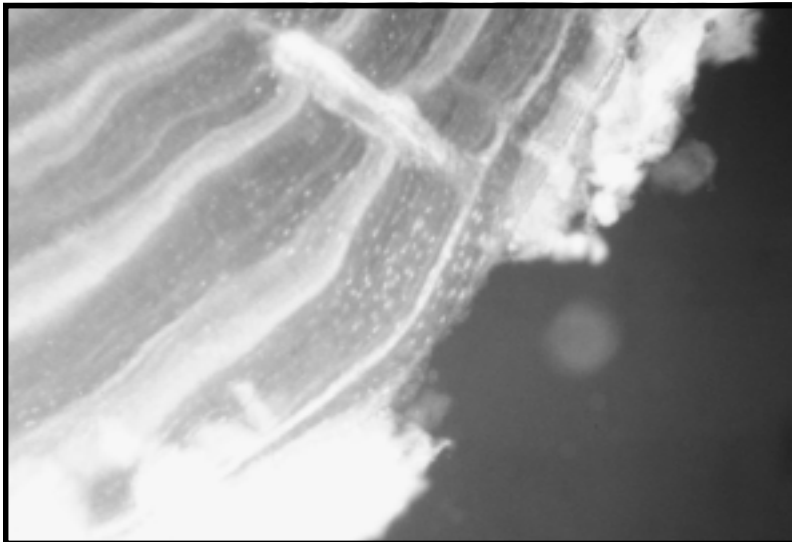


2.1 Population

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.

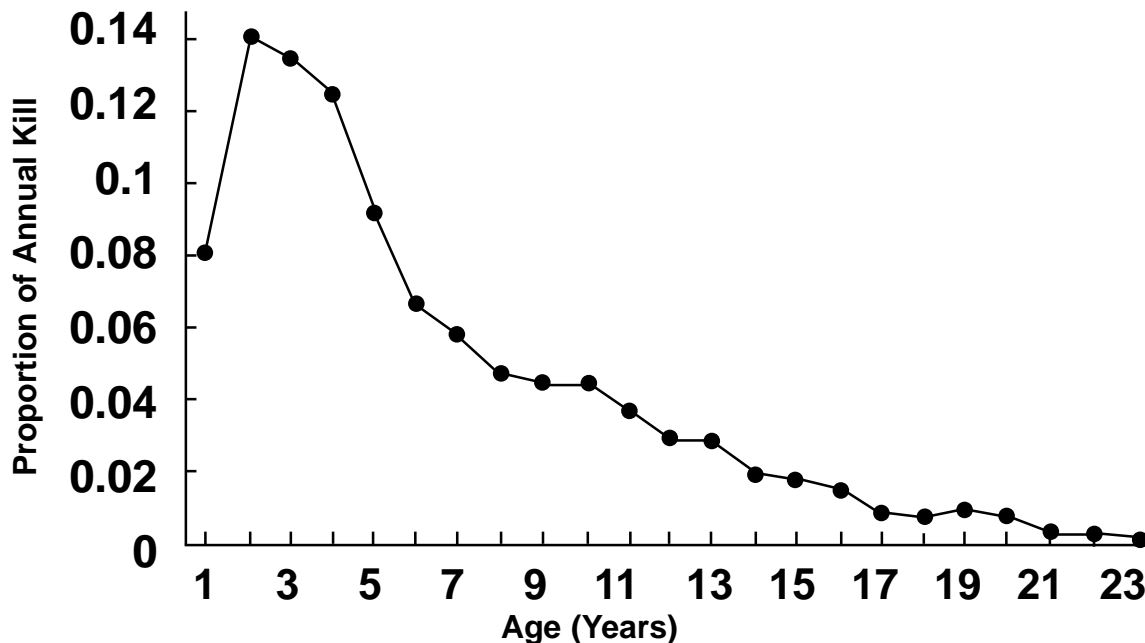
2.3 Hunting Recreation

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.



THE GRIZZWELLS



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.

Originally 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.

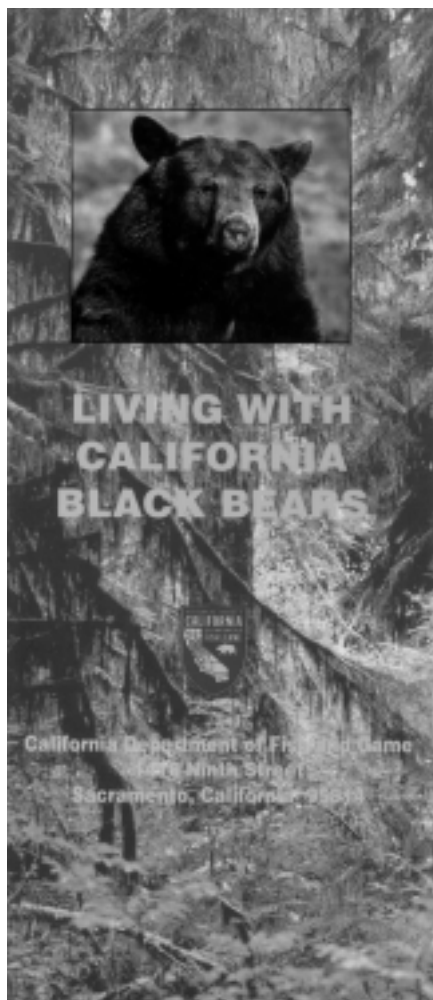


3.8 Public Information

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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APPENDIX 3

2010 Black Bear Computer Simulated Population Analysis

2010 Computer Simulation Analysis

The potential effects of the proposed project on the dynamics of the State's bear population were analyzed with the aid of a computer model. Computer modeling has become an important tool for wildlife managers as well as for wildlife researchers. The dynamics of large mammal populations such as deer, black bears, pronghorn antelope, and elk exhibit many similarities. For example, all large mammals have a minimum breeding age and each species has measurable reproductive rates. These observed rates of recruitment and survival can be used to model how a given population will behave under a given set of circumstances. Numerical values for these parameters are species, sex, and age specific. As an example, it is common for female black bears to come into estrus at 2.5 to 3.5 years of age, however, they generally do not successfully reproduce until they are 4.5 years old (Piekielek and Burton 1975, Sitton 1982, Department of Fish and Game 1996). Bears four years and older normally produce an average of 1.6 cubs in alternate years. Thus, a black bear population model would assign reproductive values and survival patterns that would reflect these unique capabilities.

For a population model to provide reliable predictions, it must account for significant biological phenomena. Users of simulation models must recognize the assumptions made in developing the model and the mechanical structures used in the model must not violate those assumptions (Conely 1978). As an example, black bears suffer differential hunting mortality because males are larger and more desirable to hunters. Males also move over larger areas than females and have a higher chance of encountering a hunter (Beecham and Reynolds 1977, Koch 1983, Rogers 1987, Litvaitis and Kane 1994). Therefore, it is important that survival coefficients (the number of young that survive) be developed for males and females in any model used for analyzing hunted black bear populations. In 1986, the Department contracted with Dr. Reginald Barrett, Associate Professor in Wildlife Management at the University of California at Berkeley, to develop a black bear population simulation model. In 2000, Dr. Barrett reworked the original model to remove the assumption of compensatory mortality. Dr. Barrett's credentials and qualifications can be obtained through the College of Natural Resources, Department of Forestry and Resource Management, 145 Mulford Hall, University of California, Berkeley, California 94720. Dr. Barrett was selected to develop the model because he is a nationally recognized expert in large mammal ecology and in the use of microcomputer simulation models for analyzing wildlife populations.

Model Assumptions

The model Dr. Barrett developed was used by the Department to assess the performance of the State's bear population as well as the potential effects of the proposed project and alternatives to the proposed project. Thirteen assumptions were made in developing the model and in interpreting the results obtained from completing simulation runs. The assumptions are as follows:

1. Black bears are long-lived seasonal breeders. This assumption was based on information collected from both live-trapped and hunter-killed bears in California (Piekielek and Burton 1975, Graber 1982, Sitton 1982, Koch 1983, Stafford 1996) which indicated black bears can live to over 20 years of age and that they breed in the summertime (July);
2. Females first successfully breed at four years of age, then every other year unless a litter is lost. This assumption is based on information obtained in studies completed in California (Piekielek and Burton 1975, Graber 1982, Sitton 1982, Koch 1983, Keay 1990) as well as information obtained in the scientific literature (Jonkel and Cowan 1971, Beecham and Reynolds 1977, LeCount 1977, Rogers 1987). This is also supported by reproductive data gathered from the teeth of hunter killed bears since 1993 (California Department of Fish and Game 1996);
3. Recruitment of a seven-month old cub is primarily a function of the age of the female (maternal skill) and essentially independent of bear density. This assumption is based on studies completed by Jonkel and Cowan (1971), Beecham and Reynolds (1977), Rogers (1987), and Elowe and Dodge (1989). The recruitment rate used in Dr. Barrett's model for younger mothers is lower than for older mothers (maternal skill);
4. The sex ratio of recruits is equally divided between males and females. This assumption is based on observed data in California (Piekielek and Burton 1975, Graber 1982, Sitton 1982, Koch 1983) as well as information collected in other states (Jonkel and Cowan 1971, Rogers 1987, Elowe and Dodge 1989);
5. Bear densities are limited primarily by food availability. This assumption is based on data reported in the scientific literature from studies completed in California and other states (Rogers 1976, LeCount 1977, Graber 1982, Grenfell and Brody 1983, Elowe 1989);
6. Adult males tend to kill subadults (recruits) in dense populations. This assumption has been well documented in the scientific literature (Jonkel and

Cowan 1971, Kemp 1972, Poelker and Hartwell 1973, Kemp 1977, Rogers 1987, LeCount 1993, Stafford 1995);

7. Natural mortality of adult bears occurs primarily in the winter. This assumption is based on the fact that if bears cannot put on enough fat to survive the winter, they generally will not den and hence, will not survive because there is little if any bear food available during the winter months;
8. Natural mortality is curvilinearly related to the ratio of bear density to available food. This assumption is based on information presented in the scientific literature. Essentially, researchers found that black bear reproduction declines in years of mast crop failures (Jonkel and Cowan 1971, Rogers 1977, Elowe and Dodge 1989);
9. There are age specific survival rates with very young (yearling) and very old bears having the lowest survival rates. This assumption is based on information reported by Kemp (1972 and 1977), Beecham and Reynolds (1977), Bunnell and Tait (1981), and Frasier (1982);
10. Young males have lower survival rates than young females. This assumption is based on the evidence presented by Jonkel and Cowan (1971), Koch (1983), Rogers (1987), and Elowe and Dodge (1989). These researchers found that young males tend to disperse farther from their mother's home range and thus have a significantly higher chance of encountering hunters or other factors which may increase mortality rates;
11. Hunting losses occur in the fall. This assumption is based on past bear hunting regulations adopted by the Commission which established fall hunting seasons;
12. Hunters select for bears based on live weight, and young of the year are not harvested. This assumption is based on past bear hunting regulations adopted by the Commission which prevented the take of cubs or females accompanied by cubs. The fact that hunters select for large bears is well documented in both the popular and scientific literature. Hunters using dogs tend to be particularly selective (Litvaitis and Kane 1994); and
13. Hunting mortality is additive to natural mortality. While evidence indicates that, up to a point, hunting mortality subtracts from rather than adds to nonhunting mortality (Kemp 1972 and 1977, Bunnell and Tait 1981, Miller 1990, Schwartz and Franzmann 1991), the Department is making the assumption (in the computer simulations) that hunting mortality adds to natural mortality. This is a very conservative approach because in California bear populations less than 10

METHODS

Population changes were simulated under varying harvest scenarios utilizing the program POPMODBB-ADD (Barrett, 2000). The model was used to provide predictions of the potential effect of various options, alternatives or hunting strategies on the bear population. Those outcomes are discussed in Chapter 2 of the 2010 Environmental Document Regarding Bear Hunting. The model was tested by attempting to mimic observed data including age structure, sex ratios and hunter kill as determined from direct field observations and hunter reports (bear tag return, bear premolar tooth analysis and the Game Take Hunter Survey). The model approximates the observed age structure of the bear population.

Seven variables are required to be input to run this program: 1) number of years for the run; 2) beginning year; 3) average carrying capacity; 4) range of the carrying capacity; 5) legal harvest; 6) legal harvest variance; and 7) estimated illegal harvest. For this analysis, the program was run for 50 years periods beginning in 2009. Statewide carrying capacity was estimated from intrinsic population growth rates (e.g. population growth rates plotted against time – the upper sigmoidal asymptote approximates carrying capacity). The carrying capacity range was equated to the variance associated with prior years' population estimates, which were derived from the sex and age structure of the harvested population (Fraser et al. 1982, Fraser 1984) and from direct field observations. Carrying capacity was estimated at 40,400 plus or minus 5,347. The random carrying capacity function within POPMODBB-ADD was used for simulations because it better represents field conditions wherein resources become more or less available annually. Legal harvest variance was approximated by the average deviation from the mean harvest over the last nineteen years. Illegal harvest was calculated as a percentage of the legal harvest and was determined by running multiple iterations of the model with varying levels of illegal harvest; the model that resulted in sex and age ratios that most closely represented the observed population was selected. The resultant annual illegal harvest estimate was calculated to be 12% of the legal harvest, or 216 bears at the current level of legal harvest. However, some members of the general public have expressed concern regarding the level of illegal harvest. To address this issue, the Department conservatively doubled this percentage of illegal harvest in the model iterations for this analysis.

A “benchmark” model was developed using these input parameters in

conjunction with the current legal harvest (Figure A-1). This model most closely mimics observed conditions (except illegal harvest rates) and was used to compare the anticipated effects of various actions (mortality levels) on the bear population. It is important to realize that the cause of mortality is not the important issue when assessing the effects on the bear population. The total mortality level experienced by the population is the key factor in determining the health and condition of the statewide bear population.

RESULTS

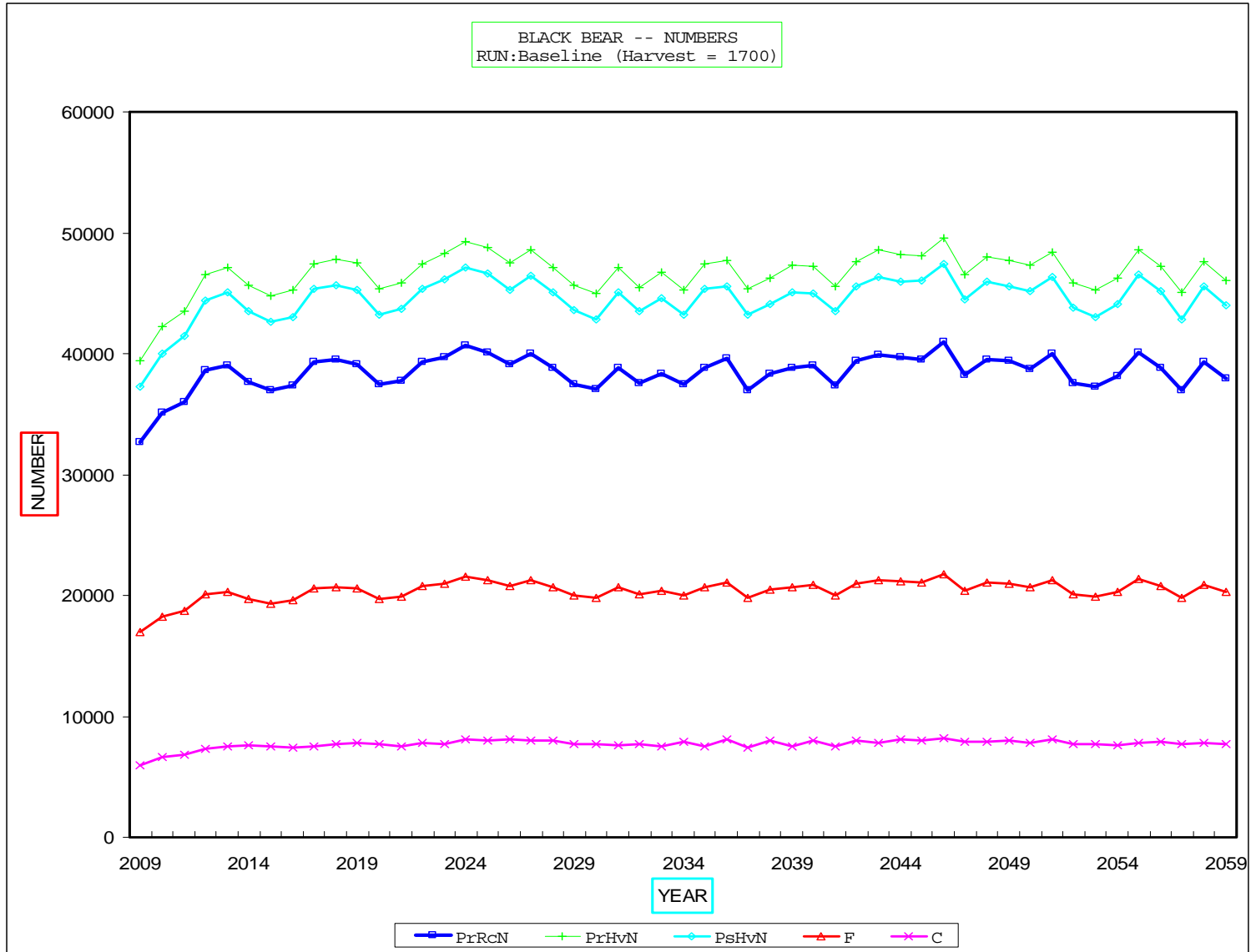
The Department estimates bear population size from sex and age ratios of the hunter-harvested bears (Frasier's method). This number is analogous to the pre-harvest population number as depicted in the population model. Furthermore, carrying capacity in this population model influences the pre-recruitment population number. As it is more biologically meaningful, this analysis reports the latter.

The options and alternatives presented within the proposed project involve varying levels of statewide harvest. As such, the Department has examined three scenarios to address the level of harvest resulting from any possible combination of options or alternatives selection. The no project alternative would maintain the statewide black bear harvest at the level resulting from the 2009 hunting season, and is analogous to the baseline model (Figure A-1). Under existing hunting regulations, the statewide black bear pre-recruitment population is expected continue to increase for approximately five years and then stabilize and fluctuate around 39,000 individuals.

An option presented in the project would allow an annual harvest of up to 2,500 bears, and the results of this model are presented in Figure A-2. When the statewide bear population is subjected to a harvest level of 2,500 bears, the pre-recruitment population, as modeled, is expected to continue increasing for approximately seven years and then stabilize and fluctuate around 39,000 individuals.

Lastly, the Department has determined the maximum level of harvest the statewide bear population can sustain. This threshold was ascertained by exposing the model to multiple iterations of varying levels of harvest while maintaining other input variables constant. The bear population begins to crash (mortality exceeds recruitment) at harvest levels greater than 3,100 bears (Figure A-3). Given that illegal harvest mortality was conservatively doubled in the model relative to the observed mortality in the population, the statewide bear population is likely to withstand a level of harvest greater than 3,100 bears.

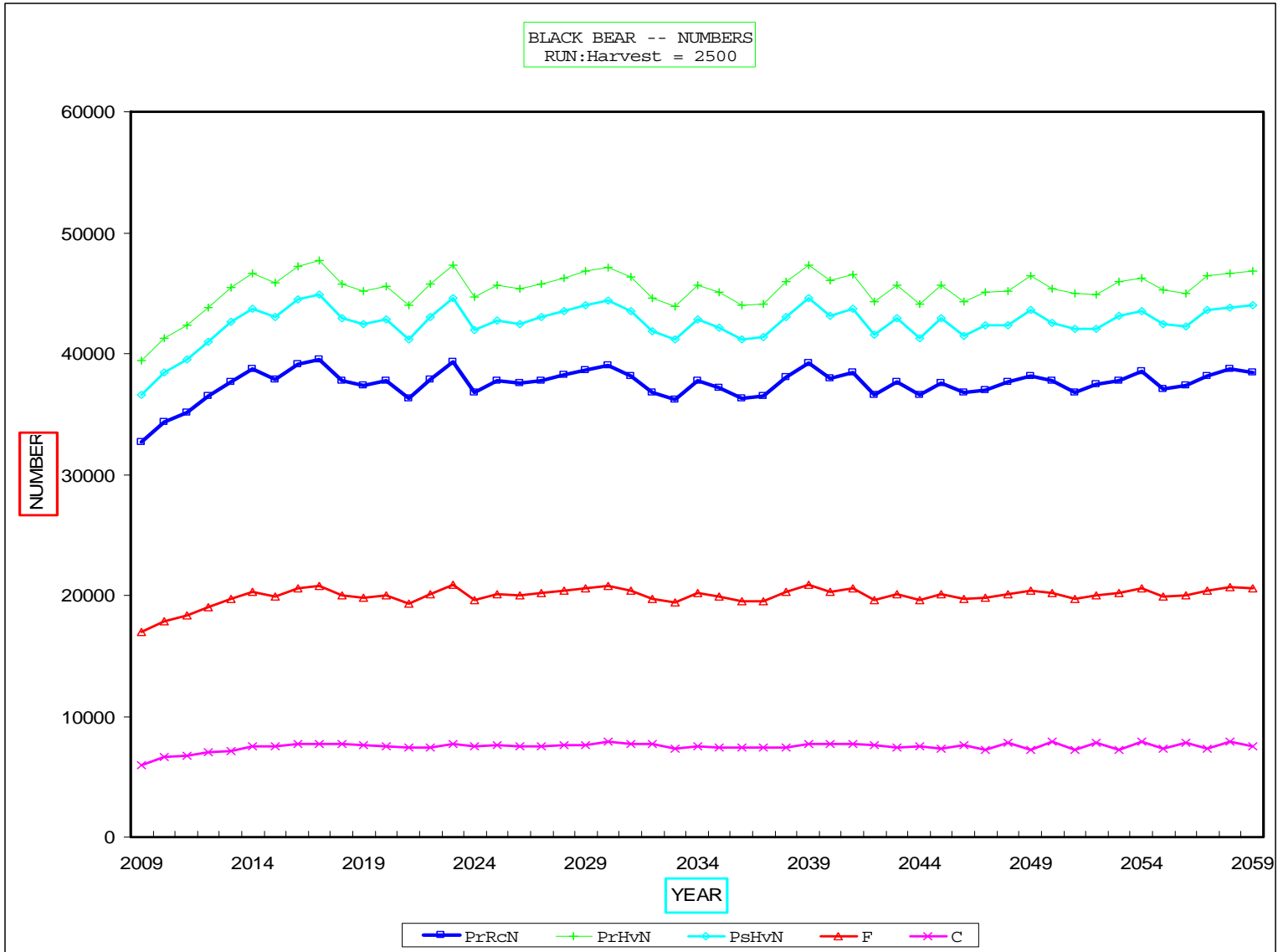
Figure A3-1. Population Model results reflecting baseline conditions (Harvest = 1700) bears.



A-53

Appendix 3 Continued

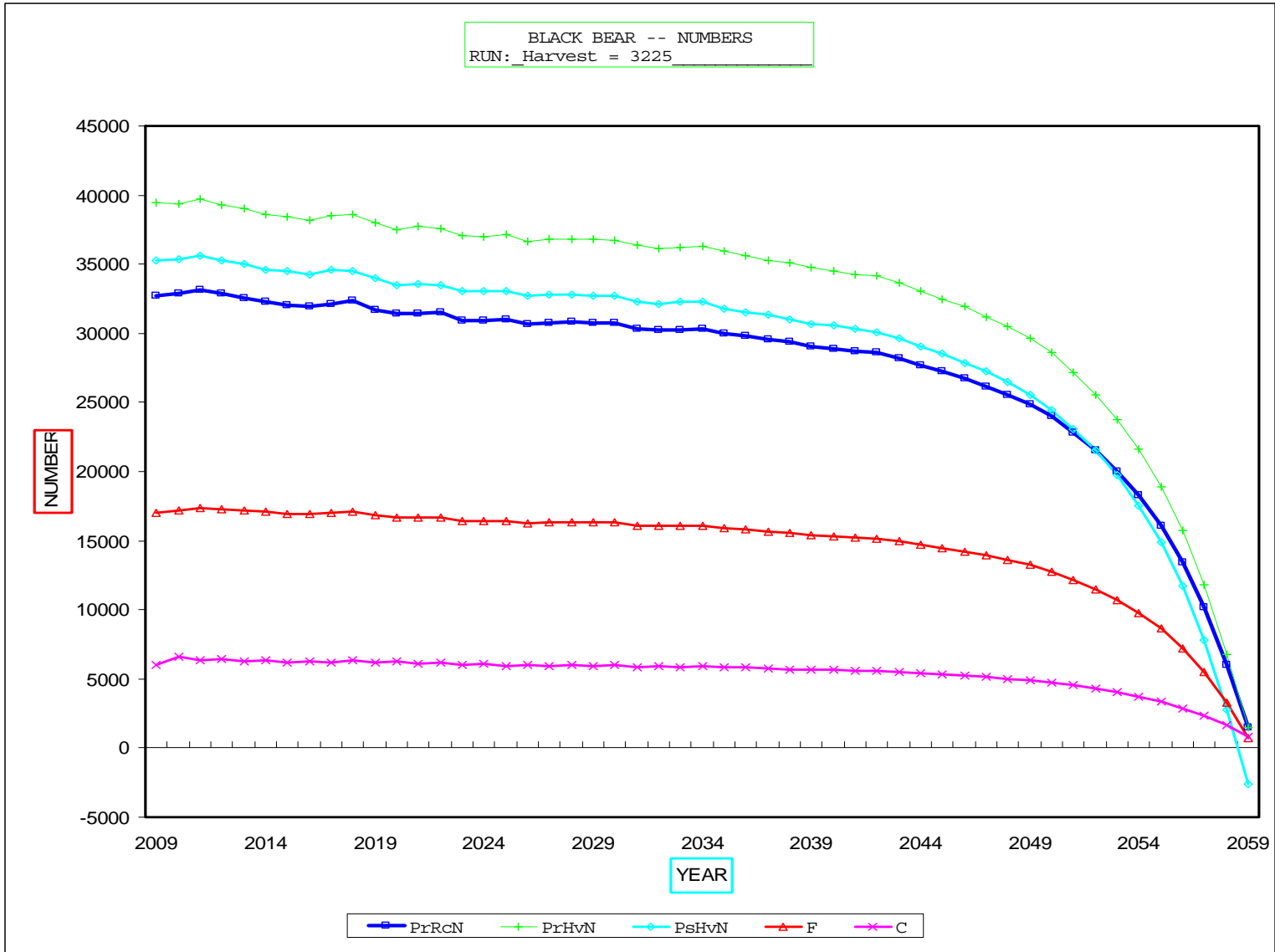
Figure A3-2. Population Model results reflecting statewide harvest of 2500 bears.



A-54

Appendix 3 Continued

Figure A3-3. Population Model results reflecting statewide harvest of 3225 bears.



A-55

Appendix 3 Continued

APPENDIX 4

2010 Black Bear Habitat and Climate Change Models

Habitat Suitability Index Model Development

BACKGROUND

Species-habitat relationship models relate occurrences of wildlife species to habitats. The architecture for these models was first developed by Patton (1978) and Thomas (1979). Three levels of these models have been described by Mayer (1986) for use by wildlife managers as tools to strengthen management decisions. The most widely used species-habitat relationship model is called Level 1, where a relative value is established for a habitat, based on a species' life activities in relation to the conditions (structure) of the habitat. The California Wildlife Habitat Relationships (CWHR) system is based on Level 1 models.

There are approximately 650 terrestrial (land based) wildlife species residing in or regularly migrating to California. Their use of habitats is varied and complex. In order to understand these relationships, wildlife biologists in California, through an interagency effort (government and private), have created species habitat relationship models for all 650 terrestrial species. These models simply rate the species preference for a habitat and successional stage (stage of growth) based on research, published literature, and expert opinion. A species' preference for each habitat is rated as optimum, suitable, marginal, or not used for life sustaining activities such as reproduction, foraging, and cover (Airola 1988). Each of these models has been thoroughly reviewed by experts familiar with each species.

The CWHR system organizes existing wildlife-habitat information. The models relate four ratings of habitat suitability (unsuitable, marginal, suitable, or optimal) for an array of habitat successional stages for reproduction, foraging, and cover. These models have been developed for all terrestrial vertebrate species residing in or regularly migrating to California (Airola 1988).

The CWHR Level 1 models are one component of an information system that describes California habitats, species management status, distribution, life history, and habitat requirements of all California's wildlife species (Airola 1988, Mayer and Laudenslayer 1988). The system represents a state-of-the-art tool for wildlife management, teaching, and research throughout the State. Much of the assessment of the cumulative effects of the State's changing environment on bears has been based on the CWHR bear-habitat relationship model.

As described above, the CWHR system is an extensive compilation of species-habitat interactions as well as natural history information about individual species. The CWHR system (Mayer and Laudenslayer 1988) was used to classify suitable black bear habitat in the State. The distribution and abundance of suitable habitat was determined using data from the Forest and Rangeland Resource Assessment Program (FRRAP 1988).

A number of publications have been prepared which describe the CWHR system. This published information has been used as references for analyses in previous environmental documents. These publications are: *Guide to the California Wildlife Habitat Relationships System* (Airola 1988), *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988), and *Microcomputer User's Manual for the California Habitat Relationships Database* (Timossi et al. 1989).

Major habitats used by black bears in California include coniferous forest types, montane and foothill hardwood types, and mixed and montane chaparral types. Coniferous forests provide year-round habitat and are preferred denning areas. Forested types such as the mixed coniferous forest which provide mixtures of vegetative types such as chaparral, hardwoods, and conifers tend to support greater numbers of bears than do less diverse coniferous types such as pure stands of true firs.

Black bears utilize hardwood habitats mainly as foraging areas. If sufficient structural diversity such as dead trees and down woody material exists, this habitat is also used for denning and security cover. Because of the food items they provide, chaparral habitats are generally most used by black bears during the fall as mast crops (acorns and fruit) become available. In some areas of the State, these vegetative types are important for reproductive success and cub survival.

The CWHR system describes fifty nine habitats with up to seventeen combinations of tree size class and canopy closure class per habitat. Habitat suitability ratings are defined for each of three life requisites, reproduction, cover and feeding. An evaluation for each habitat was created by ranking a combination of habitat, tree size and canopy closure as high, medium or low for the life requisites (California Wildlife Habitat Relationships System 2000).

HSI REVISION

In 2009, the CWHR bear habitat evaluation was expanded to include additional habitat combinations not previously considered. A total of 992 combinations were found

within the study area, which was defined as likely black bear habitat in California (Figure A4-1). All possible vegetative combinations were ranked a priori for year-round relevance to breeding, feeding and cover based on expert opinion and scientific literature. Geometric mean was calculated to develop a Habitat Suitability Index (HSI), with values ranging between 0.000 and 1.000.

The HSI results were then applied to detail vegetation datasets, primarily EVeg (Existing Vegetation - CALVEG) made available by the USDA Forest Service. A second dataset, Wildlife Habitat Type Map and Database, Central Coast (DFG Region 3) from Humboldt State University was used to represent portions of the central coast in Santa Clara, San Benito and San Luis Obispo counties not currently mapped by Eveg. Model results are displayed in Figure A4-1.

Model results were compared with bear occurrence data from two different locations within the range. For San Luis Obispo County (SLO) we examined scent data collected in 2007 and 2008, additionally we compared results with an occurrence data set provided by staff biologist. These data consisted of a variety of occurrence types, from road killed animals to trapped animals. Some of these locations included public sightings and depredation permits. The scent station data survey sites were specifically selected based on the potential of identifying bears and therefore, were placed in high quality habitat. The second dataset represented more random data throughout the county and provided good representation across habitat types. Results of these data showed that 56% of occurrences were located in areas defined as high suitability, 9% in medium and 36% in the low category (n=102).

The second dataset from the San Gabriel Mountains (SGM) contained radio telemetry locations for seven collared bears (3 female and 4 male) collected between 1987 and 1988. These data show movement patterns across habitat and between animals. The 735 locations cover an area of approximately 50,000 acres. Results of these records indicate more occurrences in highly suitable areas, 71%, 1 % in medium, and 28% in low.

Dominant habitat in these two sites differs; the SLO is dominated by oak woodland, while the SGM site is dominated by hardwood and conifer forests. At both sites a significant number of records intersected with the low suitability category. Examination of these data shows that 70 – 94% of the records are located in mixed chaparral. This suggests that the mixed chaparral may have been ranked lower than it is being used.

Lastly, habitat availability in the SGM study area were compared with documented bear use to examine bear habitat preference. Seventy-one percent of observed bear locations were recorded in the modeled highly suitable habitat which comprises only 16% of the habitat within the range. Only 28% of bear observations were located in the low suitability category which comprises approximately 80% of the available habitat. From these descriptive statistics it appears the model is valid. Additional examination of the mixed chaparral category could improve the strength of the model.

CLIMATE CHANGE MODEL

To guide statewide black bear resource planning efforts, the Department worked in partnership with researchers from the University of California, Berkeley to predict changes in black bear habitat distribution over the next 100 years, given the potential effects of global climate change.

The Department was provided a list of plant species previously modeled and worked with plant ecologists to identify plants that would best represent CHWR habitats within the black bear range. Colleagues at UC Berkeley graciously updated the models and provided results in a GIS format. Six species were used to represent eight of the CWHR habitat types occurring throughout bear range (Table A4-1, Figure A4-2). Plant disruptions were predicted using the Geophysical Fluids Dynamic Laboratory Climate Model 2.1 (GFDL_CM2_1.1) by researchers from the Ackerly Lab (UC Berkeley). Climate Model parameters consider a temperature increase of 3.3 °C , and an 18% percent reduction in precipitation within California. Source input data for the model consists of PRISM climate data (temperature and precipitation), and California herbarium records for each of the species considered.

CLIMATE CHANGE MODEL RESULTS

In order to assess how these vegetation shifts may affect bear habitat suitability, plant disruption data were compiled into a single layer of predicted habitat. Suitability codes for the WHR types above were then cross-referenced with the HSI model by averaging across cover and tree size classes to develop an average HSI rank for each code. The averaged ranks were then applied to the extent of each habitat to come up with a predicted 2070 – 2099 habitat suitability layer (Figure A4-3).

Distributions of the predicted ranges were reviewed by Todd Keeler-Wolf, a respected and published plant ecologist. He summarized that predictions indicate a

major shift in oak woodlands and riparian woodlands away from the valleys and foothills towards the coast. There would be significant constriction of upper elevation montane conifer forests (indicated by *Abies magnifica*) throughout the state. These would be extreme in the southern California mountains and in the north coast ranges. There would be a significant northward shift of southern California coastal scrub habitat (*Malosma laurina*) to central coastal California (assuming there was any non-built up habitat there), and there would be major upward shifts in chaparral (*Q. wislizeni* var. *frutescens*) away from lower foothill areas. Cool temperate forests like coastal redwood, would shrink even more, but would likely maintain some relict populations even down into Monterey County - its' current southern range limit (T. Keeler-Wolf pers. com.). Although optimal bear habitat is predicted to shift toward the coast ranges, much of the current bear range will still be considered suitable habitat and should support a viable and healthy bear population.

Table A4-1. Species Analyzed in Climate Change Model

| Species Modeled | Common Name | Associated CWHR Habitat | HSI Rank |
|---|----------------|---|----------|
| <i>Quercus douglasii</i> | Blue oak | Blue oak woodland (BOW) and Blue oak-foothill pine woodland (BOP) | High |
| <i>Malosma laurina</i> | Laurel sumac | Coastal scrub (CSC) | Low |
| <i>Quercus wislizeni</i> var. <i>frutescens</i> | Live oak | Mixed Chaparral (MCH) | Medium |
| <i>Acer negundo</i> var. <i>californicum</i> | Box elder | Montane Hardwood-Conifer (MHC) and Montane Hardwood (MHW) | High |
| <i>Sequoia sempervirens</i> | Redwood | Redwood (RDW) | Medium |
| <i>Abies magnifica</i> var. <i>shastensis</i> | Shasta red fir | Red Fir (RFR) | Medium |

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Figure A4-1. Black Bear Habitat Suitability Index Model Results.

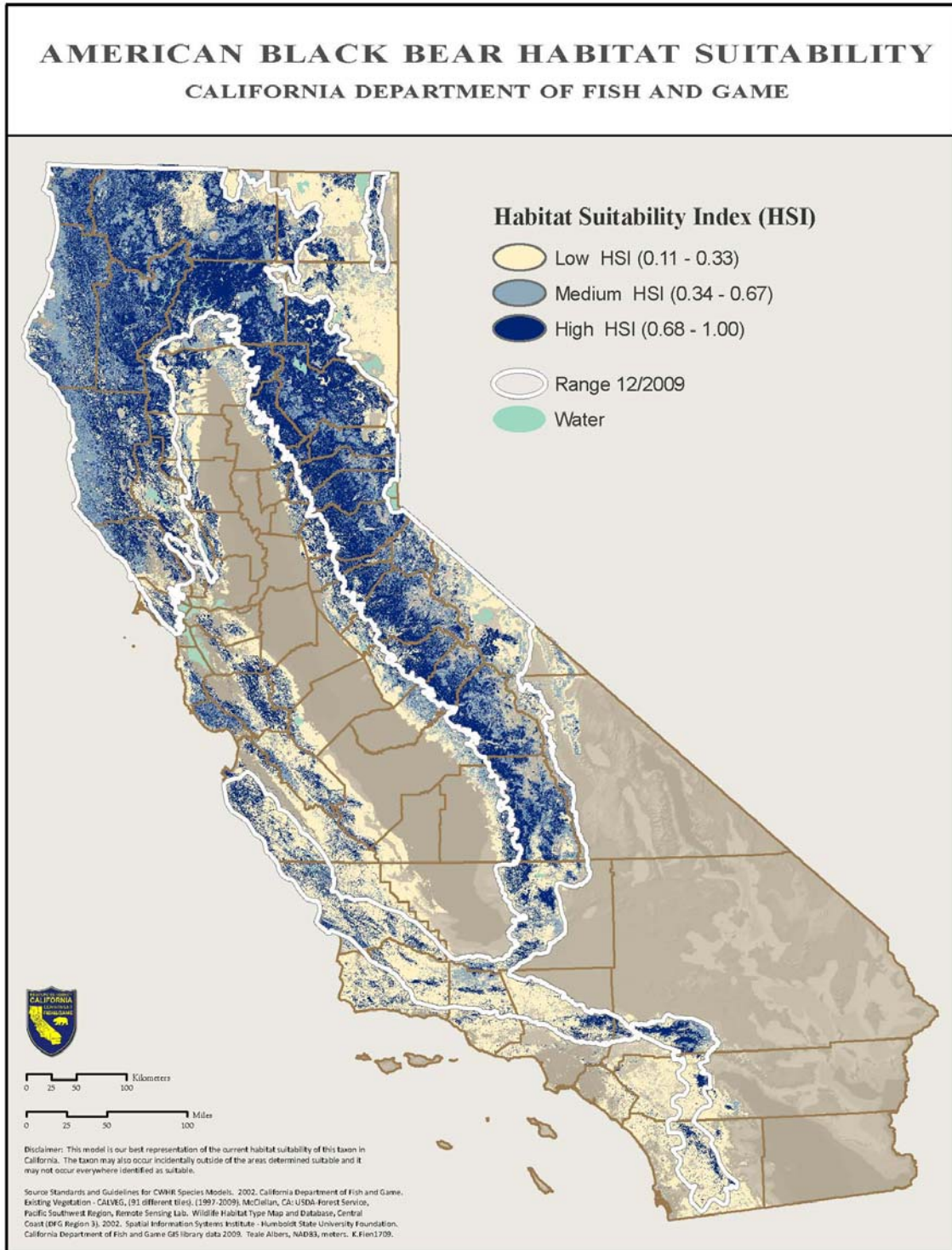


Figure A4-2. Selected Vegetative Species' Distributions as of 2009.

Current extent of species examined for climate change and corresponding CWHR habitat type.

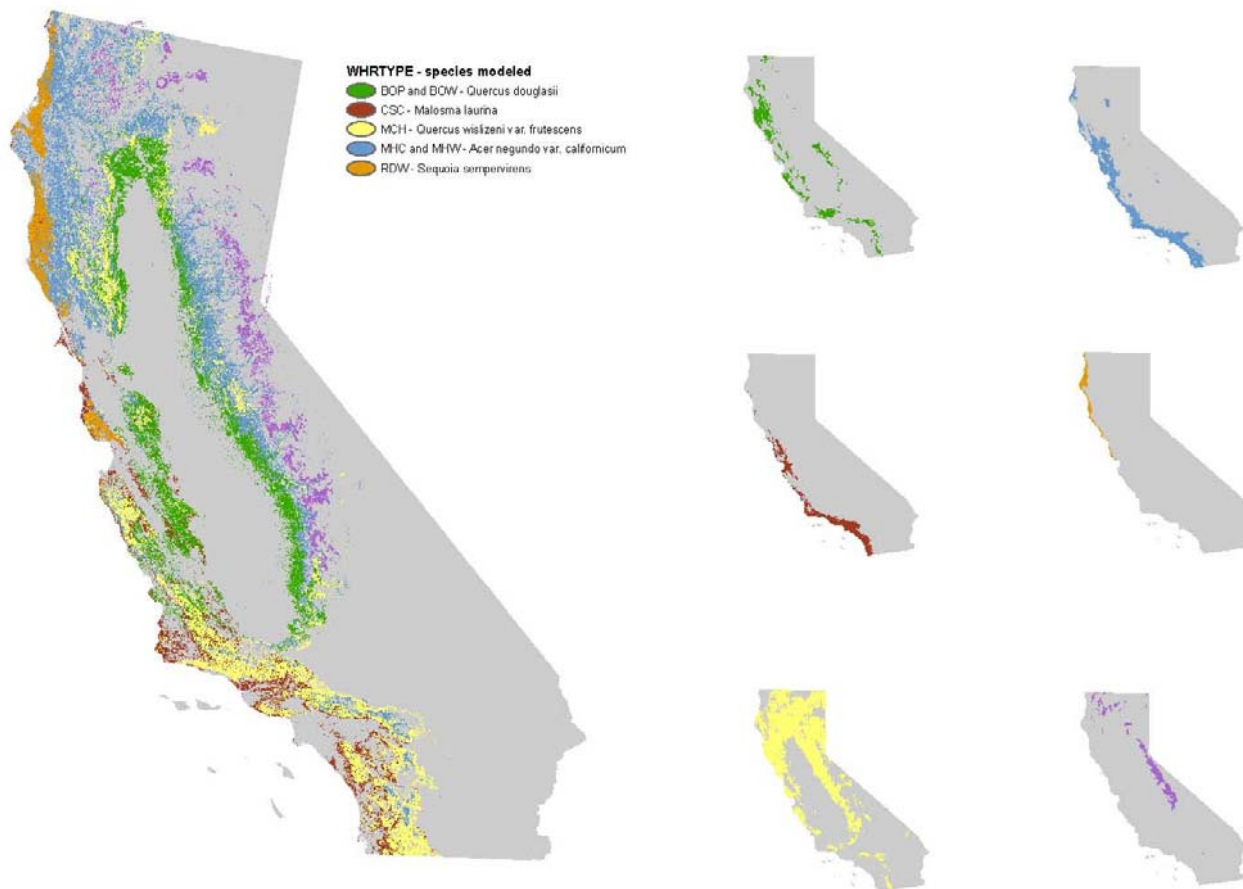


Figure A4-3. Black Bear Habitat Climate Change Model Results

