

6.4 Black Bear Study Plan

6.4.1 Pertinent Issue Questions

The black bear study addresses Terrestrial Resource Issue Questions:

2. "How and where does SMUD's infrastructure and operations affect wildlife movement?"
4. "What are the relevant and known factors affecting bear behavior in the Project area and how/where are these factors influenced by Project operation and maintenance?"
9. "What are the effects on terrestrial resources of having year-round roads in the Project area? (e.g., what are the effects related to bear hunters having access to the Project area because of road clearing?"
13. "What are the impacts on terrestrial resources due to secondary use of project access roads (e.g., OHV use)?"
30. "Relative to effects on wildlife, what is the use of off-road vehicles by season? By month?"

6.4.2 Background

California's black bear population has increased over the past 15 years and is conservatively estimated at between 17,000 and 23,000 animals (CDFG 1998). The species is widespread and relatively common throughout the Sierra Nevada, from foothill habitats to alpine zones. They generally occur in fairly dense, mature stands of many forest types, valley foothill riparian, and wet meadow. Black bears are omnivorous, feeding largely on grasses and forbs, fruits, nuts, insects, and carrion. They generally require large trees and suitable den sites in tree and snag hollows, stumps, logs, caves, or holes in the ground. These habitat elements must be in mature, dense vegetation, and on sheltered slopes for suitable denning. Most young are born in winter dens from late January to early February.

The black bear is a legally hunted species in California. In the Project area, the bear hunting season currently extends from the fourth Saturday in September (same as the General deer hunting season) until the last Sunday in December, but the season closes automatically when 1,500 bears have been taken based on mandatory tag returns. The California Department of Fish and Game (CDFG) regulates bear harvest and management in California, and as such, strives to maintain bear harvest rates within the reproductive capacity of the population to compensate for hunting mortality (i.e., "Threshold of Mortality"; Elowe and Dodge [1989]). Bear populations managed below the "threshold of mortality" can sustain continued, regulated hunting harvest (Claar et al. 1999). However, year-round access on Project roads may increase hunter opportunities and success beyond what would be available if roads were not maintained free of snow during the latter weeks of the bear season. Such increased potential for success will vary among years depending on arrival of snowfall and the date when CDFG receives the allotted 1,500 tags and closes the hunting season. Based on CDFG records, the number of bears taken by hunters in El Dorado County from 1991-2000 were: 39, 34, 50, 27, 47, 23, 44, 44, 29, and 61. Bear populations have been increasing in this region over the last couple of decades, consistent with the statewide bear population (personal communication, D. Updike, CDFG, December 8, 2001).

Conflicts between humans and black bears in high-density recreation areas are a source of concern for managers (Claar et al. 1999). Black bears consume human garbage and hazardous human/bear encounters are increasing in many campgrounds and mountain residential areas, including within the Project area. Measures implemented in such areas as Yosemite National Park to reduce this problem include installation of larger bear-proof food storage boxes, increased enforcement, increased frequency of garbage pick-up, and better environmental education for the public (Thompson and McCurdy 1995). The Eldorado National Forest (ENF) uses similar approaches to black bear management at recreation sites they manage within the Project area.

Year-round access on Project roads may have a more direct influence on bears through increased potential for disturbance at den sites due to chance encounters by winter recreationists (e.g., snowmobiles, cross-country skiers). High intensity winter recreation may cause flight, physiological stress, and/or loss of young (Youmans 1999). Bears, however, generally select den sites away from possible disturbance (Tietje and Ruff 1980), but will abandon dens following subsequent human disturbance (Lindzey and Meslow 1977, Hamilton and Marchington 1980,

LeCount 1983, Manville 1983). Den abandonment has been shown to increase overwinter weight loss to 25 percent of a bear's body weight compared to 16 percent loss for bears that do not abandon their dens (Tietje and Ruff 1980).

Beecham and Rohlman (1994) found that black bears in Idaho may react to increases in road densities by shifting the location of their home ranges to areas of lower road density. In general, female bears avoided roads, while males used roads in proportion to their availability. Kasworm and Manley (1990) reported that black bears in Montana avoided habitat within about 300 yards of open roads, while Beecham and Rohlman (1994) found that both sexes prefer to stay at least 50 yards from roads, except when feeding. In a North Carolina study, crossing of roads by bears was found to be directly related to traffic volume but the frequency of crossings did not vary by sex, age, or season (Brody and Pelton 1989). The North Carolina study also found that bears did not restrict their movements in reaction to road density within established home ranges.

In summary, impacts of recreation on black bears are not well understood. Separating effects from the various types of potential disturbances is difficult, yet research has shown that black bears are relatively tolerant of human use of roads and trails, especially outside of the denning season (Claar et al. 1999). Disturbance at den sites, however, can result in abandonment of the den, possible loss of young, and/or physiological stress.

6.4.3 Study Objectives

The objectives of this study are as follows: 1) Based on consultations with CDFG, determine if the agency is concerned about Project-related effects on bear harvest (both legal and illegal) or about effects of winter recreation on denning bears (Phase I); 2) If CDFG raises specific concerns about these Project-related effects then implement studies to determine the significance of these effects. Studies, if necessary, will focus on: 1) the relationship between harvest of bears and the availability of year-round access roads maintained free of snow for access to UARP facilities; and 2) the type, frequency, duration, intensity, and distribution of Project-related recreational use during the winter denning season in relation to the distribution of suitable denning habitat.

6.4.4 Study Area and Sampling Sites

The study areas for each objective are as follows:

- Objective No. 1: Roads maintained free of snow for year-round access to Project facilities;
- Objective No. 2: Distribution of Project-related recreation sites to be determined by the Recreation Technical Working Group (TWG) with input from the Terrestrial Resources TWG. The study area for determining distribution of suitable denning habitat corresponds to that used for the Vegetation Mapping Study (i.e., 0.5-mile from Project features).

Field studies will be restricted to those lands where the Licensee has legal access (e.g., ownership/easement rights, public lands) and will not occur on private lands without prior permission from the landowner.

6.4.5 Information Needed From Other Studies

Information on winter recreation patterns will be obtained from the various Recreation studies. The location of Project-access roads maintained free of snow will be obtained from the Licensee. The extent and distribution of human/black bear encounters will be obtained from the ENF and CDFG. Bear harvest and management information will be determined from CDFG.

6.4.6 Study Methods and Schedule

This study consists of two Phases:

Phase I: The Licensee will consult with bear experts and enforcement personnel at CDFG (i.e., Doug Updike and Rob Pirtle) to determine if CDFG, as the agency responsible for managing black bear populations in the State, has any concerns over Project-related effects on bear harvest (both legal and illegal) or potential effects of winter recreation on denning bears..

Phase II: If concerns are raised by CDFG during Phase I, the Licensee will implement the following studies:

Hunting Access: CDFG bear harvest and management records will be examined for known locations and dates of bear kills within the Project area. A map will be prepared showing the spatial relationship of bear kill locations with Project-access roads. The literature will be reviewed and summarized for information pertaining to hunter success in relation to road access. CDFG will be contacted regarding bear management objectives within the Project area and to determine the agency's concerns, if any, over the availability of year-round access roads and bear harvest, including poaching.

Winter Recreation: The type, distribution, and extent of winter recreation in the study area will be obtained from the Recreation TWG. A map will be prepared showing the spatial relationship of this recreation relative to the distribution of suitable denning habitat (i.e., dense, mature vegetation on sheltered slopes) within the study area. The distribution of denning habitat will be based on the results of the Vegetation Mapping Study and a literature review to determine the key habitat characteristics of suitable denning habitat.

In addition to the methods mentioned above, incidental observations of bears reported by field biologists, SMUD and ENF personnel, and the public will be summarized for analysis of bear distribution within the Project area. To the extent available, these records will be supported by information on sex, age, activity, and all other parameters of significance to bear management in the area.

6.4.7 Analysis

If Phase II is determined to be necessary by Phase I, analysis will be conducted for each of the study components as follows:

Hunting Access: The bear harvest data will be analyzed to determine if Project access roads have a substantial influence over hunter success. This information will be discussed with CDFG to determine if a need exists for a road management plan that considers hunter access and black bear management. If a plan is deemed necessary, it will be developed by the ENF in consultation with the Licensee and CDFG.

Winter Recreation: The spatial relationship between winter recreation patterns and distribution of suitable denning habitat will be evaluated by the Licensee in collaboration with ENF and CDFG biologists to determine if a need exists for a winter recreation management plan that considers recreational access and bear management concerns.

6.4.8 Study Output

Study results will be presented to the Terrestrial Resources TWG and Plenary Group toward the end of 2002. However, the ultimate study output will be a written report that includes the issues addressed, objectives, study area, methods, analysis, results, discussion, and conclusions. The reports will be prepared in a format that allows the information to be inserted directly into the Licensee-prepared Draft Environmental Assessment that will be submitted to FERC with the Licensee's application for a new license.

6.4.9 Preliminary Estimated Study Cost

A preliminary estimated study cost will be prepared after the Plenary Group approves the plan.

6.4.10 TWG and Plenary Group Endorsement

On April 16, 2002 the following entities gave approval to the plan: USFS, BLM and SMUD.

On May 1, 2002 the following participants gave Plenary Group approval to the plan: USFS, BLM, USFWS, Taxpayers of El Dorado County, Friends of El Dorado County, Camp Lotus, El Dorado County Water Agency, El Dorado County, Placer County Water Agency, California Department of Fish and Game, California State Water

Resources Control Board, Pacific Gas and Electric and Friends of the River. None of the participants at the meeting said they could not “live with” this study plan.

6.4.11 Literature Cited

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