

## **6.9 Northern Goshawk Study Plan**

### **6.9.1 Pertinent Issue Questions**

The northern goshawk study addresses Terrestrial Resource Issue Questions:

- 7(b). "What are the relevant and known factors (limiting and beneficial) affecting special status bird populations in the Project area and how/where are these factors influenced by Project operation and maintenance?"
- 21. "What are the Project impacts on special status birds with particular emphasis on Project facilities, operation, maintenance and Project-induced recreation?"
- 34. "To what extent do Project operations and maintenance activities and Project-induced recreation affect northern goshawk populations?"

### **6.9.2 Background**

The northern goshawk has the following special status designations: Federal Species of Concern, California Species of Concern, Forest Service Sensitive Species, and Forest Service Management Indicator Species. Nesting northern goshawks may be affected directly or indirectly by any new Project construction that may be proposed (e.g., loss of habitat to new recreation facilities, maintenance activities such as vegetation clearing within transmission line rights-of-way, or by related activities such as recreational use of the area. Recreational effects are most acute where active nests are located along trails, roads and other areas that receive heavy traffic. Goshawks initiate breeding when the ground is still covered with snow and recreational activity is minimal and nests are sometimes directly located along roads and trails that provide flight access. Such sites become prime candidates for disturbance following snowmelt as recreationists begin to use these roads and trails.

The northern goshawk on the west slope of the Sierra Nevada, breeds from about 2,500 feet in elevation in the ponderosa pine/mixed-conifer vegetation types up to approximately 10,000 feet in the red fir and lodgepole pine types (USDA 2001). They are generally year-round residents in suitable habitat but some limited seasonal altitudinal movements may occur. Nests are generally constructed in live conifer or hardwood trees, but also occasionally in snags. Nest trees are usually among the largest trees in a stand. Nests are usually established in stands of trees that exhibit greater canopy cover, greater basal area, greater numbers of large diameter trees, lower understory cover, and more moderate slopes relative to non-used stands. Currently, over 500 occupied nest territories are known to occur on national forest lands of the Sierra Nevada (USDA 2001).

The goshawk nesting period extends from mid-February through mid-September, with egg laying occurring between mid-April and mid-May (USDA 2001). The incubation period is approximately 32 to 34 days. The nestling period is approximately 42 to 45 days and, once fledged, juveniles remain in the nest area for a period of four to eight weeks before dispersing. Annual variation in reproduction is affected by weather and prey dynamics, and not all pairs of goshawks reproduce each year.

The goshawk preys mainly on small mammals (e.g., tree and ground squirrels, rabbits) and birds (e.g., Steller's jay, northern flicker, American robin) on or near the ground. Foraging typically occurs in forests with a dense to moderately open overstory, and an open understory interspersed with meadows, brush patches, riparian areas, or other openings (USDA 2001).

The U.S. Department of Agriculture, Forest Service (USFS) has been directed by the Forest Plan Amendment (USDA 2001) to establish 200-acre Protected Activity Centers (PACs) around all known and newly discovered breeding territories detected on national forest lands. PACs are intended to contain the best available nesting habitat in the largest contiguous blocks possible, based on aerial photography. In patchy habitats, PACs are to consist of multiple patches greater than 30 acres within 0.5-mile of the nest site. Best available forest stands for PACs on the westside of the Sierra Nevada have the following characteristics: 1) trees in the dominant and co-dominant crown classes average 24 inches diameter at breast height or greater and 2) stands have at least 70 percent tree canopy cover. Non-forest vegetation types (e.g., brush and meadows) are not counted as part of the 200 acres.

The USFS is directed to maintain PACs regardless of occupancy status, unless the habitat is rendered unsuitable by a catastrophic stand-replacing event (e.g., fire) and surveys confirm non-occupancy (USDA 2001). Fuel treatment and vegetation management activities are limited within PACs. In addition, Limited Operating Periods (LOPs) prohibit activities within approximately 0.25-mile of a nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. If the location of a nest stand within a PAC is unknown, surveys can be conducted to determine the stand location or the LOP can be applied to a 0.25-mile area surrounding the PAC. LOPs do not apply to existing road and trail use and maintenance or continuing recreation use, except where analysis of a proposed project or activity indicates that disturbance to a nest is likely to result. The LOP may also be waived for individual projects or activities of limited scope and duration, or when a biological evaluation documents that such projects are unlikely to result in breeding disturbance. Where a biological evaluation determines that a nest site will be shielded from planned activities by topographic features that minimize disturbance, the LOP buffer distance may be reduced. PACs may be removed from consideration if surveys determine they are unoccupied for two years.

Eldorado National Forest (ENF) biologists have documented numerous detections of goshawk from within the ENF boundaries. Numerous PACs have also been delineated including several adjacent to Project features as shown in the following table:

<b>Northern Goshawk PACs in the vicinity of Project Features, Bypass Reaches, and Tributaries.</b>	
<b>Reference Locations</b>	<b>Approximate Location of Protected Activity Center</b>
Loon Lake Reservoir	About 1 mile north of upper reservoir on the Ellis Creek tributary
Gerle Creek	Along Gerle Creek about 0.5 mile north of Gerle Creek Reservoir
Gerle Creek Reservoir	About 1 mile east of reservoir between Angel Creek and Rubicon River
Union Valley Reservoir	Adjacent to northwest shore of reservoir; About 0.5 mile east of reservoir and just north of Big Silver Creek; Several scattered around headwaters of Silver Creek above U.V. reservoir
Silver Creek, Jay Bird Creek, Brush Creek, Slab Creek	Several scattered along these streams in vicinity of project reservoirs

### 6.9.3 Study Objectives

The objectives of the northern goshawk study are: 1) to determine the location, extent, and distribution of nesting goshawks in relation to potential sources of Project-related disturbance (e.g., operation, maintenance, and recreation activities), and 2) assess potential effects on goshawk habitat, including foraging and nesting requirements, due to any habitat alteration actions proposed by the Fire and Fuels Management Plan to be developed by the Licensee. This information will be evaluated to determine if Project activities should be modified to reduce adverse impacts to the species and to support the ENF for northern goshawk management.

### 6.9.4 Study Area and Sampling Sites

The study area for determining effects on northern goshawks will be all suitable habitat above 2,500 feet in elevation and within 0.25-mile (as per LOP guidelines presented in the Sierra Nevada Forest Plan Amendment) of Project facilities that provide a potential source of ongoing disturbance to nesting goshawks due to operation and maintenance activities (e.g., dams, powerhouses, intake structures, switchyards, and primary access roads). [Note: Project features that require only minor and infrequent visitation by SMUD personnel (e.g., transmission lines) are not included in the survey area. However, the transmission line corridor would be surveyed should a vegetation management action or other significant activity be proposed within the line. In those situations, a separate evaluation will be performed to consider effects of the action on spotted owls.] Field surveys will be conducted within portions of the study area delineated as described under Pre-field Investigations (See Section 1.5.6). 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. Additional study areas will be included as deemed appropriate by the Licensee in collaboration with agency biologists (e.g., the developed and dispersed recreation areas being identified by the recreation TWG, other areas as determined by the fire and fuels

management plan, and project roads that would be identified through the project sources of sediment study in coordination with the recreation and aquatic TWGs).

#### 6.9.5 Information Needed From Other Studies

A determination of potential Project impacts on nesting goshawks will require information from the Recreation Supply Study, Vegetation Mapping Study, and the Land Management Study. Important information will be also be derived from past and current monitoring efforts conducted by ENF staff biologists, from a review of the scientific literature, and from consultations with the Licensee on proposed Project activities.

#### 6.9.6 Study Methods and Schedule

The northern goshawk study methods are based on the standardized protocols in *Survey Methodology for Northern Goshawks in the Pacific Southwest Region, U.S. Forest Service* (USDA 2000). This methodology will focus on determining the presence of active nests within close proximity to potential Project-related sources of disturbance. The methodology identifies three techniques that can be used to locate goshawks and their nest sites depending on objectives and conditions of a given survey effort. In most situations, a combination of these techniques is most effective, depending on timing, amount and distribution of suitable habitat, and available resources. The three techniques or methods are: 1) Dawn Acoustical Survey; 2) Stand Searches; and 3) Broadcast Acoustical Survey. The Dawn Acoustical Survey is conducted early (February-April) in the breeding season and, therefore, can be logistically difficult to apply where access is limited by snow. Also, listening points using this method only survey a limited area (i.e., 150-yard radius), thereby necessitating many stations to cover a large study area. The Stand Search method can be effective in identifying nest stands when goshawks are not currently breeding or have failed; however, stand searches are extremely labor intensive and best suited to assessments of small habitat patches less than 100 acres in size. The Broadcast Acoustical Survey is a 2-year protocol based on broadcast of taped calls along transects to elicit defensive behavior from territorial adults. This is the most commonly used method for detecting goshawks and is applicable to large areas of land; however, the efficacy of this method for detecting non-breeding goshawks on inactive or failed territories is uncertain, it is sensitive to observer bias, and can be labor intensive and difficult to implement fully in steep, rugged terrain. Based on the specific study area characteristics and objectives of this study, the Broadcast Acoustical Survey appears to be the most appropriate method.

#### Pre-Field Investigations

A step-down approach is used to reduce the area requiring field surveys and to maximize efficiency in surveying specific habitats. This approach will include the following steps to be implemented in early spring 2002:

- Suitable (likely to be occupied) habitat within the Study Area, based on forest structure (species composition, size class, density), patch size, slope, aspect, and proximity of meadows and riparian habitats will be determined from the Standards and Guidelines presented in the Sierra Nevada Forest Plan Amendment (USDA 2001) and supplemented by ENF records. Suitable habitat will be mapped using this information along with the results of the Vegetation Mapping Study. Alternatively, ENF maps of goshawk habitat will be used where available.
- The map of suitable habitat will be overlaid with a map of existing Project facilities that provide a potential source of ongoing disturbance to nesting goshawks due to operation and maintenance activities (i.e., powerhouses, dams, switchyards, intake structures, primary access roads). These map layers will be used to delineate patches of suitable habitat and buffers within 0.25-mile of each facility.
- The habitat/project features map will be overlaid on a map of known territories (from ENF records), and a 1-mile radius around each territory center will be deleted from the area to be surveyed. This radius is likely to contain the current territory AND unlikely to contain an additional territory. The protocols assume that this area is occupied and subject to LOPs. Therefore, no field surveys are required unless verification of status is desired to avoid a LOP. [Note: ENF may verify status of existing nests/PACs as part of their annual management efforts].
- Based on amount of remaining suitable habitat, patch size and distribution, distribution of known territories (including 1-mile radius), and available safe access, develop plan for conducting broadcast acoustical surveys. Use maps and aerial photography to determine optimal placement of survey routes (e.g., roads, trails), transects, and/or points (prominent overlooks). Where the patch size is large enough, the maximum distance between

parallel transects should be 250 m and call stations should be located 200 m apart along each transect. However, based on practical experience in applying this approach along road and trail transects, a 0.25-mile spacing is often sufficient to achieve audible coverage because of the serpentine characteristics of many forest roads and trails in the ENF

### Field Investigations

Field implementation of the 2-year Broadcast Acoustical Survey Method will occur in the area defined during the step-down analysis described above and will include the following procedures:

- Conduct surveys at least twice in each year of the 2-year survey effort. Survey during the nestling (May 17 - June 17) and fledgling (July 1 - August 31) periods. This includes a 4-8 week post-fledgling dependency period). The preferred intervals would be June 1 to August 15. After August 15, many fledgling will have moved out of the immediate vicinity of the nest stand. Surveys may begin 30 minutes before sunrise and must cease at least 30 minutes before sunset.
- At each station, broadcast at 60 degrees from transect line for 10 seconds, listen and watch for 30 seconds. Repeat sequence two more times, rotating 120 degrees from the last broadcast. Repeat 3-call sequence again then move (walk) to the next station.
- During the nestling period (June 1 - 30 preferred) broadcast the adult alarm call (kek-kek-kek), mixed with the food delivery call (if available).
- During the post-fledgling period (July 1 - August 1 preferred), broadcast the wail call, mixed with the male Food delivery call. This call is likely to elicit responses from juvenile birds.
- Do not survey under high wind conditions (> 15 mph) or rain.
- Sound must be detectable at least 200 m from the source. The proposed equipment items to be used are a Sony Mini-disc Walkman broadcasting pre-recorded calls through an Anchor Audio Mini-vox speaker.
- For each detection, record the following information: type of response (vocal non-approach, silent approach, vocal approach), compass bearing, station number and distance from transect, sex and age (adult versus juvenile/fledgling) of responding bird. Plot response location on a topographic map or aerial photo (take GPS reading if possible) and indicate direction of travel if detection was a fly-through.
- Following a detection, conduct stand search for sign, plucking sites, and nests. If nest is found, complete the goshawk nest site data sheet and include information on tree characteristics, California Wildlife Habitat Relationships System size class, canopy closure, slope, activity status, etc.
- Following a detection and documentation of the nest site, an area 1-mile radius surrounding the site may be deleted from further survey efforts.

### 6.9.7 Analysis

The location of any northern goshawk nests or PACs will be evaluated with respect to the proximity of potential Project-related disturbance sources. The evaluation will consider such factors as: 1) clear or obstructed line of sight between nest/PAC and source of disturbance; 2) distance of nest from/PAC from potential disturbance; 3) timing, intensity, and duration of disturbance relative to nesting stage; 4) need to implement LOPs for source of disturbance. The evaluation will include a thorough review of the literature and consultation with experts to determine findings of related studies on the response of goshawks to the types of disturbances in question.

### 6.9.8 Study Output

Study results will be presented to the Terrestrial Resources Technical Working Group (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.

6.9.9 Preliminary Estimated Study Cost

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

6.9.10 TWG and Plenary Group Endorsement

The Terrestrial TWG approved this plan, as amended, on March 22, 2002. The participants at the meeting who said they could “live with” this study plan were USFS, CDFG, CNPS, and SMUD. None of the participants at the meeting said they could not “live with” this study plan.

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.

6.9.11 Literature Cited

USDA (United States Department of Agriculture, Forest Service). 2000. Survey methodology for northern goshawks in the Pacific Southwest Region. August 9, 2000.

USDA. 2001. Sierra Nevada Forest Plan Amendment: Final Environmental Impact Statement, Volumes 1-6 and Record of Decision. Pacific Southwest Region, San Francisco, CA. January 2001.