



Sierra Nevada

Forest Protection Campaign



October 17, 2005

Ms. Susan Joyce, ID Team Leader
Feather River Ranger District
Plumas National Forest
875 Mitchell Avenue
Oroville, CA 95965

RE: Comments on the NOI for the Slapjack Project on the Feather River Ranger District of the Plumas National Forest.

Dear Ms. Joyce,

The following are comments on the Slapjack Project Notice of Intent:

These comments on the proposed Slapjack Project (the “Project”) are submitted on behalf of the Sierra Nevada Forest Protection Campaign, the Plumas Forest Project, and the Sierra Club (collectively, the “Campaign”).

First, the Campaign wishes to make and preserve its objections to any and all aspects of the proposed Project that deviate from the standards and guidelines contained in the original 2001 Record of Decision for the Sierra Nevada Forest Plan Amendment (“2001 ROD”) and implement the 2004 Record of Decision for the Sierra Nevada Forest Plan Amendment (“2004 ROD”). As demonstrated in the Notice of Appeal and Statement of Reasons submitted to the Chief of the Forest Service by the Sierra Nevada Forest Protection Campaign and other organizations, the 2004 ROD and accompanying final supplemental environmental impact statement (“FSEIS”) fail to comply with the National Forest Management Act (“NFMA”), NEPA and other applicable environmental laws and regulations. (Sierra Nevada Forest Protection Campaign (“SNFPC”) *et al.* 2004).¹ Therefore, in addition to the specific objections identified herein, the Campaign wishes to notify the Forest Service that, to the extent that the proposed Project implements any of the changes to the Sierra Nevada Forest Plan Amendment made by the 2004 ROD, the Project is contrary to the law.

I. The Forest Service Should Consider and Address a Number Significant Issues in Its Environmental Review and Planning for the Proposed Project.

¹ A copy of the appeal was submitted with the original comment letter 1-10-05 as an exhibit and is incorporated by reference into these comments.

The Campaign requests that the following issues, information, and analysis be considered, addressed, and disclosed in the environmental review for the Slapjack Project and as part of the planning process for this Project:

A. Description of the Project

The Forest Service should provide a clear and detailed description of the Slapjack Project, including the nature, intensity, and extent of planned logging by unit. The Slapjack NOI states the Forest Service plans to treat 4,800 acres of treatments including 2,773 acres of fuel breaks, 240 acres of group selection, 1,099 acres of mastication, 148 acres of individual tree selection, 841 acres of under-burning, and 87 acres of hand cutting, piling and burning. The Slapjack project also proposes an unprecedented 2,048 acres of herbicide use for brush control and fuel break maintenance. The project also involves road building, restoration and decommissioning and hazard tree removal on level 2-5 roads.

- With respect to size of trees that will be removed, the Forest Service should identify the diameter limit that will be removed within each treatment unit, based upon the 40 percent basal area retention standard in the 2004 ROD (p. 50) (30 percent within eastside pine forests outside of the defense zone, 2004 ROD, p. 51). The Forest Service should provide the underlying data that supports the diameter limit that will be removed. If the project will remove any trees in excess of 30 inches in diameter, the Forest Service should explain the basis for such logging (2004 ROD, p. 50). The Forest Service should not consider “operability” as an excuse for removing trees > 30” in group selection units (24” eastside) or for landing placement where alternative locations exist. Logically, operability issues should not be present is what are essentially small clear cuts that proposed to remove all trees <30”.
- The Forest Service should establish an objective definition of “cost efficient treatments” (2004 ROD, p. 51) and provide data to support any claim that the removal of larger trees is necessary to achieve such efficiency. The need to remove trees larger than 20 inches in diameter to meet fuel objectives in the Sierra Nevada region is disputed by fire scientists. (Guldin and Stine 2003, p. 8). However, the Forest Service has stated that larger trees must be logged to pay for the cost of fuel reduction treatments. (2004 ROD, p. 9).
- The Forest Service should disclose the canopy cover limit that will be applied within each treatment unit and the amount by which canopy cover can be reduced within each unit. If the limit will be less than 50 percent, the Forest Service should explain why the 50 percent standard cannot be met by unit, as required by the 2004 ROD (pp. 50-51).

The QLG portion of the 2004 ROD, p. 69 states "design projects to maintain

a minimum of 40% canopy cover averaged within the treatment unit." The 1998 QLG Act requires adherence to the CASPO Interim Guidelines or "subsequently issues guidelines", neither of which allow for canopy reduction below 40% in the Slapjack Project. Reducing canopy cover to 30% is in conflict with this standard and is contrary to existing law. We debate and disagree with the Forest Service contention that canopy cover in DFPZs must be dropped to 30-40% to effectively alter fire behavior and limit tree mortality. It is clear from recent fire behavior research (Stephens and Moghaddas 2005) that negative fire behavior and tree mortality can be mitigated by effective surface and ladder fuel treatments in a thin-from-below prescription maintaining canopy cover >50% with minimal crown thinning. (Also See Fire and Fuels Section).

The DEIS should disclose the CWHR size class distribution for existing stands and the post-treatment size class distribution for each treatment unit. The Slapjack DEIS should disclose the variable habitat values between and within the post-treatment size classes of the treated stands. CWHR 4 stands are often referred to as suitable habitat for various old forest dependent species such as spotted owl, goshawk, marten, and fisher, yet the lower end of the class 4 strata is only marginal habitat. (Example: The differences between CWHR 4 stands >20" ave. dbh and size D cover class provides much higher habitat value for the above species than 12-15" dbh trees with 30-40% cover.) When calculating residual habitat values in the Slapjack project, the biological evaluation should fully disclose the real value of the post-treatment habitat and not rely on simple averages of CWHR strata labels. Please see and address this issue raised in the attached Science Consistency Review for the Empire project on the Plumas National Forest since it also applies to the Slapjack project.

- The Forest Service should identify the snag and down wood retention levels as directed in the 2004 ROD (p. 51) and the basis for such standards. The DEIS should disclose the impacts of lower snag and large logs retention on cavity nesters and prey species such as northern flying squirrels leading to indirect and cumulative impacts to spotted owls. (see spotted owl section)
- The Forest Service should disclose the acreage (spatially) of planned treatments by treatment type, including (where applicable) group selection, defensible fuel profile zones ("DFPZs"), area treatments, individual tree selection, and other approaches. The agency should specifically identify any logging proposed for purposes other than fuels reduction (*e.g.*, reducing stand density, salvage, insect and disease), including the planned acreage of such logging, the specific units in which such logging will occur, and the rationale for any such treatments. If the project involves reducing stand density to address forest health concerns, the Forest Service should identify the objective criteria used to select the trees removed to meet this objective. The project should identify the specific contribution of fuels reduction treatments to the decreased risk of insect and disease problems related to stand density concerns. If the project involves group selection, the Forest Service should identify whether any basal area or canopy

cover retention standards will apply to such logging, as required by law. (SNFPC *et al.* 2004, p. 123).

- The Slapjack DEIS should disclose the canopy cover reduction of treatment units (DFPZs) with the GS units embedded in them together and not artificially sort out the GS units and count the acres of canopy reduction separately. Otherwise the real impacts of the overall canopy reduction will be misrepresented. The “Campaign” disagrees and debates the issue of group selection and its contribution to fragmentation. The Forest Service has recently contended (in the Empire project on the PNF) that group selection logging at the rate of 11.4%/20-entry and a rotation age of 175 years will not cause the loss of continuous forest cover as defined in the 1993 CASPO EA. We argue the Forest Service fails to represent this issues as it was discussed in the CASPO EA and therefore misleads the public regarding the impacts to old forest species resulting from the fragmentation and edge effects of the QLG logging plan.
- The Forest Service should identify in the DEIS the acreage and type of logging by land allocation, including (where applicable) old forest emphasis area, threat zone of the wildland urban intermix (“WUI”), defense zone of the WUI, protected activity centers (“PACs”), and owl home range core areas (“HRCAs”), spotted owl home ranges and furbearer corridors.
- The Forest Service should disclose the amount of planned road construction and reconstruction and analyze impacts on habitat fragmentation and connectivity, weed invasion, increased predation, and poaching. The environmental impacts of temporary road construction and restoration (disturbance) should be fully analyzed.
- If the project is adjusting the boundaries of the WUI compared to the boundaries assumed in the 2004 ROD, the Forest Service should explain the basis for the change and analyze the environmental impacts.
- Please identify and analyze the site-specific need and effects of the removal of hazard trees on specific road segments in the Slapjack project. Habitat needs for wildlife and benefits to soil resources should be assessed in any hazard removal occurring within this project analysis. Hazard trees should be felled and left in place anywhere there is a need for snags or large wood in the project area.

As noted above, the Campaign wishes to make and preserve here its objections to any and all deficiencies in the environmental assessment for this Project relating to the project description, including the definition of its purpose and need.

B. California Spotted Owl

The conservation status of the California spotted owl in the Sierra Nevada is precarious. (SNFPC *et al.* 2004, pp. 12-14). Demographic studies from the southern,

central, and northern Sierra Nevada have consistently indicated that the owl's population is declining. The most recent analysis of this research concluded that "all the demographic evidence available – such as estimated vital rates, rates of population change, and differences in paired studies – suggest substantial caution in owl conservation and management efforts." (Franklin *et al.* 2004, p. 41). Moreover, the fact that the owl appears to be faring appreciably worse on national forest lands than on nearby national park lands suggests that logging has contributed to reduced survivorship and declining owl populations. (*Id.*, pp. 37-38, 40).

There is strong evidence that logging pursuant to the 2004 ROD, particularly logging of medium and large trees, reduction in canopy cover, removal of large snags and down wood, and logging within owl PACs, owl HRCAs, old forest emphasis areas, and areas of concerns, will degrade owl nesting and foraging habitat and threaten the owl's viability. (SNFPC *et al.* 2004, pp. 14-20). The Forest Service's Science Consistency Review concluded that the new plan "incurs greater risk" to the owl than the Framework (Stine and Keane 2003, p. 9), and the agency's Washington Office Director of Fish and Wildlife found that the new plan is "a prescription for continued owl declines." (Gladen 2003, p. 11). The owl scientists who have reviewed the plan have uniformly concluded that the plan increases the risks to the owl's population, threatening the owl's viability and distribution and contributing to a trend towards federal listing under the Endangered Species Act. (Noon 2004; Verner 2003b; Blakesley and Noon 2003; Peery 2004; Bond 2003). The Slapjack DEIS should address the impacts to spotted owls in light of the increased risk from the 2004 Framework ROD as cited in the (June 21, 2005 FR p. 35607) U.S. F&WS positive 90-day finding of the SNFPC/CBD listing petition.

Given the risks to the owl of implementing the 2004 ROD, it is essential that the Forest Service take a detailed and careful look at the likely impacts on the owl and its habitat of implementing the project. An adequate analysis should address, at a minimum, the following issues. (*See* SNFPC *et al.* 2004, pp. 9-28, 77-80).

- The Forest Service should disclose the amount of owl nesting and foraging habitat currently within the project planning area and the amount of nesting and foraging habitat that will be logged. Owl nesting habitat should be defined in terms of CWHR class 5D and 6, and owl foraging habitat should be defined by CWHR classes 4M, 4D, 5M, 5D, and 6 with canopy cover greater than or equal to 50 percent. The portion of lower quality 4M strata should be disclosed but NOT relied upon to support a generalized habitat suitability discussion for spotted owls. Canopy cover less than 50 percent should not be considered as suitable owl habitat. (SNFPC *et al.* 2004, pp. 10-11).
- The Forest Service should disclose the number of PACs and HRCAs within the project planning area and the number and acreage of PACs and HRCAs (both individually and cumulatively) that will be logged. Owl survey records, occupancy records, and reproduction records for owls in, and near, the analysis area should be disclosed. Although the QLG Act prohibits logging within PACs,

the Forest Service should still disclose the potential indirect impacts to PACs from treatments adjacent to these critical areas.

- With respect to each HRCA, the Forest Service should identify the current amount of owl nesting and foraging habitat and the amount that will be degraded by the project, which was specifically identified by the Science Consistency Review as important information to be addressed in environmental planning. (Stine and Keane 2003, pp. 4, 6). The analysis should assess the percentage of suitable habitat within each HRCA both before and after project implementation. Area treatments, DFPZs and Group Selection units in the Slapjack project will impact suitable habitat within HRCAs associated with CSO activity centers identified in the DEIS. These impacts should be fully analyzed and disclosed.

The Slapjack DEIS should disclose the impacts to owls beyond the PAC and should include analysis of the impacts based upon the best available science as suggested by the Empire Science Consistency Review (attached). The Campaign requests an analysis of the amount and quality and spatial arrangement of suitable habitat within each affected spotted owl home range. We debate and disagree that an adequate impacts analysis for spotted owls can rest solely on the impacts to PACs and HRCAs. The CSO HRCA concept (Bingham and Noon 1997) considers 20-22% of the owls home range where they spend approximately 60% of the time/energy budget. The quality of the other 40% of their home range should not be ignored. See (J. Bart 1995) and the relationship of 30-50 percent suitable habitat within an owl home range which is necessary to support owl survival. This analysis was used in the 1999 QLG FEIS/BE and remains relevant today. What percent of suitable habitat exists currently and post-treatment in each CSO home Range in the Slapjack project?

- The Forest Service should disclose the acreage of old forest stands (5M, 5D, 6) 1 acre or larger that will be logged. Research indicates that these small inclusions of habitat are important for the California spotted owl (Blakesley 2003; Moen and Gutierrez 1997), and they were protected under the 2001 ROD. Both the U.S. Fish and Wildlife Service and the Forest Service's Washington Office have expressed concerns about the elimination of protection for these stands under the 2004 ROD. (USDI Fish and Wildlife Service 2003c, pp. 4-5; Gladen 2003, pp. 10-11).
- The Forest Service should identify and disclose the proximity of any of the "areas of concern" identified by Verner et al. (1992) that will be logged, including the existing amount of owl nesting and foraging habitat within such areas and the amount of nesting and foraging habitat that will be degraded. The Forest Service should analyze the extent to which such logging within areas of concern may affect the owl's distribution and dispersal in the planning area. (See SNFPC et al. 2004, p. 20).

- For projects in the Quincy Library Group (“QLG”) pilot project area, the Forest Service should specifically address information in the 1999 biological evaluation for the QLG pilot project, which identifies significant impacts to the California spotted owl resulting from fragmentation and loss of key habitat elements due to the pilot project logging program.

As noted above, the Campaign wishes to make and preserve here its objections to any and all deficiencies in the environmental assessment for this Project relating to the discussion of affected environment, impacts (including cumulative impacts), alternatives and mitigation measures that bear on the California spotted owl.

C. Pacific Fisher

The status of the Pacific fisher in the Sierra Nevada is highly imperiled. (SNFPC *et al.* 2004, pp. 31-32). The U.S. Fish and Wildlife Service recently concluded that the west coast population of the fisher, including the isolated population in the southern Sierra Nevada, warrants listing under the Endangered Species Act. (USDI Fish and Wildlife Service 2004). A report co-authored by leading Forest Service researchers concluded that the southern Sierra fisher population “has a very high likelihood of extinction given reasonable assumptions with respect to demographic parameters.” (USDI Fish and Wildlife Service 2004, pp. 18790-91; Lamberson *et al.* 2000).

Promoting the fisher’s viability in the Sierra Nevada requires two steps: protecting and enhancing habitat that is currently occupied within the southern Sierra fisher conservation area, and protecting and restoring habitat north of the southern Sierra fisher conservation area to facilitate the fisher’s recolonization of and expansion to the central and northern Sierra. Therefore, it is essential that the Forest Service carefully consider impacts of planned logging on the fisher even outside of currently occupied habitat.

There is strong evidence that logging pursuant to the 2004 ROD, particularly logging of medium and large trees, reduction in canopy cover, removal of large snags and down wood, and logging within old forest emphasis areas and the southern Sierra fisher conservation area, will degrade fisher denning, resting, and foraging habitat and further threaten the fisher’s viability. (SNFPC *et al.* 2004, pp. 32-41). The forest carnivore experts who have reviewed the plan have uniformly concluded that the plan increases the risks to the fisher’s population, further threatening the fisher’s viability and distribution and contributing to the need for federal listing under the Endangered Species Act. (Barrett 2004a; Kucera 2004; Lewis 2003a, 2003b; Buskirk 2003). As the Forest Service has recognized, “given the current low density of fishers in the Sierra Nevada, the loss of even a small number of individuals ... could significantly impact the population.” (USDA Forest Service 2001a, Vol. 3, Chap. 3, part 4.4, p. 9).

Given the risks to the fisher of implementing the 2004 ROD, it is essential that the Forest Service take a detailed and careful look at the likely impacts on the fisher and its

habitat of implementing the project. An adequate analysis should address, at a minimum, the following issues. (See SNFPC *et al.* 2004, pp. 28-41, 80-83).

- The Forest Service should disclose the amount of fisher denning/resting and traveling/foraging habitat currently within the project planning area and the amount of such habitat that will be logged.
- The Forest Service should disclose the acreage of old forest stands 1 acre or larger that will be logged. Research indicates that these small inclusions of habitat are important for the fisher (FSEIS, p. 139), and they were protected under the 2001 ROD. Logging of these small but important areas could eliminate potential denning and resting sites for fisher (Barrett 2004a), especially given the documented use of numerous resting sites within a particular home range. (SNFPC *et al.* 2004, p. 30).
- The Forest Service should disclose the amount and intensity of proposed logging within the southern Sierra fisher conservation area. Specifically, the Forest Service should analyze the percentage of each watershed characterized by medium-large trees and canopy cover of 60 percent or greater, both before and after proposed logging. These figures are based on the 2001 ROD (p. A-45) and reflect the best available research regarding occupied fisher home ranges (Zielinski *et al.* in press A; USDA Forest Service 2001a, Vol. 3, Chap. 3, part 4.4, p. 11). (See SNFPC *et al.* 2004, pp. 33-34).
- The Forest Service should identify and disclose the number of fisher home ranges that will be logged, the current amount of suitable habitat within each home range, and the amount of such habitat that will be logged. Information on many fisher home ranges is available from Forest Service telemetry research in the southern Sierra Nevada and should be disclosed and analyzed in the environmental documentation.
- The Forest Service should disclose the impacts of proposed logging on fisher habitat connectivity and on the fragmentation of existing habitat, particularly within checkerboard lands in the central and northern Sierra. (SNFPC *et al.* 2004, pp. 38-39). The 2004 ROD directs the Forest Service to “minimize old forest habitat fragmentation,” to assess fragmentation issues in the biological evaluation, to assess potential impacts on habitat connectivity, and to consider retaining forested linkages as part of “project-level analysis.” (2004 ROD, pp. 53-54). Special attention should be paid to impacts of any proposed DFPZs or road construction on habitat connectivity and fragmentation.
- The Forest Service should disclose the amount and intensity of proposed logging within furbearer management areas or forest carnivore networks that have been proposed or adopted by each national forest. Include a fragmentation analysis for fisher based upon the best available habitat models (see Zielinski *et al.* (a) (b); Mazzoni 2002; Campbell 2004 and others).

- For projects in the QLG pilot project area, the Forest Service should specifically address information in the 1999 biological evaluation for the QLG pilot project, which identifies significant impacts to the fisher resulting from fragmentation and loss of key habitat elements due to the pilot project logging program.

As noted above, the Campaign wishes to make and preserve here its objections to any and all deficiencies in the environmental assessment for this Project relating to the discussion and evaluation of affected environment, impacts (including cumulative impacts), alternatives and mitigation measures that bear on the Pacific fisher.

D. American Marten

The marten is among the most habitat-specific mammals in North America, and changes in the quality, quantity, and distribution of available habitat can affect their distributional range in the Sierra Nevada. (USDA Forest Service 2001, Vol. 3, Chap. 3, part 4.4, p. 23). The marten is closely associated with the structural characteristics of old forests, especially large trees, large snags and down wood, and dense canopy cover. (SNFPC *et al.* 2004, pp. 41-43). Research has shown that the marten is highly sensitive to forest fragmentation, generally tolerating a landscape that has no greater than 20-25 percent forest openings. (*Id.*, p. 43).

Because of its low reproductive potential and large home range, together with its affinity for old forests, the marten is considered vulnerable to local extirpation. (USDA Forest Service 2001, Vol. 3, Chap. 3, part 4.4, pp. 22-23). Extensive surveys by Forest Service researchers have indicated that there is a significant gap in the marten's distribution in the northern Sierra (Zielinski 2002; Kucera *et al.* 1995), which may be related to the relative absence of old forests in this area. (Kucera 2004).

There is strong evidence that logging pursuant to the 2004 ROD, particularly logging of medium and large trees, reduction in canopy cover, removal of large snags and down wood, and logging within the QLG pilot project area, will degrade marten denning, resting, and foraging habitat. (SNFPC *et al.* 2004, pp. 45-48). The forest carnivore experts who have reviewed the plan have uniformly concluded that it increases the risks to the marten's population, threatening the marten's viability and distribution and potentially leading to local extirpation. (Barrett 2004a; Kucera 2004; Buskirk 2003) In a recent study of the marten's historical v. contemporary distribution, it appears the marten's range has been severely limited based, in part, on logging-related habitat fragmentation (Zielinski *et al.*, 2005). This new information should inform the Slapjack DEIS as to the risks of increased intensive logging to marten viability.

Given the risks to the marten of implementing the 2004 ROD, it is essential that the Forest Service take a detailed and careful look at the likely impacts on the marten and its habitat of implementing the project. An adequate analysis should address, at a minimum, the following issues. (*See* SNFPC *et al.* 2004, pp. 41-48, 83-85).

- The Forest Service should disclose the amount of marten denning/resting and traveling/foraging habitat currently within the project planning area and the amount of such habitat that will be logged. The marten inhabits eastside pine forests, so the impacts on marten of logging within these areas must be assessed.
- The Forest Service should disclose the impact of group selection openings on the marten. Given the marten's sensitivity to forest openings, the Forest Service should analyze the percentage of openings within marten habitat before and after project implementation with respect to a threshold of 20-25 percent forest openings.
- The Forest Service should disclose the existence of marten within the planning area. The apparent absence of the marten from portions of the QLG pilot project area requires substantial caution in allowing additional logging within and adjacent to this area. The Forest Service should disclose and discuss any local survey information that indicates presence or absence of marten within the planning area.
- The Forest Service should disclose the impacts on marten distribution and viability of removing medium-large trees and large snags and down wood and decreasing canopy cover within the planning area.
- The Forest Service should disclose the impacts of proposed logging on marten habitat connectivity and on the fragmentation of existing habitat, particularly within checkerboard lands in the central and northern Sierra. (SNFPC *et al.* 2004, pp. 38-39). The 2004 ROD directs the Forest Service to "minimize old forest habitat fragmentation," to assess fragmentation issues in the [biological evaluation], to assess potential impacts on habitat connectivity, and to consider retaining forested linkages as part of "project-level analysis." (2004 ROD, pp. 53-54). Special attention should be paid to impacts of any proposed DFPZs or road construction on habitat connectivity and fragmentation within the QLG pilot project area, which has been identified by the Forest Service and others as a significant concern. (SNFPC *et al.* 2004, pp. 47-48; 1999 QLG ROD, p. 8-9)
- For projects in the QLG pilot project area, the Forest Service should specifically address information in the 1999 biological evaluation for the QLG pilot project, which identifies significant impacts to the marten resulting from fragmentation and loss of key habitat elements due to the pilot project logging program.
- The Forest Service should disclose the amount and intensity of proposed logging within furbearer management areas or forest carnivore networks that have been proposed or adopted by each National Forest.

As noted above, the Campaign wishes to make and preserve here its objections to any and all deficiencies in the environmental assessment for this Project relating to the

discussion of affected environment, impacts (including cumulative impacts), alternatives and mitigation measures that bear on the American marten.

E. Northern Goshawk

The northern goshawk is a Forest Service Sensitive Species. In the Sierra Nevada, the goshawk breeds throughout the ponderosa pine/mixed conifer, red fir and lodgepole pine vegetation types, and in eastside pine forests on the east slope. (USDA Forest Service 2001, Volume 3, Chapter 3, part 4.4, p. 113). “Northern goshawks require mature conifer and deciduous forests with large trees, snags, downed logs, dense canopy cover, and open understories for nesting, and use forests with dense to moderately open overstories, open understories interspersed with meadows, brush patches, riparian areas, or other natural or artificial openings for foraging.” (*Id.*, p. 117).

The FSEIS identified that the 2004 ROD could adversely affect goshawk habitat with a particular emphasis on eastside pine habitats. Reduction in basal area without a canopy cover limits in eastside pine types (FSEIS, p. 284) higher reduction in canopy cover (*Id.*, p. 285), and simplification of stand structure (*id.*) were all associated with the implementation of the 2004 ROD. The analysis in the FSEIS anticipates that “mitigations to retain higher levels of stand basal area or canopy cover to ensure adequate foraging and nesting habitat within a project area could be incorporated into individual projects.” (*Id.*, p. 284).

Given the risks identified in the FSEIS, the Forest Service must make a detailed assessment of the likely impacts of implementing this project on northern goshawk and its habitat. An adequate analysis should address, at a minimum, the following issues.

- The Forest Service should disclose the amount and intensity of harvest proposed in goshawk territories.
- The Forest Service should fully disclose the adverse impact of suitable nesting, foraging and post-fledging habitat for each of the identified goshawk areas impacted by this project (*Id.*, p. 285). The Slapjack Project should disclose plans to enter goshawk PACs and nest areas and explain the justification for such action in regard to meeting fuels and stand density objectives.
- The Forest Service should evaluate goshawk density in the vicinity of the Project and prepare an assessment of the potential for the Project to adversely alter habitat and increase habitat and population gaps. (*Id.*, p. 286)
- The Forest Service should consider one or more alternatives to the proposed Project that limit the reduction of canopy closure and basal area to ensure that high quality nesting and foraging habitat is associated with specific territories.
- For projects in the QLG pilot project area, the Forest Service should specifically address information in the 1999 biological evaluation for the QLG pilot project,

which identifies significant impacts to the goshawk resulting from fragmentation and loss of key habitat elements due to the pilot project logging program.

As noted above, the Campaign wishes to make and preserve here its objections to any and all deficiencies in the environmental assessment for this Project relating to the discussion of affected environment, impacts (including cumulative impacts), alternatives and mitigation measures that bear on the northern goshawk.

F. Management Indicator Species

The Forest Service should disclose the impacts to habitat and populations of MIS identified in the Plumas National Forest, Forest Plan which are likely to occur in the analysis area. The MIS cumulative effects section must assess the cumulative impacts to the various MIS at the project and forest level since the MIS are forest-level indicators. The cumulative effects analysis should focus on the species and not solely the analysis area.

In the 2004 ROD (p. 70), the Forest Service readopted Appendix E of the 2001 SNFPA FEIS, including the annual monitoring plan for various Management Indicator Species and Species At Risk (“MIS/SAR”) that are considered particularly vulnerable to impacts from National Forest management.

The Forest Service should disclose the direct, indirect, and cumulative impacts to each MIS/SAR affected by this Project, including amounts and changes in habitat and all population trend data to support findings under NFMA. MIS/SAR identified in the forest plan and Appendix E for Old Forest, Aquatic-Riparian and Hardwood Ecosystems should be identified and analyzed in the project planning area and cumulatively where they dwell during the phases of their life-cycle.

As noted above, the Campaign wishes to make and preserve here its objections to any and all deficiencies in the environmental assessment for this Project relating to the discussion and evaluation of affected environment, impacts, including purported project benefits and cumulative impacts, alternatives and mitigation measures that bear on the issues of MIS/SAR.

G. Fire and Fuels

The 2004 ROD was based partly on the assumption that logging under the 2001 ROD could not achieve the Forest Service’s fuels reduction objectives. However, as demonstrated in the Campaign’s appeal of the 2004 ROD, the Forest Service has failed to demonstrate in the FSEIS that logging trees greater than 20 inches in diameter or reducing canopy cover to below 50 percent is necessary to reduce the risk of catastrophic fire. (SNFPC *et al.* 2004, pp. 62-71). Therefore, it is essential that the Forest Service include a careful and detailed analysis of fire and fuels issues in project-specific environmental documentation to justify proposed logging with respect to fuels reduction. The analysis should include, at a minimum, the following.

- The Forest Service should provide estimates of projected flame length, fire resiliency, mortality of dominant and co-dominant trees, and probability of initiation of crown fire for each alternative, and disclose the underlying data and rationale.
- The Forest Service should provide estimates of projected fire condition class for each alternative, together with underlying data and rationale.
- The Forest Service should prepare an analysis of impacts on fire hazard based on thinning from below up to a range of diameter limits, beginning with 12 inches in diameter and increasing by 2 inch increments to the maximum diameter limit allowed by the 2004 ROD.
- Based upon concerns raised by leading fire scientists (Stephens and Mogohaddas 2005, Stephens 2004; Stephens 2003; Stephens 1998; van Wagtendonk 1996), the Forest Service should provide an analysis of tradeoffs leading to increased fire hazard from increased canopy openings. The Forest Service should disclose specific microclimate effects, including changes in wind speed, humidity, understory re-growth, and maintenance issues in treatment areas as part of the fuels analysis.
- The increased fire hazard and probability of scorch on group selection units in and outside of DFPZs should be fully disclosed.
- The Forest Service should provide analysis of fire and fuels treatment outcomes in terms of how these treatments have affected stand density by thinning, prior to asserting additional need for increased logging to meet separate stand density objectives.
- The Slapjack Fire and Fuels section the DEIS should disclose the uncertainty surrounding the fuel model outcomes utilized in the DEIS (as discussed in the Empire SCR). The DEIS should also fully explain the various focuses and bias within each fuel modeling strategy in plain language the public can understand.

See Below (Rice 2005):

“The lack of a spatial fire growth simulator and behavior model that displays fire behavior characteristics throughout the project area is a significant void. There was no analysis using FLAMMAP or FARSITE, which is used routinely in other forests, and on the Plumas National Forest for other projects. Instead, FMAPlus (which is the only model that allows one to use allometric conversions to crown bulk density) was used. Outputs from FMAPlus could have been used in the landscape-wide fire behavior prediction analysis.

Use of fire intensity and fire spread instead of Crowning Index and Torching Index could better measure the effectiveness of treatments, for FLAMMAP and FARSITE gauge the metrics of project goals directly and could have provided the decision-makers with a distribution of various fire intensities and spread rates for the various alternatives over space and within and between each alternative. This approach would have greatly facilitated the assessment of the tradeoffs between the Alternatives.

FLAMMAP and FARSITE place more emphasis on crown fire initiation (which does not involve crown bulk density). Consequently, in FLAMMAP and FARSITE the importance of thinning to a certain crown cover is not as important as treating the surface fuels and raising the height to live crown. FLAMMAP and FARSITE do display the potential for crown fire spread in a spatially explicit manner.

The use of FLAMMAP and FARSITE allows the decision-maker to see the spatial distribution of predicted fire severity and inferred fire effects. These two landscape-wide fire behavior and growth simulators allow the analysis of adjacency. Specifically, one could evaluate the possibility of crown scorch of untreated stands when they are adjacent to a group selection stand. The models can also illustrate the magnitude and location of reduced fire severity and fire spread rates in an untreated stand in which the fire flanked around a treated stand. Similarly, because the discontinuities of fuel treatments are better portrayed with FLAMMAP and FARSITE, a more accurate analysis of crown and torching can result (when fuel reduction is spread uniformly over the landscape, crowning and torching is over predicted). Further, fire containment success with the DFPZ's in place can be evaluated with FARSITE.

The type of model is chosen for analysis makes a difference, and the one selected emphasizes the benefits of thinning to reduce crown bulk density rather than directly evaluating potential size and intensity of all wildfires, not just crown fires. In this way, the authors of the FEIS fail to acknowledge real-life conditions where surface fires dominate fire management concerns.”

As noted above, the Campaign wishes to make and preserve here its objections to any and all deficiencies in the environmental assessment for this Project relating to the discussion and evaluation of affected environment, impacts, including purported project benefits and cumulative impacts, alternatives and mitigation measures that bear on the issues of fire and fuels.

H. Riparian Issues and Analysis

Both the 2001 ROD and the 2004 ROD rely upon an Aquatic Management Strategy to protect and enhance riparian and aquatic resources. However, the FSEIS recognizes that the 2004 ROD “may pose higher short term risks to aquatic resources because it prescribes larger amounts of mechanical treatments and greater treatment intensities.” (FSEIS, p. 215).

The FSEIS also recognized the need to complete site-specific analyses of cumulative effect of any proposed action on aquatic and riparian resources. (FSEIS, Volume 2, p. 31). At a minimum the Forest Service must evaluate the following in this project analysis.

- The Forest Service should quantify the amount and intensity of timber harvest proposed in Riparian Conservation Areas (“RCAs”) and Critical Aquatic Refuges (“CARs”).
- The Forest Service should make a finding, supported by evidence in the environmental analysis, that the proposed Project is consistent with the Riparian Conservation Objectives (“RCO”) and the standards and guidelines in the 2004 ROD. (2004 ROD, pp. 62-66). This should include a detailed analysis of proposed actions where greater than 5% of the RCA will be compacted and a

statement of how this level of compaction is consistent with meeting the RCOs and standards. (FSEIS, p. p. 210)

- The Forest Service should prepare a cumulative watershed effects analysis that discloses the threshold of concern for the affected watersheds, the level of disturbance contributed by the proposed action and proposed mitigation measures when project activities would cause the watershed to approach or exceed the threshold for concern.
- The Forest Service should assess road conditions for the project area, identify maintenance and restoration needs for stream crossings, and identify maintenance and decommissioning of specific roads.

As noted above, the Campaign wishes to make and preserve here its objections to any and all deficiencies in the environmental assessment for this Project relating to the discussion and evaluation of affected environment, impacts, including purported project benefits and cumulative impacts, alternatives and mitigation measures that bear on the issues of aquatic issues and analysis.

I. Other Planning Issues

The following issues should also be analyzed and disclosed in the environmental impact statement and/or environmental assessment for this Project.

First, the environmental impact statement and/or environmental assessment for this Project should analyze an alternative that fully implements the 2001 ROD. Such an alternative is necessary to allow the public and the decision maker to compare directly the environmental impacts of implementing the 2004 ROD and the consequences of implementing the 2001 ROD.

Second, the Forest Service must also make an independent finding in a biological evaluation with respect to the Project's impacts on sensitive species such as the California spotted owl, Northern goshawk, Pacific fisher and American marten. The 2004 ROD and FSEIS did not analyze site-specific impacts and did not fully consider cumulative impacts. As the Forest Service stated in the FSEIS:

The modeling for the SNFPA provides a relative comparison of bioregional-scale effects of the alternatives on vegetation and habitat over time. It also provides information to the decision maker and public regarding potential spatial effects, for example numbers of PACs potentially treated, acres in home range core areas potentially treated, and so forth. However, the SEIS presents a programmatic level analysis. Site-specific effects will be analyzed and mitigations measures will be developed when actual projects are planned and designed on the ground. Biological evaluations will also be developed at the site-specific project scale.

(FSEIS, Volume 2, Response to Comments, p. 118, emphasis added) Similarly, in the November 25, 2003 biological opinion that accompanied the FSEIS, the Forest Service stated:

The documentation in the FSEIS and this letter constitutes the programmatic Biological Evaluation for sensitive animal and plant species that are known or are suspected to occur within the planning area . . . Forest Service policy specifies that Biological Evaluations will be prepared for all project-level actions that are proposed to implement the selected alternative. The programmatic Biological Evaluation will provide a baseline to consider bioregional cumulative effects in these project-level analyses. *These project-level Biological Evaluations will be able to consider the spatial and temporal direct, indirect, and cumulative effects at the local scale and will make independent determinations for each affected sensitive species.*

(Biological Evaluation, p. 2, emphasis added) Therefore, as anticipated in the FSEIS and accompanying biological evaluation, the Forest Service must make new determinations at the project level with respect to species viability and the potential trend towards federal listing. *See, e.g., Sierra Club v. Block*, 576 F. Supp. 959 (D. Or. 1983) (“A programmatic EIS will often be insufficient as it relates to site-specific actions. This may be because it does not contain sufficient detail to satisfy NEPA requirements, or because new information is revealed subsequent to its preparation.”).

Third, because the Forest Service made numerous assumptions in modeling the 2004 ROD in the FSEIS that were not incorporated into the plan’s standards and guidelines (SNFPC *et al.* 2004, pp. 110-113), the Forest Service should disclose the extent to which the Project is consistent or inconsistent with the 2004 ROD *as modeled in the FSEIS*. For example, the environmental assessment should disclose whether any sugar pine larger than 6 inches in diameter will be removed in SPLATs, DFPZs, or defense zones; whether any trees larger than 20 inches in diameter will be removed in SPLATs; whether any trees larger than 24 inches in diameter will be removed from DFPZs, old forest emphasis areas, or the defense zone; and whether 50 percent canopy cover will be retained within old forest emphasis areas. (*See* SNFPC *et al.* 2004, pp. 111-112). To the extent that the Project is not consistent with the 2004 ROD, as modeled in the FSEIS, the environmental assessment must carefully analyze the differences, including cumulative impacts.

Fourth, the Forest Service should disclose other important Standards and Guidelines contained in the specific Land and Resource Management Plan that are not identified in the 2004 ROD. An explanation of forest plan consistency should be provided with each site-specific analysis.

Finally, with respect to all of the foregoing issues, the Forest Service should analyze the cumulative impacts of the project together with “other past, present, and

reasonably foreseeable future actions.” 40 CFR 1508.7. In addition to considering logging on public lands, it is essential that the analysis also address logging on private timberlands, particularly within checkerboard areas where private lands are intensively intermingled with Forest Service lands. (SNFPC *et al.* 2004, pp. 95-98). This analysis should include the environmental impacts of maintaining any proposed DFPZs or area treatments, which are reasonably foreseeable future actions.

As noted above, the Campaign wishes to make and preserve here its objections to any and all deficiencies in the environmental assessment for this project relating to the discussion and evaluation of affected environment, impacts (including cumulative impacts), alternatives and mitigation measures that bear on the planning and evaluation issues listed above.

J. Quincy Library Group Pilot Project

Projects within the QLG pilot project area require special consideration and analysis. The Forest Service concluded as part of the QLG environmental impact statement process that full implementation of the project “could pose a serious risk to the viability of the owl in the planning area, thereby making the implementation of Alternative 2 inconsistent with the National Forest Management Act and its implementing regulations.” (USDA Forest Service 1999a). The U.S. Fish and Wildlife Service expressed concerns “that the proposed action will negatively affect spotted owl survival and/or reproduction for the following reasons: (1) habitat loss, (2) habitat fragmentation, and (3) changes in prey base.” The Service concluded as follows: “The Service believes the implementation of Alternative 2 poses a significant threat to the long-term viability of the California spotted owl, Pacific fisher, and American marten due to the loss, degradation, and fragmentation of suitable habitat.” (USDI Fish and Wildlife Service 1999, p. 16, emphasis added). The Record of Decision approving the QLG pilot project reiterated these concerns about owl viability, concluding that fully implementing the QLG pilot project “could pose a serious risk to the viability of the California spotted owl in the planning area.” (USDA Forest Service 1999c). Similar concerns were expressed by the Regional Forester in adopting the 2001 Framework. (USDA Forest Service 2001b, p. 51). The Forest Service has failed to cite any new information that would warrant changing these findings. *See* SNFPC *et al.* 2004, pp. 20-24.

Given these serious concerns about impacts of the QLG project on owl, fisher, and marten viability, it is essential that projects in the QLG pilot project area take a careful look at site-specific and cumulative impacts on these species and their habitat. In particular, the Forest Service must make an *independent finding* in the biological evaluation for such projects as to whether project implementation may contribute to a trend towards federal listing. As noted above, both the FSEIS and the accompanying biological evaluation clearly recognized the limitations of the bioregional modeling presented in the FSEIS and the need for need for site-specific analysis during project planning. Accordingly, relying upon the FSEIS to support such a site-specific finding, particularly when the FSEIS failed to address site-specific impacts or adequately to consider cumulative impacts, would be legally inadequate.

Projects in the QLG area must also disclose and analyze whether there have been previous entries into the project area pursuant to the CASPO guidelines. As described in the Campaign's appeal of the 2004 ROD, such multiple entries would be contrary to law. (SNFPC *et al.* 2004, p. 123). The Forest Service should also disclose whether any group selection units will comply with basal area and canopy cover retention standards, as required by Alternative 2 in the QLG FEIS. (SNFPC *et al.* 2004, p. 123).

As noted above, the Campaign wishes to make and preserve here its objections to any and all deficiencies in the environmental assessment and/or biological evaluation for this project relating to the discussion and evaluation of affected environment, impacts (including cumulative impacts), alternatives and mitigation measures that bear on the implementation of the QLG pilot project.

III. The Proposed Project Violates NEPA, NFMA, and Other Applicable Laws.

As detailed in the attached Notice of Appeal, the 2004 ROD for the Sierra Nevada Forest Plan Amendment and accompanying FSEIS violate NEPA, NFMA, and other applicable laws. Therefore, to the extent the proposed Project implements the 2004 ROD, it too is contrary to the law. As noted above, the Campaign wishes to make and preserve its objections to any and all aspects of the proposed Project that deviate from the standards and guidelines contained in the original 2001 ROD and implement the changes to those standards and guidelines made by the 2004 ROD.

Conclusion

In conclusion, the Campaign hereby requests that it be provided with a copy of the DEIS/FEIS or environmental assessment (draft and final), the biological assessment and biological evaluation for plants and wildlife, any fire and fuels report, silvicultural report, or hydrology report, any analysis of MIS/SAR, economic analysis, forest plan consistency checklist, and any separate cumulative effects analysis. The Campaign also requests one large format project map with DFPZs, GS, ITS, Rx fire and mastication units outlined, and one large format wildlife map. We also requests a list or index to the project file and specifically all state and Federal agency comments on the DEIS/FEIS. The Campaign requests that these documents be provided as soon as available, preferably in an electronic format on CD or via e-mail.

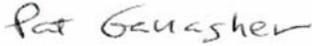
Thank you for considering these comments.

Sincerely,



Craig Thomas

Craig Thomas, Director
The Sierra Nevada Forest Protection Campaign
915-20th Street
Sacramento, CA 95814
(530) 622-8718
cthomas@innercite.com



Pat Gallagher
Director of Environmental Law
Sierra Club
85 Second Street, 4th Floor
San Francisco, CA 94105
415.977.5709
415.977.5793 fax



John Preschutti
Plumas Forest Project
P.O. Box 11
Blairsden, CA 96103

REFERENCES

Barrett, R.H. 2004a. A critique of the Sierra Nevada Forest Plan Amendment final supplemental environmental impact statement and record of decision. April 25, 2004.

Blakesley, J.A. 2003. Ecology of the California Spotted Owl: breeding dispersal and associations with forest stand characteristics in northeastern California. Ph.D. dissertation, Colorado State University, summer 2003.

Blakesley, J.A. and Noon, B.R. 2004. Comments on Sierra Nevada Forest Plan Amendment – Final Supplemental Environmental Impact Statement. April 25, 2004.

Bingham, B.B., and Noon, B.R. 1997. Mitigation of habitat “take”: application to habitat conservation planning. *Conservation Biology* 11:127-139.

Bond, M. 2003. Comments on the Sierra Nevada Forest Plan Amendment Draft Supplemental Environmental Impact Statement. September 10, 2003.

Buskirk, S.W. 2003. Comments on the Sierra Nevada Forest Plan Amendment Draft Supplemental Environmental Impact Statement. September 7, 2003.

Campbell, L.A. 2004. Thesis, Distribution and Habitat Associations of Mammalian Carnivores in the Central and Southern Sierra Nevada. University of California, Davis, California, USA.

Franklin, A. B., Gutiérrez, R. J., Nichols, J. D., Seamans, M. E., White, G. C., Zimmerman, G. S., Hines, J. E., Munton, T. E., LaHaye, W. S., Blakesley, J. A., Steger, G. N., Noon, B. R., Shaw, D. W. H., Keane, J. J., McDonald, T. L., and Britting, S. 2004. Population Dynamics of the California Spotted Owl (*Strix occidentalis*): A Meta-Analysis. Ornithological Monographs 54.

Gladen, J.T. 2003. Memorandum from James T. Gladen, Director, Watershed, Fish, Wildlife, Air and Rare Plants, to Kathleen Morse, Interdisciplinary Team Leader, Subject: Watershed, Fish, Wildlife, Air and Rare Plants Staff comments on the Sierra Nevada Forest Plan Amendment draft supplemental environmental impact statement. September 12, 2003.

Kucera, T.E. 2004. Comments on the Sierra Nevada Forest Plan Amendment final supplemental environmental impact statement. April 24, 2004.

Kucera, T.E., Zielinski, W.L., and Barrett, R.H. 1995. The current distribution of American martens (*Martes Americana*) in California. California Fish and Game 81:96-103.

Lamberson, R.H., Truex, R.L., Zielinski, W.J., and Macfarlane, D. 2000. Preliminary analysis of fisher population viability in the southern Sierra Nevada. Unpublished report. USDA Forest Service, Pacific Southwest Region.

Lewis, J.C. 2003a. Comments on the Sierra Nevada Forest Plan Amendment draft supplemental environmental impact statement. September 12, 2003.

Lewis, J.C. 2003b. Comments on Fish and Wildlife Service 90-day finding for fisher. August 18, 2003.

Mazzoni, A.K. 2002. Habitat use by fishers (*Martes pennanti*) in the southern Sierra Nevada, California. Thesis, California State University, Fresno, California, USA.

Meyer, Marc D., Kelt, D. A., North, M.P. 2005. Nest Trees of Northern Flying Squirrels in the Sierra Nevada. Journal of Mammalogy, 86(2):275-280.

Moen, C.A. and Gutierrez, R.J. 1997. California spotted owl habitat selection in the central Sierra Nevada. Journal of Wildlife Management 61:1281-1287.

Noon, B.R. 2004. Letter to Jack Blackwell. April 25, 2004.

Peery, Z. 2004. Declaration of Zach Peery, M.S. April 25, 2004

Rice, C.L. 2005 Fire and Fuel Comments on the Empire Vegetation Management Project, Mt Hough Ranger District, Plumas National Forest. In: Sierra Nevada Forest Protection Campaign's Appeal of the Empire Project. October 11, 2005.

Sierra Nevada Forest Protection Campaign et al. 2004. Notice of appeal of the record of decision and final supplemental environmental impact statement for the Sierra Nevada Forest Plan Amendment. April 29, 2004.

Stephens, S. L. 2004. Testimony before the Resources Subcommittee on Forest and Forest Health. February 28, 2004.

Stephens, S. L. and Mogohaddas. J.J. 2005. Experimental Fuels Treatment Impacts on Forest Structure, Potential Fire Behavior, and Predicted Tree Mortality in a California Mixed Conifer Forest. Forest Ecology and Management. In Press 2005.

Stine, P. A. and Keane, J. 2003. Science Consistency Report. Draft supplemental environmental impact statement, Sierra Nevada Forest Plan Amendment. Content pertaining to California spotted owls as of October 20th, 2003. November 3, 2004.

USDA Forest Service 1999a. Biological assessment and evaluation of Herger-Feinstein Quincy Library Group Forest Recovery Act. Prepared by Gary W. Rotta, Wildlife Biologist, Plumas National Forest. August 14, 1999.

USDA Forest Service 1999c. Record of Decision. Herger-Feinstein Quincy Library Group Forest Recovery Act Final Environmental Impact Statement. Pacific Southwest Region. August 1999.

USDA Forest Service 2001a. Sierra Nevada Forest Plan Amendment, Final Environmental Impact Statement. Pacific Southwest Region. January 2001.

USDA Forest Service 2001b. Sierra Nevada Forest Plan Amendment, Final Environmental Impact Statement, Record of Decision. Pacific Southwest Region. January 2001.

USDI Fish and Wildlife Service 1999. Comments, review and informal consultation on the draft environmental impact statement for the Herger-Feinstein Quincy Library Group Forest Recovery Act Pilot Project. August 17, 1999.

USDI Fish and Wildlife Service 2003c. Comments on the Sierra Nevada Forest Plan Amendment, Draft Supplemental Environmental Impact Statement. Sacramento Fish and Wildlife Office. September 12, 2003.

USDI Fish and Wildlife Service 2004. Endangered and threatened wildlife and plants; 12-month finding for a petition to list the west coast distinct population segment of the fisher (*Martes pennanti*). 69 Fed. Reg. 18769 (April 8, 2004).

Verner, J., McKelvey, K.S., Noon, B.R., Gutierrez, R.J., Gould, G.I., and Beck, T.W. 1992. The California spotted owl: A technical assessment of its current status. USDA Forest Service, Pacific Southwest Research Station, General Technical Report PSW-GTR-133, July 1992.

Zielinski, W.L. 2002. Mesocarnivores: status and conservation issues. Presentation at the Sierra Nevada Science Symposium, Kings Beach, CA. October 10, 2002.

Zielinski, W.J., Truex, R.L., Schmidt, G.A., Schlexer, F.V., Schmidt, K.N., and Barrett, R.H. In press 2005. Home range characteristics of fishers in California. Journal of Mammalogy.

Zielinski WJ, Truex RL, Schmidt GA, Schlexer FV, Schmidt KN, Barrett RH. 2004 Resting habitat selection by fishers in California. *Journal of Wildlife Management* 68 (3): 475-492

Zielinski, W.J., Truex, R.L., Schlexer, F.V., Campbell L.A., Carroll, C. 2005. Historical and contemporary distributions of carnivores in forests of the Sierra Nevada, California, USA. *Journal of Biogeography* 32, 1385-1407.