



(415) 310-5109

Peter R. Baye, Ph.D.
Botanist, Coastal Ecologist
P.O. Box 65
Annapolis, California 95412



baye@earthlink.net

CALFIRE/California Department of Forestry and Fire Protection
Attn: Leslie Markham, Forest Practices
135 Ridgeway Avenue
Santa Rosa, CA 95401

September 8, 2008

SUBJECT: Bohemian Grove 01-06NTMP-001SON

To CALFIRE Forest Practices:

I am submitting the following critical review comments on certain biological aspects of the Bohemian Grove 01-06NTMP-001SON. My focus is on plants, vegetation, endangered wildlife impacts and mitigation, and adequacy of surveys and methods. I understand that agency review of this complex and controversial proposal is still ongoing, after prolonged review and revision of the large-scale NTMP.

My qualifications to comment are based on my scientific, regulatory, and environmental background, and geographic area of specialization. I am a professional plant ecologist and botanist (Ph.D., University of Western Ontario, Canada), specializing in the study and conservation of terrestrial and wetland coastal plant species, communities, and their ecosystems, for 29 years. My professional experience includes preparation, review, and management of joint NEPA/CEQA documents (EIR/S) for U.S. Army Corps of Engineers (San Francisco District, regulatory staff, 7 years), California Coastal Conservancy, and California Department of Water Resources; and preparation of Endangered Species Act Recovery Plans and Section 7 consultations and for the U.S. Fish and Wildlife Service (Sacramento Fish and Wildlife Office, staff biologist, 5 years) for listed species of terrestrial and wetland ecosystems of the California coast. I have direct knowledge of the coastal forest flora and vegetation of western Sonoma County from nearly 10 years of rural residence within second-growth redwood forestlands here, and many years of prior field botany.

I have reviewed the NTMP Section V – Additional Information dated March 20, 2007, including the project's acreage analysis, Botanical Resources report (2006) and northern spotted owl database and habitat assessment. I have also reviewed the California Department of Fish and Games Pre-Harvest Inspection letter dated August 8, 2007, and CDFG memorandum reply dated May 24, 2007. In addition, I have reviewed the Botanical Resources report and NTMP for Bohemia Ranch 1-03NTMP-017SON (2003), covering the forestlands adjacent and south of the Bohemian Grove NTMP.

1. Botanical Resources

1.1. Scope of the NTMP and botanical resources impact assessment.

The Botanical Resources report contains 2006 survey information that covers only a small portion (123 acres out of 2470 acres) of the NTMP area. The NTMP and 2006 Botanical Resources report makes no reference to any past or future proposed comprehensive survey and assessment of the vegetation and plant species of the NTMP area or its setting. The California Department of Fish and Game PHI memorandum made reference to this and no other past or future botanical report that covers the entire NTMP area. The lack of a NTMP project-wide botanical survey and assessment makes it impossible to evaluate the cumulative impacts of the NTMP to native vegetation dynamics and structure, invasive species spread, or population structure and viability of sensitive plant species. It appears that the entire NTMP (already at the maximum size permissible) will be “piecemealed” in subsequent compartmentalized biological surveys without reference to the NTMP area or its setting as a whole. This is absolutely inconsistent with any CEQA-equivalent or CEQA assessment for either a project, program, or master plan I have ever reviewed, and it is also inconsistent with general CEQA Guidelines for evaluation of environmental setting, existing baseline conditions, and environmental impacts.

Even within the limited 2006 survey area, the Botanical Resources report does not actually assess environmental impacts to plant communities, plant species diversity, or special-status plant species. It merely provides a presence/absence determination of plant species occurrences (and an incomplete one) within the study area, implying or asserting only direct “footprint” impacts of road or timber harvest activities. The so-called “analysis of target special-status species” (section 3.6) and “Impact analysis” (section 4) consists of a few cursory sentences with no meaningful scientific or technical discussion or analysis. No soil maps, geologic maps, vegetation maps, rare plant population maps, or invasive species distribution maps, other data, or scientific literature are discussed to support conclusions about the distribution of resources in relation to timber harvest. Only qualitative presence/absence and coarse habitat descriptions are provided as data, and a plant species list for species observed in the 123 acre survey subset of the total NTMP area.

The report fails to consider significant and obvious indirect or cumulative ecological consequences (essential to CEQA or CEQA-equivalent impact assessment) of NTMP operations over time, such as herbicide use, facilitation of spread of existing on-site invasive plant species, introduction/range extension of invasive plant species not currently present on site but in Sonoma County, spread of pathogens, increase in herbivore populations and herbivory impacts on sensitive species. In short, the report is little more than inventory; it lacks any ecological analysis. The most important omissions in assessment of potential significant impacts to plant resources are discussed below.

- (a) Timber harvest disturbance and road use or maintenance effects on the spread of non-native invasive species (forestland weeds, non-native erosion control seed/hay sources, pathogens) that can severely impair regeneration of native species and plant communities, including sensitive species.

The Botanical Resources report listed numerous noxious weeds that can rapidly invade disturbed coastal conifer forest soils and inhibit regeneration of native plants, including special-status species. Invasive plant population spread can indirectly displace or reduce native plant

populations in early post-logging succession by seedling or mature plant competition, pre-emption of space, or modification of vegetation structure and microhabitats. Examples of significant (noxious) non-native invasive species reported to be present already in the NTMP survey area that could be increased and spread by timber harvest, erosion control, or road maintenance (brushing) include jubata grass (*Cortaderia jubata*), velvet grass (*Holcus lanatus*), Harding grass (*Phalaris aquatica*), bull thistle (*Cirsium vulgare*), fireweed (*Erechtites minima*), Italian thistle (*Carduus pycnocephalus*), and especially French broom (*Genista monspessulana*). In addition, erosion control seed mixes or hay can introduce additional non-native invasive species established in other nearby parts of the county or region, including those with high potential for invasion in disturbed redwood forests, such as tall veldtgrass (*Ehrharta erecta*). Non-native species invasion impacts are not narrowly confined to timber harvest areas or road maintenance areas; they actively spread along disturbed corridors or patches, and increase invasion pressures (seed rain) on even intact plant communities. The Botanical Resources report fails to address this impact altogether, and fails to identify or recommend basic integrated weed management practices (e.g., prevention, early detection, removal, confinement of weed populations) to mitigate impacts to sensitive plant species or communities on or in the vicinity of the 123 acre survey area, the 2470 acre, NTMP area and the biological assessment area beyond its immediate boundaries.

(b) Cumulative long-term effects of herbicide use for road maintenance and post-harvest timberland management in the NTMP area and access areas.

The Botanical Resources report provides no information whatsoever on the types, locations, timing, application rates, or restrictions of herbicides used (if any) in the NTMP area or survey area. Herbicides applied for one purpose, such as suppression of scrub or hardwood trees following logging, may have significant impacts on non-target plant species in the application area, or beyond it (e.g. aerial spray drift or groundwater transport of soils-stable herbicides such as imazapyr). Broadcast application of herbicides could have effectively irreversible and significant impacts (such as extirpation or severe reduction) on native ground layer species richness and diversity, particularly on plant populations with low dispersal or recolonization ability (e.g., clonal herbs, mycotrophic orchids and ericads, hemiparasites, and parasitic plants).

(c) Cumulative long-term effects of NTMP logging on native species diversity and plant communities

The Botanical Resources report considers only individual species impacts, and only direct impacts to listed special-status species. This is not only incorrect interpretation of CEQA (or CEQA-equivalent guidance), it is scientifically unsound conservation biology. Biological diversity, particularly diversity associated with relict populations of mature forest soils, is an important “botanical resource”, at least as important as special-status species conservation. This is equally true from the perspective of scientific or public interest. The maintenance of biological diversity in logged forests is affected by herbivore densities, particularly granivorous (seed-eating) small mammals (Vora 1993, Jules and Rathke 1999, Vellend 2003). The Botanical Resources report disregards all potential significant long-term impacts to native species diversity or plant community resilience associated with timber harvest.

(d) Failure to identify areas of mature forest canopy, soils, and refuges of forb populations with high biological diversity.

Within second-growth or third-growth coastal forests in Sonoma and Mendocino counties, relict patches of relatively undisturbed soils, seed banks, and bud banks often occur, even in areas of past clear-cuts. These relict patches often act as essential refuges of high species diversity that facilitate recolonization and recovery of adjacent logged forest patches during secondary succession. The Botanical Resources report failed to identify any significant geographic variation in native plant species diversity, soil structure, or vegetation structure associated with relict or mature forest conditions, either within the NTMP area or the narrower study area.

(e) Failure to disclose the distribution and abundance of wetlands (riparian marsh and scrub, seep/spring wetland, or wet meadow vegetation in the project area, or in relation to road or logging areas.

The report is contradictory in describing the presence and potential impacts of sensitive habitats such as wetlands in the NTMP area and survey area. The Botanical Resources report includes a map of the NTMP and survey area that represents at least two springs, hydrologic features that are typically associated with localized hillslope wetlands. The species list includes wetland indicator plants such as *Juncus effusus* (soft rush), which is misleadingly described as from “open area with Moisture [sic]” instead of “wetland”. In Section 3.7, it describes wetlands as sensitive habitat, then states, “There is no sensitive or critical habitat within the proposed project. The spring and drainage on the property are considered sensitive and or critical habitat and have been provided with a buffers [sic]. Do the “buffers” redefine the sensitive wetlands outside the project area? Are WLPZ requirements the “buffers”? This is a fallacy – mere circular reasoning. No reference to buffer specifications or conditions is cited. What enforceable mitigation measures provide buffers? What is the “project area” – the 2006 study subset, or the whole NTMP? The carelessly written section supports neither the assertion that no sensitive habitats occur, nor the assertion that they are adequately protected.

The self-contradictions about wetlands in the Bohemian Grove NTMP are only slightly less overt than those of the Bohemia Ranch NTMP Botanical Resources report (prepared by the same authors), which stated “There are no critical or sensitive habitat types present as per DFG CNDDDB [sic]...Biologically, the stream corridors are considered critical habitat and the wetland resented on the north side of the property also meets the definition of critical or sensitive habitats”. This flatly contradicts the 2003 report’s definitions of critical/sensitive habitats on p. 334.11. In both 2003 and 2006 botanical reports for Bohemian botanical resources, confused and inconsistent information prevents meaningful interpretation or public (and agency) comments, and undermines proper impact analysis and formulation of appropriate mitigation.

(f) Floristic survey methods, results, and rare plant assessments.

Even more perplexing is the inconsistent treatment of special-status serpentine vegetation and plant species as present/not present or affected by the NTMP. The report paradoxically asserts “No special-status species were found within the 2006 study sites” and “There is no critical or sensitive habitat within the proposed project”, alongside the following statement about the rare *Arctostaphylos bakeri* ssp. *sublaevis* (carelessly misspelled “*subleavisi*” throughout), “Populations of this plant are on a serpentine ridge on the southeast property line. The 2006 harvest will use an existing road that passes through populations of this plant”. The report separately contradicts even this qualification in Section 5.0, which states, “no special-status

species known for the quadrangle, the surrounding quadrangles, the region associated with the plant community within the 2006 survey area were identified on the project sites *or access roads*” (emphasis added). The report rationalizes the contradiction by asserting that no impacts would occur (without any reference to NTMP conditions prohibiting herbicide use, brush-clearing, or activities that spread invasive competing species or pathogens affecting rare serpentine plants).

The argument is irrational and counterfactual. Rare plants are documented to be present in the NTMP area, and within the project area, and potential significant impacts could occur through multiple activities associated with routine NTMP road and logging operations (herbicide application or drift, invasive species spread, road maintenance, erosion control), as well as inadvertent activities (ignition of wildland fire by motorized equipment or vehicles). It is irrelevant that “no changes in the road are proposed” as stated in Section 5; what is relevant is what indirect or direct impacts could occur to sensitive plants as a result of NTMP authorization overall.

It is also disconcerting that the survey did not actually detect or identify this highly visible species, but conceded its presence because of past surveys and identification by others. This raises the question of whether the survey methods and qualifications of field botanists were adequate (see below).

The same contorted, conflicted statements about presence/absence and impacts of rare plants are given for other species, *Arctostaphylos bakeri* ssp. *bakeri*, *Chlorogalum pomeridianum* var. *minus* (misspelled “*poneridianum*”), *Cordylanthus tenuis* ssp. *capillaris* (misspelled “*capilaris*”), *Lessingia arachnoidea*, and *Horkelia tenuiloba*. As in the model case of *A. bakeri* ssp. *sublaevis*, the report dismisses the special-status species from evaluation in the NTMP by piecemealing the study area and assuming that because no direct impacts are proposed for the areas currently occupied, no indirect or cumulative impacts can occur. This reasoning is not merely naïve or invalid plant ecology: it is a systematic, arbitrary and prejudicial conclusion with no scientific basis.

The geographic scope of analysis of the NTMP’s assessment of sensitive species and plant communities is woefully incomplete, focused on a small portion (5%) of the overall NTMP authorization area without reference to past or future (deferred) study and assessment of either the full project area, or its environmental setting (biological assessment area). The report provides no meaningful impact analysis of NTMP activities on existing native plant populations and communities, or overall plant diversity. It ignores potentially significant indirect and cumulative long-term impacts for the long-term NTMP, and instead focuses narrowly on weak presence/absence data and tacit assumptions that only direct project impacts are foreseeable. Finally, even this attenuated and blinkered impact analysis is based on a single year’s local survey with insufficient survey methods. The deficiencies include a lack of late-summer surveys, apparent omissions in the local flora (nondisclosure of unidentified taxa), sampling strategy with no reference to distribution of vegetation types or soil series/inclusions, and failure to identify previously verified sensitive species within the survey area.

This unusually large (maximum legal limit) NTMP area requires comprehensive surveys of the soil types and plant community types (important predictive variables for plant populations and vegetation) present within its boundaries. Appropriate and adequate methods for this geographic scale would include GIS analysis of aerial photography, soil maps, topography (slopes, aspect,

elevation), geologic maps, and (if available) digital elevation models. The soil/vegetation units within the NTMP area should be classified and stratified random sampling strategies should be fitted to the heterogeneous sub-units to ensure proportional coverage of field survey efforts. The entire flowering season should be included in surveys, including at least one late summer flowering annual forb survey.

1.2. Mitigation

The Botanical Resources report fails to describe feasible or scientifically credible mitigation to minimize or avoid direct impacts (timber harvest, herbicide application) or indirect impacts (e.g., gully or sheet erosion on Hugo soil series with “very high” erosion hazard, mass wasting, herbicide drift, invasive plant spread from erosion control, increased post-logging herbivore density and herbivory/granivory impacts), to special-status plant species, significant vegetation stands with high biological diversity (such as mapped or unmapped serpentine soil inclusions), or seep/spring wetlands.

To mitigate potentially significant long-term indirect and cumulative impacts to important plant biological diversity and sensitive plant populations (see 1.1. above), the NTMP should include as a condition of authorization a requirement for preparation, resource agency approval and review, and implementation of an enforceable mitigation/monitoring plan (CEQA-equivalent) that adequately addresses:

- Comprehensive plant and vegetation surveys for the NTMP area based on stratified sampling of soil/vegetation subunits that correspond with species composition, to serve as a baseline for repeated surveys (time-series monitoring of plant distributions, with emphasis on distribution and abundance of special-status or regionally rare plant populations);
- Baseline surveys of noxious weed distributions and seed sources to guide adaptive management of invasive weeds;
- Pre-emptive detection and eradication of additional invasive plant species dispersed by vehicles, equipment, or erosion control measures;
- Control of existing infestations of noxious invasive species present on site, with emphasis on suppression and containment near active NTMP roads, equipment staging and stockpile areas, and areas of timber harvest;
- Best management practices to educate field crews on locations of sensitive plant resources and incompatible activities (equipment staging, stockpiling, brush clearance, road repair fill borrow sites or grading, fire ignition sources, off-road vehicle turns, construction of turn-outs) and field-mark locations of sensitive plant communities and buffer zones;
- Pre-harvest seasonally timed plant surveys to establish exclusion and buffer zones for ground-based equipment and vehicles
- Analysis of all herbicides likely to be used in ongoing forest or road management, vectors of target and non-target transport of herbicides (runoff, subsurface flows, spray drift) and prescriptions for restricting modes of application, herbicide types, or locations that may likely damage vegetation with high native plant species diversity (“hot spots”) or sensitive plant species.

- Site-specific assessment of unstable “high erosion hazard” Hugo series soils to avoid initiating slope failures above springs, headwaters, ephemeral streams, or wetlands.

1.3. Plant survey methods and environmental baseline for impact assessment.

The Botanical Resources report methodology is deficient and unreliable for both sensitive plants and floristic inventory even within the limited 123 acre area within the larger 2470 acre NTMP area (5%). It contains unexplained omissions of genera and species, and internal inconsistencies of reporting habitats and species observed. For example, the species listed as “observed” on the 123 acre study area, including seeps and watercourses and extensive coniferous forest, as well as serpentine chaparral, included no sedges in the genus *Carex* (not even unidentified “*Carex* sp.”), only one *Juncus* species, and no herbaceous Ericaceae species whatsoever. As a professional botanist with nearly two decades experience in Sonoma County (and permanent residence of nearly one decade in one of its largest coastal forests), I find this result incredible. It would be difficult to find a patch of coastal redwood-douglas fir forest in Sonoma County even half the size of the study area that lacked at least one *Carex* species (at least vegetative specimens identifiable to the level of genus or subgenus, if not species or subspecies) and at least one herbaceous Ericaceae species – even if it lacked springs and seeps. The grass species list is also suspiciously short for an area in forested Sonoma County over 100 acres including a local serpentine outcrop, with no unidentified grass species acknowledged, and only common species identified. These are all strongly suggestive of exclusion of unidentified species from the list, or a deficient survey effort for the area studied. These likely defects would be mitigated if the entire NTMP area had been surveyed first (following stratification of sampling by soil and vegetation types), and the 123 sub-“project area” had been re-surveyed. Hierarchical sampling of the project area would enable an analysis of the species-area curve and determination of minimum sampling effort to ensure adequate detection probabilities. This basic method for sampling large areas was not performed.

Even more incredible (and contradictory) is the report’s multiple conclusions that rare plant species lack suitable habitat in the study area, when ecologically associated species and habitats are documented to be present. For example, the report provides as “justification for absence on project site” for *Hemizonia congesta* ssp. *leucocephala* (a special-status native tarplant that grows in many grassland soils, including roadsides and serpentine vegetation), the rote phrase, “Absence of requisit [sic] habitat”. This is contradicted by the presence of multiple ecologically associated species (one in the same family), and the presence of serpentine soil roadsides. Interestingly, the report authors also failed to survey the site after August 6 (this species often blooms late August to October or later), and failed to identify the species at Bohemian Ranch (1-03NTMP-017 SON) where it had been reported earlier by other botanists. The report provides no explanation why *Cordylanthus tenuis* ssp. *brunneus* “has no suitable habitat on site”, while its ecologically equivalent subspecies *tenuis* was documented on the serpentine soil area on the property boundary. This conclusion is not credible. *Lessingia hololeuca* suffers the same inconsistent treatment: it is reported to be excluded by “lack edaphic requirements”, while the ecologically equivalent and sometimes associated species *L. arachnoidea* is documented on the property’s serpentine soil outcrops. *Calamagrostis bolanderi* is reported to be excluded by “absence of requisite mesic habitat”, even though springs are mapped in the NTMP. These arbitrary conclusions on the whole suggest a prejudice to exclude or rationalize away detection, focused survey effort, re-survey efforts, impacts, and appropriate mitigation for special-status plants.

The apparently coarse survey results are likely to result in errors that could result in significant adverse impacts. The lack of a stratified vegetation sampling strategy based on soil series or preliminary vegetation classification is a fundamental flaw with complex topography, soils, and drainage. The report provides no documentation of methods and results to support its peremptory findings that “further biological studies are unwarranted” and “there is no reason to expect any impacts to special-status plant species...it is with the highest degree of certainty that this conclusion is formulated”.

I must also note that the vascular plant species lists in the report contained more frequent and repeated spelling or typographic errors (one to five on most pages of the species list) than I have seen in any recent unpublished professional plant surveys. This reinforces my impression that the report was hastily or poorly edited for substantive content and format alike. This is not merely a *pro forma* concern – it is a “red flag” for more substantive errors that underestimate rare plant distributions (like *Arctostaphylos bakeri* ssp. *sublaevis* that was not identified by the current survey, but was verified on the project site by previous surveys).

2. Endangered wildlife: Northern Spotted Owl

The NTMP utilizes the conventional Forest Practice Rules-based protocols for assessing impacts and “take” of federally listed northern spotted owl that focus narrowly on direct impacts of occupied NSO territories/home ranges within a short time period – a “snapshot” of NSO distribution in relation to imminent timber harvest. Applied to NTMPs with longer or indefinite periods of authorization, this NSO “snapshot” approach necessarily fails to address long-term cumulative timber harvest impacts (forest habitat quality decline, fragmentation and edge effects, core habitat acreage decline) as well as long-term population decline of NSO in the biological assessment area – a decline which the RPF (Kent) has previously acknowledged in the NTMP for the adjacent parcel (01-03NTMP-017SON p. 141 revised 6/11/03).

The Bohemian Grove NTMP assessment of NSO impacts entirely ignores significant indirect, cumulative, long-term impacts of logging in a mature second-growth forest on the dispersal and abundance of principal competitor and predator species, the non-native barred owl (which is rapidly expanding its Pacific range southward) and the great horned owl, even though the RPF (Kent) previously identified barred owls present in the adjacent Bohemian Ranch NTMP area (01-03NTMP-017SON p. 141 revised 6/11/03) and acknowledged potential causally related declines in NSO in the biological assessment area.

Fragmentation and disturbance of mature second-growth (or old growth) conifer forests is known to facilitate invasion of more habitat-generalist barred owls and great horned owls into high-quality foraging and nesting habitat of NSO. Mature forest structure provides NSO refuge from predators, and fragmentation and logging disturbance gaps dispersed within mature forest habitats of NSO is likely to cause significant long-term degradation and decline in NSO population viability (Solis et al. 1990, Blakesley et al. 1992, Zabel 1995, Hunter et al. 1995, Ward *et al.* 1998, Thome *et al.* 1999, Zabel et al. 2003). In addition, barred owls are now known to be vectors for blood parasites that have been confirmed to have significant adversely effects on NSO (Ishak *et al.* 2008), another potential indirect impact of logging-facilitated spread of barred owls.

The NTMP fails to apply readily available published peer-reviewed, authoritative research on NSO ecology to justify its (flawed) conclusion that NSO impacts will not result in significant

impacts or “take” or at a local (within-project) scale or regional (among habitat blocks in the southern coastal NSO range) scale. Given the scarcity of mature second-growth or old-growth NSO habitat in Sonoma and Marin Counties available for the NSO metapopulation, and the relatively large area of the project compared with other NSO habitat blocks in the region, this is a major deficiency in the project’s environmental impact analysis that likely underestimates significant potential indirect and cumulative long-term impacts of the NTMP. Analysis of the NTMP’s long-term indirect and cumulative impacts on NSO habitat quality, predator and competitor interactions, and population viability in the context of regional habitat models and NSO metapopulation structure are essential for scientifically sound assessment of impacts.

The 2006 “technical assistance” letter from U.S. Fish and Wildlife Service is not only outdated, but the Service has discontinued the practice of issuing technical assistance letters for NSO “no take” determinations – a protocol that has, and never had, any legal authority whatsoever under the Federal Endangered Species Act of 1973 (as amended). The Arcata Fish and Wildlife Office has confirmed that these technical assistance letters are not considered “federal actions”, and are not supported by administrative records for decisions. In other words, there is no record of any substantial scientific analysis of overall NTMP impacts to NSO by the Service, CALFIRE, or the Department of Fish and Game, other than crude location and buffer zone data, and use of unsubstantiated assumptions that “no take” would occur within arbitrary distances – counter-indicated by evidence of regional declines in NSO populations, and spread of barred owls in Sonoma County timberlands). This NSO “take” and impact risk situation is not remedied (and is probably exacerbated) by currently proposed rules to modify NSO consultation procedures to become purely internal state-only reviews reliant on rote determinations by commercial consulting biologists, without scientific peer review or federal review.

The NTMP’s failure to analyze and mitigate potentially significant impacts (including potential “take”) of NSO must be corrected. This is particularly important for this NTMP because of its exceptional size and location within one of the most extensive blocks of mature coastal conifer forests in the region, where this vegetation type is scarce and declining. Corrective measures would require:

- Re-survey of the NTMP area and Biological Assessment Area for NSO and principal competitor and predator species;
- Analysis of long-term impacts using the best available scientific habitat and population models for NSO developed by U.S Fish and Wildlife Service, U.S. Forest Service, and academic scientists for Pacific Northwest Forests, calibrated and adapted to Sonoma County;
- Preparation and authorization of a Habitat Conservation Plan (HCP) to conserve well-distributed habitat refugia, buffer zones, and provide legal authorization for incidental “take” of NSO. I believe that failure to prepare and authorize an HCP for the project area under current regulatory and biological circumstances could place the timber operators, landowners, RPF, and possibly CALFIRE at risk of violating of Section 9 of the Endangered Species Act, in view of a recent federal court opinion and order regarding state regulatory actions that are likely to result in unauthorized “take” (Animal Protection Institute and Center for Biodiversity v. Minnesota Department of Natural Resources, U.S. District Court – Minnesota Memorandum Opinion and Order Civil No. 06 - 3776 (MJD/RLE).

Conclusions and recommendations

The botanical resources report is woefully incomplete in terms of the geographic scope of the NTMP, basic impact analysis and mitigation, and characterization of existing vegetation, soils (and soil-vegetation relationships), and plant species composition. It relies on a single floristic survey with many apparent or likely errors, omissions, and inconsistencies that make it unreliable. It lacks even minimal CEQA-equivalent mitigation, in part because of woefully deficient impact analysis. The endangered northern spotted owl impact assessment is also basically deficient, and ignores the best available scientific evidence, models, and methods for evaluating significant indirect and cumulative long-term impacts of timber harvest on NSO habitat quality and populations. The NTMP as currently proposed cannot demonstrate that no “take” of NSO would occur, and provides ample evidence that implementation of the NTMP would result in “take” and contribute significantly to long-term regional declines of the NSO as a result of direct, indirect, and cumulative impacts. The exceptionally large block of mature forest habitat within the NTMP and its surrounding forest area warrants and necessitates a Habitat Conservation Plan to avoid significant impacts and avoid unauthorized “take” of NSO.

Respectfully submitted,



Peter R. Baye, Ph.D.

Cc: Friends of the Gualala River
Sierra Club, Redwood Chapter
Paul Carroll
Forests Unlimited
Interested parties

Literature Cited

Blakesely, J.A., A.B. Franklin, and R.J. Gutierrez. 1992. Spotted owl roost and nest site selection in northwestern California. *Journal of Wildlife Management* 56: 388-392.

Hunter, J.E. R.J. Gutierrez, and A.B. Franklin. 1995. Habitat configuration around spotted owl nest sites in northwestern California. *Condor* 97:684-693.

Ishak HD, Dumbacher JP, Anderson NL, Keane JJ, Valkiunas G, *et al.* (2008) Blood Parasites in Owls with Conservation Implications for the Spotted Owl (*Strix occidentalis*). *PLoS ONE* 3(5): e2304.
doi:10.1371/journal.pone.0002304

Jules, Erik S. and B.J. Rathcke. 1999. Mechanisms of reduced *Trillium* recruitment along edges of old-growth forest fragments. *Conservation Biology* 13: 784-793.

Solis, D.M., Jr. and R.J. Gutierrez. 1990. Summer habitat ecology of northern spotted owls in northwestern California. *Condor* 92: 739-748.

Thome, D.M, C.J. Zabel, and L.V. Diller. 1999. Forest stand characteristics and reproduction of Northern Spotted Owls in managed north-coastal California forests. *Journal of Wildlife Management* 63:44-59.

Vellend, M. 2003. Habitat loss inhibits recovery of plant diversity as forests regrow. *Ecology* 84: 1158-1164.

Vora, R.S. 1993. Effects of timber harvest treatments on understory plants and herbivores in northeastern California after 40 years. *Madroño* 40: 31-37.

Ward, J.P. Jr. R.J. Gutierrez, and B.R. Noon. 1998. Habitat selection by Northern Spotted Owls: the consequences of prey selection and distribution. *Condor* 100: 79-92

Zabel, C.J., K. McKelvey, and J. P. Ward, Jr. 1995. Influence of primary prey on home range size and habitat use patterns of spotted owls (*Strix occidentalis*). *Canadian Journal of Zoology* 73:433-439.

Zabel, Cynthia J, J.R. Dunk, H.B. Stauffer, L.M. Roberts, B.S. Mulder, and A. Wright. 2003. Northern spotted owl habitat models for research and management application in California (USA). *Ecological Applications* 13: 1027-1040