California Department of Fish and Game Comments on the
Draft Environmental Impact Report for Proposed JDSF Management Plan

The California Department of Fish and Game (DFG) appreciates the opportunity to comment on the Jackson Demonstration State Forest (JDSF) draft Environmental Impact Report (DEIR). DFG's review of the JDSF DEIR has been focused within its jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (Section 1802, Fish and Game Code). In addition, DFG, as trustee agency under California Environmental Quality Act (CEQA) Section 14 California Code of Regulations (14 CCR) 15386, CEQA Guidelines), provides expertise to review and comment upon environmental documents and makes recommendations regarding potential negative impacts to those resources held in trust for the people of California.

DFG's review was restricted to the DEIR, and not of the Draft Forest Management Plan (DFMP). We understand the DFMP's intent is to provide programmatic guidance to California Department of Forestry and Fire Protection (CDF) in the management of the Forest, and subsequent to the DEIR, will need to be updated and finalized. Further, we recognize more site-specific assessment of impacts and mitigation for sensitive[1] species will need to be provided in timber harvesting plans (THPs), and reviewed by the public and trustee agencies.

Overall the biological resource discussions in the DEIR were informative; however, portions were unclear, incomplete, and/or not fully integrated with the DFMP. The DEIR's analyses regarding potential species impacts are generalized with many species analyses based on various models such as California Wildlife-Habitat Relationships (CWHR). While useful, models are not always sufficient for accurately assessing potential impacts as they relate to the habitat, species and proposed management disclosed in the DEIR. This highlights the need to expand the understanding of the biological resources on JDSF. Lastly, DFG noted that many literature citations in the text were not included in the references cited section, a number of citations were apparently miss-cited, and some pertinent literature appears to have been overlooked.

DFG comments are presented below and summarized by pertinent section, biological resource, and page number. For questions regarding these comments, please contact Mr. Marty Berbach, Staff Environmental Scientist, at (916) 327-8839, or Ms. Clare Golec, Environmental Scientist, at (707) 964-1597.

[1] Sensitive species include those species listed as endangered, threatened or rare (Section 670.2, 14 CCR; Section 1900, Fish and Game Code; ESA Section 17.11, Title 50, Code of Federal Regulations), or those meeting the definitions of rare or endangered provided in Section 15380 of the CEQA Guidelines.

Part V. Environmental Setting

- Page V-4: Other contributing economical pressures for commercial timber management are lower timber volume on the landscape (past harvest practices and younger stands), higher costs of doing business (such as wages, construction and gas prices), and international market competition.

Part VI. Alternatives

- Pages VI-35 through 37, Table VI.1 Comparison of Management Approach and Elements Among Proposed Alternatives: Alternatives A, B, and D do not appear to propose the protection and recruitment of sufficiently large blocks of appropriately-placed, late successional forest habitat that would benefit marbled murrelets. These alternatives do not appear consistent with the designation of JDSF as marbled murrelet critical habitat (U. S. Fish and Wildlife Service 1996), nor the recovery objectives and goals of the Marbled Murrelet Recovery Plan (U. S. Fish and Wildlife Service 1997).

- Page VI-39, Table VI.1 Comparison of Management Approach and Elements Among Proposed Alternatives: Differences regarding rare plant surveys and species considerations under Alternatives B through E are unclear given the standard CEQA considerations would include all listed measures, including Alterative C1. The distinct differences appear to be the addition of Integrated Pest Management under Alterative C1 and some level (as funding permits) of forest-wide floristic surveys under Alterative F. The Alternatives offer very little management considerations for sensitive plants and, with the exception of Alterative F, none appear to provide for any floristic surveys. This is crucial for ensuring the adequacy of sensitive plant surveys and for developing a sound understanding of the forest flora. Given JSDF's high quality and volume of timber relative to other managed redwood forestlands, DFG recommends that consideration be given to re-directing timber revenues back into the Forest for purposes of providing adequate and consistent funding for the management of roads, recreation, forestry and biological resources.

- Page VI-53, Table VI.1 Comparison of Management Approach and Elements Among Proposed Alternatives: It is unclear how Alterative B and C1 will differ in management approaches for wetlands. Alternative B cites FPRs and Alternative C1 cites FPRs with "protection of wetland site and integrity and hydrological function". However, the wetland section of the DEIR does not clarify other management approaches beyond standard FPR's WLPZ protections measures.

Part VII. Resource Specific Analysis

Part VII.6.1, Aquatic Resources

- Page VII.6.1-5: Where stated that, "…*streams in JDSF are primarily confined and therefore generally lack off-channel habitats such as side channels and floodplains that would otherwise provide high-quality overwintering habitat for juvenile coho salmon."* DFG considers flood prone areas that support wetland indicators including mud-lined trees, sand and silt deposits or presence of hydrophytes such as common scouring rush (*Equisetum hyemale* ssp. *affine*) as frequently inundated floodplains and the minimum extent of the riparian zone. Protecting and enhancing riparian buffer zones to protect coho salmon is one of the Noyo River watershed recommendations in the coho salmon recovery strategy (California Department of Fish and Game, 2004). However, a potential contradiction exists regarding the Watercourse or Lake Protection Line (WLTL) and Channel Zone definitions in the California Forest Practice Rules (FPR), which typically leads one to apply the WLTL (the inner boundary of a Watercourse or Lake Protection Zone [WLPZ]) adjacent to the active stream channels and streamward of floodplains[2]; based on delineating the WLTL at the streamside prevalence of 25-year old conifers and hardwoods. These trees typically persist near the active channel, thus, transitioning a watercourse margin here typically separates the active channel from its floodplain (the two are therefore, protected differently). The current FPRs do not necessarily recognize or support recent science-based treatments that suggest combining the active channel and floodplain into a single feature known as the channel zone (Ligon. et al., 1999) or that the separation of the two may result in loss of riparian corridors (and WLPZs placed thereon) from lateral channel migration described in Naiman, et al., 1992; Rapp, et al. 2003; Keller and Swanson, 1979, and noted on DEIR pages VII.6.1-5 and 6. The final EIR should detail how flood prone areas (i.e., the 20-year return interval floodplains) will be identified and managed in the Forest and how will proposed management compliment the goals of coho recovery, insofar as recovering properly functioning riparian microclimate, shade and large woody debris recruitment to streams, and the intent of the FPRs to maintain, protect and restore riparian zones (14 CCR § 916)?

- Page VII.6.1-10: According to Benda and others (2002) and Benda and Associates [2004 (a, b)], low gradient channels with floodplains, bank erosion and tree mortality are usually more important than landslide features as a wood recruitment mechanism. It should be noted that these studies were based on chronic wood input modeling (such as delivery from tree mortality, longevity of wood in the channel, distance and direction of tree fall, and wind-throw or gradual undercutting of root systems) and assumed that most large woody debris (LWD) originates from a set distance from the channel; such as the 90% wood recruitment originating from within 33 feet of the bank in Benda's second growth

[2] The level area near a river channel, constructed by the river in the present climate and overflowed during moderate flow events (Leopold, 1994).

study sites. Subsequently, these studies did not consider the fact that a majority of wood input and output tends to be episodic (i.e., delivery from windstorms, floods, fires or landslides) and not constant or chronic. Episodic wood input has been shown to account for most of the tree fall and wood delivery in streams (Naiman, et al. 2000). This may explain why the volume of wood with sources that could be identified in Benda (2002) was low (mean 27%) in the old growth study segments. It is, therefore, important to explain that wood recruitment distances vary tremendously on spatial (e.g. hill slopes vs. active floodplain sources) and temporal scales (e.g. time to grow mature [300-400 years old] redwoods vs. young second growth (60-80 years old) in the riparian zone.) Moreover, management guidelines that are predicated on these types of models (especially if data is collected from small streams absent active floodplains) for set distances of wood recruitment will likely result in underestimating riparian zone protection required to provide long-term instream wood for medium to large streams. Thus, these guidelines may not sufficiently support the intent of the Forest Practice Rules to maintain, protect or recover riparian zones depending on their conditions. DFG recommends establishing the WLTL at the outer boundary of a watercourse's 20-year return interval event floodplain to avoid losing instream large woody debris or recruitment potential, where lack of this value is a primarily limiting factor. The area between the WLTL should then be defined as the channel zone where timber harvesting would be directed to improve salmonid habitat through the limited use of the selection or commercial thinning silvicultural methods with review and comment by DFG. Alternatives C1 and C2 propose compliance with the FPRs plus additional equipment limitations and no-cut zones for Class I and Class II watercourses (according to DEIR pages VI-29 and 31). It appears that Alternatives D-F with their Riparian Management Zones will provide the best protection for watercourses and floodplains insofar as minimizing impacts to large wood recruitment because it provides guarantees that late seral habitat will be developed in the riparian zones and will compensate for the FPR's separation of the active channel from floodplains with FEMAT-based watercourse buffer widths.

- Page VII.6.1-11: Where stated, *"However, reduced levels of detrital input into streams attributable to streamside timber harvesting is somewhat offset by concomitant increases in detritus production within stream channels (primarily dead algae and other aquatic plant debris)…"*, is there a specific reference for this comment because first order streams (such as Class III watercourses) contain little algae and aquatic plants present to offset reduced detrital levels from streamside timber harvests (Clare Golec, Botanist with DFG, pers. comms February 2006); therefore, detritus production in headwater streams is primarily dependent on riparian vegetation and emergent wetland plants. FPRs do not require post harvest overstory canopy retention for Class III watercourses, unlike Class I and Class II watercourses that also receive large woody debris protection measures. Yet, because of their dentritic pattern in typical watersheds, Class IIIs often comprise a large proportion of the stream network and are therefore considered important for maintaining ecosystem integrity (Sheridan, 2003).

Since Alternatives C1 and C2 propose compliance with the FPRs plus additional equipment limitations regarding Class III watercourses (according to DEIR pages VI-32 and 33), it appears that Alternatives D-F with their Riparian Management Zones provide the best protection for Class III watercourses insofar as minimizing the rate of nutrient removal from headwater streams, the products of which indirectly benefit coho, tailed frog, southern torrent salamanders, etc.

- Page VII.6.1-14: The DEIR cites the study by CH_2M-Hill and Western Watershed Analysts (1999), which reported that nearly 80% of cumulative riparian shade effectiveness is reached within approximately 0.5 site-potential tree heights vs. the generalized curve presented by FEMAT (1993), which suggests that cumulative effectiveness for shading approaches 100% at a distance of, approximately, 1.0 tree height from the stream channel. Why are two different percentages compared, such as 80% for the Steinblums and others 1984 (ACD) curve vs. 100% for the FEMAT curve? The Riparian Shade Effectiveness "FEMAT" Curve reaches 100% at 1.0 tree height and the Steinblums and others 1984 (ACD) curve is not much lower at, approximately, 95% at 1.0 tree height. Additionally, why is 80% cumulative riparian shade effectiveness chosen as a curve comparison point as opposed to 100% if the point is not to further impair, but instead, restore impaired watercourses and riparian zones? Alternatives D-F with their Riparian Management Zones appear best suited to provide adequate shade to stream because the RMZs provide better guarantees for late seral habitat development in the riparian zones, which is critical to coho recovery (California Department of Fish and Game, 2004), while more effectively avoiding substantial effects on any portion of riparian habitats by utilizing the FEMAT-based watercourse buffer widths.

- Page VII.6.1-15: The DEIR cites the James (2003) study of streamside microclimate and stream temperature in the Sierra Nevada region, which revealed that clearcuts had no discernable impact on microclimate within 40 feet of the stream bank. This example is possibly misleading when it's compared to coastal watersheds, where streams do not receive water temperature-ameliorating effects such as snow pack and associated cold water run-off in the Sierras. A caveat should be added to the James 2003 study discussion to inform the reader about how such narrow stream buffers might be appropriate in the Sierra setting, but might not be appropriate in the coastal watershed setting (see Ledwith,1996, which is perhaps a more appropriate microclimate setting comparison). For JDSF, it is likely that water temperature-ameliorating effects are more effectively achieved by tall-tree shade, which approaches 100% at one site potential tree height according Steinblums and others, 1984. One site potential tree height (the expected height of coniferous trees upon maturity at 200 years) on a high-site coastal California redwood forest is, approximately, 165-220 feet when utilizing mature redwood trees as opposed to young growth (50-60 year old) redwoods, resulting in a buffer that's at least four times wider than the James 2003 buffer width results.

- Page VII.6.1-20: Where stated that "*Incised channels, even where the stream is not confined within the valley bottom, have little or no connectivity between channels and floodplains, and typically provide very little off-channel or side-channel habitat capable of providing low-velocity refuge during high flow events."* It is further stated that, *"Confined channels make up 97 percent (184 mi or 296 km) of the classified Class I stream length in the JDSF Proper assessment area."* This implies that most Class I streams in the JDSF either don't have floodplain connectivity and, where they do, they're of little aquatic habitat importance. Regarding connectivity, the flood of December 31, 2005 was an, approximately, 10-year return interval (RI) flood event (i.e., frequent flood compared to Noyo River gaging station's history of peak flows) and evidence of floodplain connectivity and landward extent (as much as 100 feet) on the SF Noyo is obvious (sand, silt and debris deposits) near the confluence with the Noyo River. Big River's floodplains (near the Two Log Creek confluence) were under floodwaters for approximately 20 hours according to the nearby USGS gaging station (estimated to have been a 20-year flood RI based on its location between Caspar Creek [8-12 year RI], and the Navarro, [approximately 20-year RI]). Did the Stillwater Sciences 1997 assessment utilize gaging station data to estimate the approximate stage-height of a 20-year flood RI as part of their field verification of channel confinement and floodplain connectivity estimates? DFG considers the 20-year RI floodplain and the active channel as the most biologically critical area, based on coho salmon life cycle requirements (CDF 2005) and the minimum extent of channel zone habitat necessary for protection, maintenance and recovery of coho populations in the North and Central Coast regions. Splash damming is mentioned in the DEIR as a causal factor in channel incision and should be acknowledged along with the Stillwater Sciences reference that, in part, the lack of connectivity is most likely artificial. However, stream channel and riparian zone recovery will likely result in these floodplains becoming more temporally and spatially connected. A re-assessment of channel confinement, following the recent flood, will likely reveal much greater floodplain connectivity with Class I active channels than is suggested in the DEIR.

- Page VII.6.1-22: Figure VII.6.1.2, Sediment in Pools (V*) at Noyo River and Nearby Stream Sites (1992), appears to be missing sampled stream names on the ordinate, for example, between Kass and Parlin Creeks.

- Page VII.6.1-38: Repetitive references to past stream clearing by DFG (e.g., under the heading of *"Big River watershed-Mendocino Redwood Company-Stream Habitat Assessment"* and particularly the last paragraphs on pages VII.6.1-46 and 1-84) should be explained in more context including logging history, which necessitated the clearings in the first place (there is some mention of this for Caspar Creek on page VII.6.1-35.) In the past, logging-related debris jams were deliberately caused by pushing wood debris into streams for crossings and streamside landings. As mentioned in the DEIR, splash dams were also built (circa 1860s-1930s) in some watersheds such as Big River and Caspar Creek to drive logs downstream. By design, splash dams blocked water and fish

passage while in use and after log-drives when the dams were abandoned, many still intact. DFG and others recognized (in the early 1960s) that removing and/or modifying logging-related fish impasses was important because it didn't matter how much wood was present in spawning and rearing habitats if fish could not get access to the habitat. At some locations, well intentioned efforts to provide fish passage may have removed too much wood to the detriment of fishery rearing habitat. However, past debris removal practices should be discussed with the acknowledgement that past logging activities initiated the need to clear streams of wood in order to re-establish migration for salmon and steelhead. Explaining this fact in context of the DFG stream clearings will provide readers with a more complete account of why in-stream wood is, in part, lacking in some JDSF streams.

- Page VII.6.1-91: It's stated that, *"Timber operations within channel migration zones will not occur (except as allowed in the Forest Practice Rules*)". What is the definition of a Channel Migration Zone?

- Page VII.6.1-91: it is stated that, *"Within Class I and Class II WLPZ, retain a minimum of 240 sq. ft. conifer basal area following completion of timber operations"*. How will this strategy meet Forest Practice Rule 897 [Implementation of Act Intent (b)(1)(C)] to *"Retain or recruit late and diverse seral stage habitat components for wildlife concentrated in the watercourse and lake zones and as appropriate to provide for functional connectivity between habitats"*. Contrast this with the fact that the Forest Practice Rule's WLPZs are typically managed under selection silviculture for tree growth where the largest trees can be removed at the end of every growth cycle. Without additional requirements to allow trees to recruit into larger diameters, these areas will not contribute the type of large wood that historically formed the large woody debris and late seral components in the riparian zone. Alternatives D-F, particularity Alternative D developed from recommendations of the JDSF Citizen Advisory Committee, appear to meet this goal most effectively with their protected riparian zones for all watercourses using harvest limitations similar to the methods described in FEMAT (1993). Management that's designed to establish late successional habitat will likely guarantee sources of large wood as riparian zones develop late-seral habitat (noted on page VII.6.1-37).

- Page VII.6.1-102: The impact evaluation of the DFMP (alternative C1) and alternative C2 is based on using standard FPRs [14 CCR 916.9(i)] for LWD recruitment with the addition of 25-foot no-cut zones in the inner WLPZs and additional silviculture considerations. This is a good strategy to employ especially when WLPZs are placed at the base of hill slopes as opposed to inner floodplain margins because WLPZs are subject to natural destruction from lateral channel migration in addition to high winds that penetrate both streamward and landward of WLPZ edges (Reid and Hilton 1988). In 1999, a Scientific Review Panel (SRP) of scientists was created to undertake a comprehensive review of the California Forest Practice Rules (FPRs) regarding their adequacy to protect

salmonid species (Ligon and others 1999). The SRP concluded that the FPRs, including their implementation (the "THP process") did not ensure protection of anadromous salmonid populations. The SRP recommended that the watercourse and lake transition line (WLTL) be placed outside of active floodplains (20-year return interval, Bill Trush, pers. comms, 2004). Furthermore, the SRP reasoned that the river channel and floodplain inseparably comprise a stream (the channel zone) and recommended that it neither be harvested nor considered a zone for LWD recruitment. The SRP then opined that if the channel zone or WLTL definitions were modified, the WLPZ widths would have to be re-evaluated. The SRP also made specific rule recommendations such as redefining the watercourse transition line to include the flood plain: *The watercourse transition line is the outer boundary of a watercourse's floodplain as defined by the following: (1) the upper limit of sand deposition; and, (2) evidence of recent channel migration and/or flood debris. The first line of permanent woody vegetation must not be used to determine this transition line.* The current FPR's definition and interpretation of the WLTL uses the first line of woody vegetation to determine the watercourse transition line for unconfined channels. It appears that future JDSF THPs will use the FPR definitions for determining the WLTL. Considering this, DFG recommends that the JDSF management plan instead use definitions recommended by the SRP to improve protection and recovery of salmonid populations.

- Pages VII.6.1-106 and 107: Regarding Impact 3a: Riparian Forest Extent and Quality, the watercourse and lake protection zone's (WLPZ) measures in Alternative C1 and 2 are not adequately explained when compared to Alternatives D, E and F. Thus, it is difficult to evaluate potential project impacts. If Alternatives D-F provide enhanced riparian protection above minimum Forest Practice Rules, plus what's provided in the Alternative C1 and C2, then choosing alternatives D-F is preferred because the Forest Practice Rules do not recognize all critical salmonid and riparian habitat protection measures recommended in the 1999 SRP. In addition, the DFMP does not appear to compensate for where the FPRs fall short in protecting streams and rivers recommended in current literature.

Part VII.6.2, Botanical Resources

- Part VII.6.2.1, Setting: The DEIR should include in the vegetation series, Douglas-fir – Tanoak Series, which incorporates the CNDDB/Holland vegetation types Broadleaved Upland Forest (in particular Mixed Evergreen Forest and Tanoak Forest) and North Coast Coniferous Forest. The Redwood Series is considered to only incorporate the CNDDB/Holland vegetation types North Coast Alluvial Redwood Forest, Alluvial Redwood Forest, and Upland Redwood Forest. Generally this vegetation series forms a mosaic with the redwood series, occupying the more exposed aspects of ridgelines and upper slopes.

- Page VII.6.2-2: Other communities or series in the redwood region should include coastal scrub, willow riparian forests and woodlands, native grassland and non-native grassland.

- Pages VII.6.2-2 and 6.2-8: Discussions on rare or sensitive vegetation types and Bishop pine forest should include Northern Bishop Pine Forest as a sensitive vegetation type. The Northern Bishop Pine Forest is very limited in distribution and is often poorly understood when within its range.

- Page VII.6.2-7: Please note the correct spelling of *Cupressus goveniana* ssp. *pigmaea*, and sensitive plants frequently associated with Mendocino pygmy cypress forest are:

  Rare Species:
  1. *Arctostaphylos mendocinoensis* pygmy manzanita
  2. *Boschniakia hookeri* small groundcone
  3. *Campanula californica* swamp harebell
  4. *Carex californica* California sedge
  5. *Cupressus goveniana ssp. pigmaea* pygmy cypress
  6. *Juncus supiniformis* hair-leaved rush
  7. *Lilium maritimum* coast lily
  8. *Pinus contorta* ssp*. bolanderi* pygmy pine
  9. *Rhynchospora alba* white beaked-rush
  10. *Usnea longissima* long-beard lichen

  Uncommon/Unique Species:
  1. *Calamagrostis bolanderi* Bolander's reed grass
  2. *Ceanothus gloriosus var. exaltatus* glory brush
  3. *Cladina portentosa ssp. pacifica* Pacific reindeer lichen
  4. *Cornus Canadensis* bunchberry
  5. *Sphagnum* sp. peat moss
  6. *Veratrum fimbriatum* corn lily

- Page VII.6.2-9: Please note tree gaps are another important natural event that creates micro sites in the redwood forest.

- Page VII.6.2-9: Another important forest community component beside fungi (please note lichens are in the Kingdom of Fungi under the Division Mycomycota) are the bryophytes (mosses, liverworts, and hornworts), which aid in soil and nutrient retention through reduction of surface erosion and absorption of nutrients and water during rains. In addition, there are three rare mosses identified in CNDDB Rarefind database for Mendocino County (although not in the vicinity of JSDF). The distribution and rarity within this taxonomic group is poorly understood. Information pertaining to this group would benefit by encouraging inventories and academic studies in JSDF.

- Page VII.6.2-12: May want to reference the taxonomic reclassification (change of genus) for Cape ivy (*Delairia odorata*), this name is noted in Appendix 7B Botany. Also correct generic scientific name for pennyroyal (*Mentha* vs. *menthe*).

- Page VII.6.2-14: Table VII.6.2.1 should include marsh pea (*Lathyrus palustris*), a sensitive plant range extension from Humboldt County to the Garcia River Watershed in Mendocino County. This species was located in a redwood forest opening wetland in association with redwood, Douglas-fir, tanoak, *Baccharis pilularis*, *Athyrium felix-femina*, *Carex aquatilis C*. *hardfordii*, *C*. *gynodynama*, and *Juncus patens* (pers. com. Heise 2005).

- Page VII.6.2-104: Table VII.6.2.1 should cite the State ranks for the species as many of these species also have State sensitive status (in particular S1 and S2 ranks). Another relevant rank is the global rank, which is similarly assigned as the State rank but is reflective of the world status. The State ranking system is a separate system for assigning status and provides additional status information for a species.

- Page VII.6.2-15: Table VII.6.2.2. should be revised and updated to <u>exclude</u>: *Calamagrostis foliosa*, *Ceanothus gloriosus var. gloriosus*, *Collomia diversifolia*, *Hemizonia congesta ssp. tracyi*, *Linanthus acicularis*, and *Ribes victoris*; and <u>include</u> *Lotus formosissimus*.

Part VII.6.2.2, Regulatory Framework for the Protection of Botanical Resources

- Page VII.6.2-17: CEQA also provides for assessment of regional rare and unique species [CEQA § 15125(c)]. Also state rank is an important status factor in assessing whether a species meets the criteria of rare, threatened, or endangered under Section 15380 CEQA Guidelines.

- Pages VII.6.2-17 and 18: The Native Plant Protection Act (NPPA) does not exempt timber operations from the California Endangered Species Act, CEQA, or the Forest Practice Act (Weburg Case 2003). The unmitigated salvaging of a rare or endangered plant would likely be considered a significant impact under CEQA. In addition, the NPPA does not apply to species not listed by the Fish and Game Commission as threatened, rare, or endangered. Hence application of the NPPA Section 1913 is not appropriate for determining the need to adequately assess sensitive botanical resources in the THP process. The most pertinent NPPA exemptions are prohibition of take and Fish and Game Code Section 2081 take permit.

Part VII.6.2.4, Specific Management Actions

- Page VII.6.2-19: Special Concern Areas and Unique Habitats should address Bob Woods Meadow, and the two sensitive vegetation types; Sphagnum Bog (separate from wetlands) and Northern Bishop Pine Forest.

- Page VII.6.2-19: Special Concern Areas and Unique Habitats, should include mature Douglas-fir/hardwood stands on gentle slopes with increase surface water retention and well developed duff layers (such as along ridgelines) that are rich in fungi and unique mycotrophic plants including sugar-stick *(Allotropa virgata*), gnome plant (*Hemitomes congesta*), pine sap (*Monotropa hypopithys*), and California pinefoot (*Pityopus calfornicus*). These species are non-photosynthetic plants that obtain fixed carbon from other plants via shared fungi that are mycorrhizal with tree roots (three-way relationship), and have a high level of specificity with a host fungus (Bidartondo and Bruns 2001). The California pinefoot is listed as uncommon. All species have known occurrences on the Forest, and are slow establishers dependent on mature forests and specific host trees (cut the tree, and fungi and plant die.)

- Page VII.6.2-20: Cypress Groups, it is unclear whether the sensitive pygmy cypress will be protected throughout its distribution on the Forest including single trees on productive soils.

- Page VII.6.2-20: Pygmy Forest, limiting (vs. continuing) recreational activities may be appropriate for this rare and fragile vegetation type. The EIR should provide an in-depth impact assessment for all activities proposed in the pygmy forest. Potential beneficial management is burning, invasive weed control, and road abandonment.

- Pages VII.6.2-21 through 6.2-23: It is unclear if surveys will have a floristic element, which is a key component of the *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (CDFG 2000). Please note floristic surveys:

    1. Generate a higher quality survey, noting all you see greatly improves the field review of the flora present in a project area. A predictive survey can miss taxa not predicted to occur and the surveyor will not be as observant with a narrowly focused survey (regardless of the skill).
    2. Detect not only unexpected habitat associations of sensitive plants, but unpredictable micro-habitat occurrence within larger vegetation types, species range extensions, species occurrence within ecotones that may not have been predicted as potential habitat (a common occurrence).
    3. Generate an overall species list that can be referenced, for example if the assessment has missed a sensitive species the omission can be addressed both from the reviewing point of view as well as the project proponent.
    4. Provide a necessary component of a professional botanical survey for sensitive species and allow a determination of adequacy of the surveyor/survey, which is essential in determining whether sensitive species would be detected.
    5. Lastly, floristic data (such as project generated) is crucial in developing knowledge of JDSF flora and sensitive botanical resources.

- Pages VII.6.2-22 and 6.2-24: The DEIR cites that sensitive plant knowledge will be enhanced in part on a project-by-project inventory basis, however without a floristic component to the survey methodology, there is unlikely to be an effective mechanism for collecting botanical data (such as new sensitive species or species composition and diversity). Also, development of appropriate management strategies will require a monitoring component. Monitoring is not discussed in the DEIR.

- Page VII.6.2-23: As currently stated, survey design will be "*based on the concepts contained in the CDFG Guidelines*". This statement is unclear. Will surveys be conducted in a manner consistent with the CDFG Guidelines? The intent of CDFG Guidelines is to provide the factual and scientific information needed for determining the adequacy of the survey and surveyor, and to assess the significance of a project to impact sensitive plants pursuant to CEQA Section 15064. These guidelines apply generally to proposed projects under CEQA. In reviewing THPs, DFG relies on these guidelines as well as CEQA Sections 21000 of the Public Resources Code and Sections 15000 of the California Code of Regulations.

- Page VII.6.2-23: Surveys and Mitigation Development should include provisions for DFG to review and comment on survey reports (often surveys are conducted after the THP review process), and consultation with DFG if an activity has the potential to impact a sensitive species. Consultation with DFG by the administrating agency is required for projects undertaken pursuant to a certified regulatory plan in lieu of the EIR process (CEQA Guidelines §§ 15250-15253).

- Page VII.6.2-23: Sensitive plant documentation should include vouchering of populations (may include more than one occurrence) with a recognized herbarium such as the Jepson Herbarium at University of California at Berkeley or the College of the Redwoods Herbarium at the Fort Bragg Campus. Please note that a federal or state endangered, threatened, or rare listed or candidate species requires a permit to collect or take. For unlisted sensitive plants, collection should only be done if a given population is greater than 20 plants and include representation of the key features. All specimens should be pressed and put in between sheets of newspaper with a herbarium label made out of 100% rag paper (archival paper).

Part VII.6.2.6, Impacts

- Pages VII.6.2-26 through 6.2-29: Impact 3 and Impact 4, the current inventory data of the botanical resources on JDSF is not extensive, and proposed surveys do not appear or have a floristic component. How will new species, range extensions, or unpredicted species occurrence within new habitat or ecotones be detected? Last year, floristic surveys in the Garcia River drainage detected range extensions for two significant species; Santa Cruz clover (*Trifolium buckwestiorum*) was a county extension from the south, and marsh pea *(Lathyrus palustris*) was a county extension from the north.

- Page VII.6.2-27, Par. 4: The DEIR implies that surveys will be conducted as necessary if "*potential to significantly impact a listed species*", and may differ for listed and non-listed sensitive species. It is not clear what is meant by this. It should be noted that surveys for listed and non-listed sensitive species should be conducted in habitat areas that will receive management impacts. Mitigation (vs. surveys) is based on significance of impacts. In a letter to Mr. Neil Fischer from Mr. William Snyder, dated July 19, 2001, he states "*Surveys are not a requirement; but unless the presence or absence is established, the available range of mitigations which would meet the requirements of 14 CCR 15370 would generally be limited to avoidance of suitable habitat.*"

- Page VII.6.2-31: Table VII.6.2.3, robust monardella (*Monardella villosa* ssp. *globosa*) can be associated with upland forest openings and should be addressed as an upland forest associated species.

- Page VII.6.2-32: Table VII.6.2.3, Pygmy Functional Group should include the sensitive pygmy cypress (*Cupressus goveniana* ssp. *pigmaea*), which is the primary defining species of the pygmy forest.

- Page VII.6.2-32: Table VII.6.2.3, Wet Areas Functional Group should include marsh pea (*Lathyrus palustris*), coast lily (*Lilium maritimum*), North Coast semaphore grass (*Pleuropogon hooverianus*), and swamp harebell (*Campanula californica*). Although some of these wetland species (hydrophytes) are cited in the Upland North Coast Conifer Functional Group, they also occur in wetlands outside of this group.

- Page VII.6.2-34: Forest understory species dependent on shade and moist forest microclimate are also sensitive to canopy removal.

- Page VII.6.2-35: The Pygmy Forest and Closed Cone Forest/Openings Functional Groups, cites that no significant cumulative effects are expected to occur with management proposed and mitigation adopted. It should be noted that fire suppression is an important cumulative effect and it is not clear whether reintroduction of fire is proposed in these vegetation types.

- Page VII.6.2-35: The Environmentally Sensitive Habitat Area (ESHA) designation for pygmy forest only applies to the Coastal Zone. A significant amount of pygmy forest acreage is outside the Coastal Zone and on private lands where future protection is not necessarily guaranteed.

- Page VII.6.2-38: It is unlikely that the *Trillium ovatum* on JDSF differs significantly in habitat and life history requirements. The species occurrence in early seral or clear cut stands may be a factor of localized persistence rather then preference. Plant ecologists and botanists consider this species a mesic forest understory plant throughout its range. Many of the liliaceous forest herbs are slow establishers and are sensitive to timber harvest. Species such as

Clintonia uniflora, *Smilacina racemosa*, *S. stellata*, and *Trillium ovatum* have declined over 40% more in harvest areas than in retained forest aggregates (Nelson and Halpern 2005).

- Page VII.6.2-38: The two studies suggesting that mid to late seral stands are not rich in forbs and grasses when compared to other seral stages on JDSF does not fully assess successional and species composition factors. Early seral stands will differ in species composition (shade intolerant and fast establishers) from mid to late seral stands (shade tolerant and slow establishers). Species diversity is high in early seral stands then it drops significantly in early to mid seral stands (such as in "dog-haired" stands). Forest understory species diversity increases with time and peaks in old growth stands (Halpern and Spies 1995). Early seral and late seral stands offer different types of plant diversity and both are important seral stages for plant diversity.

- Page VII.6.2-42: In addition to clean straw mulching, seeding with non-invasive species is another important measure for preventing the introduction of invasive weeds on roadbeds and other areas needing erosion control. Seeding species selection should utilize native (preferably) or non-native species not known to be persistent or invasive until native species reestablish. Commonly, annual (or "Italian") ryegrass (*Lolium multiflorum*) has been utilized on forest lands. Ryegrass is a well recognized allelopathic, persistent and invasive non-native grass. DFG does not recommend the use of ryegrass on JDSF.

Part VII.6.2.7, Additional Management Measures and Monitoring

- What management measure(s) will be used to assess potential direct and cumulative impacts to sensitive species from management activities? The DEIR does not appear to specifically address sensitive plant monitoring. Monitoring can be a powerful tool to determine trends over time and demonstrate whether management objectives for sensitive plants are effective. The DEIR should include a monitoring strategy for sensitive plants.

Part VII.6.5. Wetlands

Part VII. 6.5.1, Regional and Project Setting

- Page VII 6.5-1: Definition should also include that wetlands are transitional areas between terrestrial and aquatic systems.

- Page VII 6.5-1: The quality and relative value of a wetland is also dependent upon its biological function as well as physical characteristics.

- Page VII 6.5-1: DEIR should provide a more comprehensive list of wetland vegetation types on JDSF such as freshwater marsh and swamp, and should also include the Forest's Lost Lake.

- Pages VII 6.5-1 and 6.5-3: It is unclear what other types of management may be applied for wetland habitats that "maintains or restores productivity", besides WLPZ protection measures.

Part VII.6.5.2, Regulatory Framework for the Protection of Wetlands

- Page VII 6.5-2: The DEIR should include a discussion on the Porter-Cologne Water Quality Control Act.

Part VII.6.5.5, Impacts

- Page VII 6.5-4: Management activities that are subject to the THP review process should also identify other potential wetlands such as marshes, swamps, bogs and fens, which are not necessarily associated with riparian habitats. In addition, the DEIR should discuss methods that will be utilized to identify and delineate wetlands in the field.

- Page VII 6.5-4: Indirect impacts to wetlands may also result from changes in hydrology resulting from upslope harvesting (such as microclimate alteration) and road building/maintenance (such as drainage diversion or concentration), as well as changes in canopy cover and colonization of invasive non-native plants.

Part VII.6.6. Wildlife and Wildlife Habitat

- To improve the clarity of many tables (e.g., VII.6.6.3), cells with no values should not be assigned a value of 0, but rather indicated by a dash (-). A value of 0 should only be used where the measurement was 0. "Other public" should be identified in the text. For comparisons of downed log characteristics, the data should also be expressed in units of volume as well as number.

- Page VII 6.6-21: States that "Other unusual habitat types that also occur include northern coastal salt marsh, coastal brackish marsh, coastal and valley freshwater marsh, and grand fir forest." Do all of these occur on JDSF?

- Page VII.6.6-30: In Table VII 6.6.5 why are there blank cells? For example, what canopy cover is necessary for conifer < 24 inches to be "Low to Moderate capability Habitat?"

- Page VII.6.6-33: Figure VII 6.6.8a does not seem to show what the related text implies. What are the data points on the graph?

Part VII.6.6, Marbled Murrelet

- Page VII 6.6-53, Par.1: Please update using recent at-sea-survey data. Although there is a 300-mile gap in marbled murrelet distribution through marbled murrelet Recovery Zone 5, marbled murrelets continue to be detected in low numbers off the coast of Mendocino County.

- Page VII 6.6-53, Par.2: Note that the use of radar to detect marbled murrelets relies not only on the flight speed of the radar target, but also the target size, flight path, and observed flight time.

- Page VII 6.6-53, Par.3: Include that marbled murrelets at inland detections have been documented using both radar and ground-based audio-visual surveys.

- Page VII 6.6-54, Par.1: The list of positive murrelet detection sites is confusing. The listed detection locations could be better organized by specifying whether murrelets were detected by radar or audio-visual survey methods. In addition, drainages should go from north to south (or vice-versa), and counties of the drainages should be specified. Correct Wheatfield Creek to Wheatfield Fork of the Gualala River (Sonoma County) and include the South Fork Eel murrelet detection (see CNDDB).

- Page VII 6.6-55, Par.1: Specify that Horsetail Gulch and Gulch 16 (1.5 miles east of Horsetail Gulch) are two known occupied sites on Campbell Timberland Management lands in the Ten Mile drainage (Middle Fork) as identified using protocol audio-visual surveys.

- Pages VII.6.6-56 and 57, Table VII 6.6.8: Consider re-organizing table by drainages from north to south within the 10-mile radius of JDSF rather than by date. Clarify whether breeding behavior is occupied behavior as indicated by sub-canopy flights, circling etc. (see Evans Mack et al. 2003). Note that Ralph et al. 1994 is outdated- protocol standards (footnote “a” on table). The protocol has been revised several times and the most current survey protocol is described in Evans Mack et al. 2003. Footnote “b” - please confirm whether the USFWS ever had a murrelet survey protocol. Please correct the entry Noyo, the Worm 2- survey results by Mendocino Redwood Company which indicated that equivocal murrelet vocalizations were detected by the surveyor. In response, DFG asked for an additional year of survey where no murrelets were detected.

- Pages VII.6.6-56 and 57: Table VII 6.6.8 and Table VII 6.6.9 appear duplicative. Consider merging or having one table for radar detections and one table for ground-based audio surveys (protocol, non-protocol, or incidental). Currently, protocol for radar surveys has not been endorsed by the Marbled Murrelet Technical Committee.

- Page VII 6.6-72, Par.1: Evans Mack, et al. (2003) briefly describe the radar use for surveying marbled murrelets (as opposed to recommending it), but the protocol focuses on ground-based audio-visual survey methods. Consider the use of radar as a course filter to detect murrelet presence by drainage or watershed. Ground-based surveys should accompany radar surveys. As stated above, no radar protocol exists for surveying murrelets.

- Page VII 6.6-72, Par. 4: See McShane, et al. (2004) for updated threat level from murrelet nest predators.

- Page V11 6.6-75, Par.3: Please correct the diameter of nest branches in California as reported in Hamer and Nelson (1995) as ranging from 6 to 24 inches.

- Page VII.6.6-80: Figure VII.6.6.8b is difficult to read and interpret. Consider using color and well-defined polygons to delineate acreages of potential marbled murrelet habitat.

- Page VII 6.6-83: Regarding the restoration of marbled murrelet habitat, the application of the Carey et al (2002) guidance should be debated based on site-specific values to murrelets and other forest management goals. DFG looks forward to participating in creating timber management schemes intended to promote marbled murrelet and/or late seral habitat conditions.

Part VII.6.6.3, Project Measures for Protection of Resources

- Page VII.6.6-113: Regarding hardwood standards, what are the scientific and biological bases for the 10% and 15% of the basal area goals? Are these percentages of the pre-harvest or post-harvest stands? How will hardwoods be retained as ecologically important components of stands, especially in stands where they are reduced and subjected to competitive conditions in the resultant conifer stands? Similar to the deadwood management plan outlined above, there should be a hardwood management plan that also includes monitoring with feedback to specific management actions if the goals are not being met. The plan needs to recognize that hardwood-dominated timber sites are a natural, albeit long-lasting early seral stage. As such, conversion of all such stands to maximum timber production is unwise. We recommend that JDSF maintain some representative hardwood dominated stands in each planning watershed where they are present.

- Page VII.6.6-113: Regarding the snags standards, where are the “wildlife special concern areas” described, and what acreage do they cover? What are the “select areas” in which JDSF “will recruit snags through indirect measures, such as retention of larger conifers (at least 30 inches DBH)?” As suggested above, recruitment should be assured in all timber harvest units, regardless of silviculture.

- Page VII.6.6-113: Regarding the LWD standards, to assure that the demise of one tree does not dominate the standard (and thus overly-localize the value), the standards should specify that the counts should be limited to pieces derived from separate trees, where possible. As for other habitat components, monitoring for LWD should be described and a feedback loop should be included for purposes of adjusting the strategies if warranted.

- Page VII 6.6-114: Regarding the "Species of Special concern" bullet, it should be clear that the primary mitigation for listed species is avoidance. For listed species, determining significant effects should not be diminished by rationalizing perceived minor effects or the presence of off-site habitat or individual occurrences. These factors may be brought into DFG's decision process where take cannot be avoided. For each species of special concern (listed or otherwise) where a project areas has habitat or species presence, the impact assessment should include nearby areas where impacts may also occur. A cumulative impacts assessment area shall, by default, extend "beyond the boundaries" of the assessment area.

- Page VII.6.6.115: The paragraph prior to "training" is unclear. Is "project" as used in this paragraph equivalent to "project" as defined under CEQA, or more loosely as any activity that JDSF undertakes? Does this paragraph mean that the rigor and focus of scoping (and subsequent surveys and/or development of mitigation measures) will differ between projects based on the premises of perceived habitat impact? The paragraph in the project examples is unclear. Does it mean that activities leading to repeated, periodic disturbances will have a different scoping/mitigation process than those for pre-commercial thins, etc.?

- Page VII.6.6.116: Regarding survey protocols, it should be noted that some species may not have "established protocols," and JDSF may want to deviate from established protocols for site-specific reasons. This paragraph should simply state that the protocols will be those provided or endorsed by DFG (and USFWS, as appropriate).

Part VII.6.6.4, Additional Management Measures

- Pages VII.6.6-118 and 119: The acreage figures provided for "contribution to marbled murrelet habitat" are confusing, and could be easily cleared up if presented in tabular format. Is the 20% inclusive of the old-growth stands? Where are the non-stream corridor late-seral development stands? Do these figures take into account any of the possible key areas for murrelet habitat suitability assessment? What amount of the "key areas" is CDF committing to provide?

- Pages VII 6.6-118 and 119: Alternatives C1, C2 and E propose as mitigation the implementation of Contribution to Recovery of Marbled Murrelets. DFG finds that the proposed Contribution to Recovery of Marbled Murrelets is ill-defined, unclear and will unlikely be effective in contributing towards the continued existence and improvement of marbled murrelet populations in the area. We offer the following reasons:
  1. Only the *identification* of key areas for *assessment* of marbled murrelet habitat is proposed. In other words, the Russian Gulch, lower Big River, Mitchell/Jughandle Creek, and lower Hare Creek areas have not been selected as areas for murrelet habitat protection and recruitment. Rather, the areas have only been identified as places to examine in the future (i.e., 18-24

months following DFMP implementation) for murrelet habitat retention and recruitment. The DEIR fails to disclose the criteria and justification used to identify areas for assessment, and does not detail how areas will be assessed and then chosen for murrelet habitat retention and recruitment. For example, why are the Caspar, upper Hare, and Upper Parlin Creek watersheds not identified as key areas for assessment for marbled murrelet habitat recruitment even though, according to Map Figure R, these areas are fully suitable for marbled murrelets? All identification, assessment and selection criteria of marbled murrelet habitat areas should be fully described and available in the environmental document for public and agency review. CDF should seek input from DFG and FWS prior to the selection of marbled murrelet retention and recruitment areas.

2. The procedure for protecting remaining old-growth trees and stands is unclear. For example, does the protection of old-growth trees also include the retention of neighboring trees to minimize windthrow and microclimate fluctuation? Also, it is uncertain from information provided whether old-growth trees include all trees with potential marbled murrelet nest platforms.

3. The identification of marbled murrelet areas for assessment is not based, at least in part, on current, relevant marbled murrelet surveys performed in JDSF or potential murrelet nest tree abundance and availability.

4. The protection of riparian old-growth stands may not contribute significantly to murrelet habitat recovery unless they connect to larger blocks of late successional forest habitat. Thin, linear patches of habitat will unlikely be large enough to provide adequate nesting habitat for murrelets. Also, large perimeters of edge between late and early successional forest habitats may reduce nearby marbled murrelet nest success by attracting and facilitating murrelet nest predators such as Steller's jays and ravens.

5. The proposed Contribution to Recovery of Marbled Murrelet Habitat plan is not a clear and specific plan to improve nesting conditions for murrelets on JDSF. A more effective contribution towards the recovery of marbled murrelets in the area would be through the implementation of a marbled murrelet management plan. This would entail the preservation and recruitment of large blocks of late successional habitat that lie immediately adjacent to, are contiguous with and are in the vicinity of, existing known occupied marbled murrelet habitat such as the Russian Gulch State Park. Any removal of trees within these blocks would only be done to enhance marbled murrelet nesting habitat and would be conducted only with state and federal agency, university, and marbled murrelet technical committee input and oversight. Humans and human garbage and food sources should be strictly controlled and/or removed in habitat retention and recruitment areas. A marbled murrelet monitoring program should be included as part of the management plan. To date, it appears that the presence of marbled murrelets on JDSF has only been cursorily investigated through THP-driven murrelet surveys. Thus, survey information is absent over large portions of JDSF. Under a more comprehensive strategy to recover marbled murrelets

and their habitat on JDSF as part of the DFMP, landscape-level surveys using radar should be conducted in key drainages. In conjunction with radar surveys, rigorous ground-based murrelet surveys (i.e., increased survey effort above current protocol level) should be conducted. If marbled murrelets are detected outside of above-mentioned late successional forest blocks, then appropriate measures to protect, buffer and expand murrelet occupied areas should be applied. Survey information would also be used to implement a murrelet predator management plan if warranted, and direct murrelet habitat management research.

- As proposed, it is doubtful that the DFMP's Contribution to Recovery Marbled Murrelet Recovery described in the DEIR as an additional mitigation measure will help improve habitat conditions for marbled murrelets adjacent to and within JDSF, and in Conservation Zone 5 in general. The DFMP should include a clear and concise marbled murrelet management plan as explained above, that fully justifies and accurately identifies; a) specific areas for suitable and near-suitable habitat retention (e.g., adjacent to Russian Gulch State Park), b) short and long-term murrelet habitat recruitment, and c) all current and future timber harvesting, habitat management, research and human uses in the recruitment areas. The DEIR should be revised to include such a marbled murrelet management plan.

Part VII.6.6.6, Project Impacts

- Page VII.6.6-122, Other Unique and Special Habitat Features: There is little mention of wildlife trees or the importance of wildlife tree habitats such as basal hollows. However, the DEIR discloses at least 14 sensitive wildlife species that depend on large tree structures. In addition to developing late seral stands in riparian zones and around existing old-growth stands, the DEIR should address individual trees with special wildlife elements. Large, decadent, predominant trees that were once abundant prior to the extirpation of late seral forests are currently rare and scattered on commercial timberland, where past timber harvests removed most of the old-growth/wildlife tree habitat including isolated decadent, predominant trees exhibiting either (singularly or in combination) basal hollows, small cavities, internal rot or mistletoe broom, crevice cover (loose or deeply furrowed bark), complex crowns, and lateral large limbs or epicormic branching (new growth such as shoots or limbs borne on old wood of trees). For trees with fire-derived basal hollows, complex or broken crowns and other cover types, their vertebrate wildlife value for species such as Vaux's Swift and Purple Martin (in reference to page VII.6.6-128) and is also extensively documented (Gellman and Zielinski, 1996; Franklin, et al., 2000; Hunter and Mazurek, 2003; Mazurek and Zielinski, 2004). There was very little discussion in the DEIR about the importance and essentially irreplaceable nature of basal hollows for wildlife. These forest elements are considered irreplaceable features for wildlife habitat and in some cases they are not obvious old growth, but instead, damaged (e.g., by fires of wind or both) second growth that have developed wildlife habitats. How will trees that exhibit the aforementioned wildlife habitat characteristics be evaluated and protected when they are not obvious old-growth trees? The DEIR

should disclose what characteristics will be used to identify special wildlife elements and that they will be given special consideration in the management plan. Consider adding additional retention criteria (similar to the aforementioned characteristics above) to Mitigation 1 on page VII.6.6-131 (Mitigation and Monitoring) that captures these types of wildlife trees.

- Page VII.6.6-123: Regarding the lotis blue butterfly, coast hosackia might be the species host plant, but other herbaceous species of the pea family are thought to be potential host/food plants. Also coast hosackia is not considered an early successional species, and its habitat is better described as open wetland habitats rather then disturbed wetland habitats.

- Page VII.6.6-124: The contention that WLPZ protection measures will improve habitat of yellow-legged frogs is not fully supported by the literature. The DEIR is proposing to manage stream side areas for high canopy cover and cool water for several other species. However, yellow-legged frogs are generally more abundant in watercourses with little canopy and warm water. Thus, WLPZ management goals could well reduce habitat quality for this species. It is not surprising to find that a specific suite of management actions might enhance habitat for some species and diminish it for others.

- Page VII.6.6-124: General comment about the use of CWHR in the analyses presented. The DEIR identifies the version and the habitat capability calculation method. However, it does not note what components were included or excluded from the analyses. A suggestion is to introduce the CWHR model before its application is reported in the document. A table that identifies habitat types and describes the stages used in the subsequent tables should be provided. At the same time, the document should describe the growth models used to grow the CWHR stands over time.

- Page VII.6.6-125: What is meant by “protecting” nest sites and post-fledgling areas of 100 acre and 300 acre, respectively? Does this pertain to goshawk nests?

- Page VII.6.6-126: Regarding osprey, note that the USFWS does not exert specific jurisdiction of this species relative to the FPRs.

- Page VII.6.6-127: Regarding murrelets, the text should be specific in stating that mitigation measures are avoidance measures.

- Page VII 6.6-127, Par.3: The DEIR states that the DFMP defines marbled murrelet habitat as any intact remnant stand of old-growth forest at least two acres in size and 200 feet across. Marbled murrelets have been documented nesting in second-growth forest with single residual conifers with suitable nest platforms or in mature forest stands with scattered residuals with platforms (DFG files). This definition should be revised to reflect recent murrelet habitat nest

stand and nest tree characteristics described in McShane et al. (2004) and Evans Mack et al. (2003).

- Page VII 6.6-127: The DFMP proposes the "management" of habitat recovery areas to advance the development of late successional forest conditions and potential for murrelet nesting. The DFMP is unclear on what management actions will be taken and where they will be taken relative to occupied and unoccupied murrelet habitat. To date, DFG is unaware of any scientific research that has specifically examined use and breeding success of murrelets nesting in stands modified to benefit murrelets. However, experimental research on creating murrelet habitat in JDSF may be warranted. DFG believes that it is imperative that any research performed to improve marbled murrelet nesting habitat conditions on JDSF be conducted in a scientifically rigorous manner with oversight from state and federal wildlife agencies as well as universities and groups such as the Marbled Murrelet Technical Committee.

- Page VII.6.6-128: Within the Vaux's swift and purple martin section, there seems to be a partial discrepancy with the snag standards specified on page VII.6-6-114.

- Page VII.6.6.130: Regarding tree voles, identify the basis for using the 100 meter dispersal distance in your analysis.

- Page VII.6.6.130: Regarding Pacific fisher, provide the rationale that the hardwoods management program benefits the species. The opposite is more likely.

- Page VII.6.6-130: Mentions "other habitat SCAs," but these are not identified, described, located, or quantified in this chapter.

Part VII. 6.6.7, Mitigation and Monitoring

- Page VII.6.6-131: Mitigation 1 implies that snags will be subject to removal after retention goals are met. Snags should not be removed except for safety purposes. Rather, if snags are above the retention goals, then it seems more appropriate to back-off the rate of green-tree retention for recruitment purposes. Under "monitoring, 1" the DEIR indicates that the DFMP establishes monitoring standards then indicates no changes in the standards are required? This is unclear. When referencing "monitoring standards", is the document referring to the protocols, the statistics around the estimates, or is this statement referring to not changing the retention goals? In any case, monitoring should feed-back in the management loop to assure that the desired conditions are being achieved.

Part VII. 6.6.8, Comparison of Alternatives

- Page VII.6.6-133: The discussion of early stages of forest development model suggests that "early seral forest in this condition is not expected to persist to 2060." Yet, the DEIR earlier states that the even to uneven-aged management

proposal will be about 29% to 64%. What sort of management will the remaining 6% receive if not even or uneven-aged? In addition, group selections will provide early seral-stage values. This statement in the DEIR needs to be clarified.

- Page VII.6.6-134: Why does the DEIR use Coastal Scrub CWHR to represent the earliest transitory stages of forest development of a forest type, which is essentially size class 1 within whichever forest type it is? Coastal Scrub is considered an intermediate coastal vegetation type.

- Page VII.6.6-134: as a limitation on the modeling approach, the DEIR should include the assumption that habitat elements are either fully present (or absent, depending on the element switches used). There should be a description of the crosswalk of forest vegetation to WHR, or at least the rules followed to make the assignments. The growth and yield models used to grow WHR types should be specified.

- Page VII.6.6-134: For the non-JDSF assessment area, the DEIR should describe how it was derived and either describe its geographic extent or map it. Why has the future of landowner's timber management programs not addressed hardwood control efforts? As various landowners achieve greater levels of success in hardwood control, hardwood types may become greatly diminished across the assessment area.

- Page VII.6.6-135: The description for modeling MRC forests is confusing, especially the last 2 sentences.

- Page VII.6.6-135: Why the decline in total acreage in Table VII 6.6.15?

- Page VII.6.6-137: The reference to harvest option "r1" needs a description/definition.

- Page VII.6.6-138: For NIPFs, is the assumption about which model (industrial, parks, and high-retained selection) supported by recent history?

- Page VII.6.6-138: The increases as reported by percentages can be misleading. It would be easier to understand changes such as 3000+% for a couple of types as 30 x the current amount.

- Page VII.6.6-138: The last paragraph seems in error. Is the projection that even-aged management will no longer be used in the assessment area? That does not reflect the assumptions stated above.

- Pages VII.6.6-140 and 170: Figures such as VII.6.6.9 and VII.6.6.12 are too busy. They should be segregated into several figures by vegetation types to better reveal how age classes change over time. Eliminating any seral stage will

be cause for concern and might necessitate management actions to assure that they are represented.

- Page VII.6.6-219: The definition of Total Edge Index appears incomplete. It suggests the units should be measured as length (e.g., feet), not percent.

- Page VII.6.6-221: What is the rationale behind the suitability groupings for scores?

Part VII.6.6.9, Alternatives Comparison

- Page VII.6.6-260: It is not clear how Alt C1 and Alt C2 differ. Isn't the "Contribution to Recovery of Marbled Murrelet Habitat management measure" of C1 equal to "increase in the area (primarily in the vicinity of upper Russian Gulch, lower Big River, and upper Thompson Gulch) dedicated to development of late seral forest conditions specifically with the intent of Murrelet habitat recruitments" of C2?

Part VII.10. Hydrology and Water Quality

- Page VII.10-18: Water drafting during timber operations is typically done with a water ("pump") truck that diverts and stores 3,000-4,500 gallons of water. The water is primarily used for dust abatement, road construction and reconstruction, stream crossing construction and fire suppression. Pump trucks are capable of diverting 450 gallons per minute (approximately 1 cubic foot per second), but are regulated to diverting no more than 350 gallons per minute in addition to other (e.g. screen size) criteria as part of Fish and Game, Section 1600, diversion agreements. Pump truck(s) can make multiple (6+) trips per day to the same drafting site. Drafting sites are typically located in fish bearing (Class I) streams and non-fish, aquatic species habitat (Class II) streams. Some drafting sites employ water storage where the typical diversion involves gravity-feeding water through a screened intake (placed in the wetted channel) attached to a small diameter pipe that is attached to a water storage tank (typically plastic or metal and sometimes concrete capable of storing 3,000-10,000 gallons of water). Most Fish and Game Section 1600 diversion agreements contain conditions designed to minimize site-specific, potential stream impacts such as entraining or stranding fish, amphibians and aquatic insects. In order to evaluate potential cumulative impacts from multiple water drafting sites, either in the same stream order and/or in the same planning watershed, the EIR should provide a map of all known drafting sites in and adjacent to JDSF (where they affect streams flowing into JDSF). The EIR should estimate of summer base flows affected by these diversions, by which diversion rates can be more effectively evaluated on a watershed scale and for the purposes of spatially- and temporally-planning future stream diversions. How will water diversions be monitored to ensure that cumulative impacts from multiple diversion sites are not adversely impacting downstream aquatic resources?

- Page VII.10-25: The hydrological importance of fog drip to redwoods, and redwood forest microclimate and associated vegetation is a well recognized environmental influence (Dawson 1998, Burgess and Dawson 2004). Cornell University ecologist, Todd Dawson, found that redwood leaves absorb water directly from the fog (thought to be a factor in the ability of rewoods to achieve great heights), and that about a third of the yearly moisture coming into the forest is actually coming from fog drip off the trees with the understory receiving about two thirds of their water from fog (twice as much as the redwoods themselves). In addition, when water samples (fog water and rainwater have distinctive chemical fingerprints) were taken from intact redwood forest and compared with clear cut redwood forest over a three-year period, the clear cuts were found to contribute less than half as much fog water to the forested environment.

Part VIII. Cumulative Effects

Part VIII.15, Cumulative Impacts Summary and Comparison Table

- Pages VIII-102 through 104: Table VIII.14 shows that Alternatives B, C1, C2, and E rely on the Contribution to Recovery of Marbled Murrelet Habitat as mitigation. However, for reasons listed above, DFG believes that the proposed mitigation will be ineffective because it is unspecific, lacks clear short-term and long-term habitat goals, fails to include a feedback mechanism such as murrelet surveys, and does not provide a plan for the control and management of threats to marbled murrelets, such as human disturbance and nest predators.

- Pages VIII-102 through 104: The DEIR considers Alternatives E and F to have the potential for significant beneficial cumulative effects for marbled murrelets. DFG believes that benefits to marbled murrelets may only be slight, especially for Alternative E since murrelet retention and recruitment areas, if not well-chosen, monitored and controlled, could negatively affect murrelet breeding success through disturbance and predation. DFG believes that benefits to local marbled murrelet populations could be maximized through the implementation of a marbled murrelet management plan as described above. The plan would include the careful selection and retention of sufficiently-sized and favorably located blocks of suitable and near-suitable habitat on the west side of JDSF as described in Alternative F. The protection and recruitment of JDSF lands adjacent to known occupied Russian Gulch State Park is critical. Within these blocks of habitat, suitable nesting conditions would be allowed to develop, threats to murrelets would be eliminated or minimized, and research and monitoring would provide a feedback loop to assess murrelet presence and use of the habitat as well as determining future habitat needs.

- DFG believes that with the inclusion of a well-designed marbled murrelet management plan, the DFMP would be more consistent with JDSF's role as designated critical marbled murrelet habitat, and contribute more towards the recovery of murrelets in this part of its distribution as described in the Marbled

Murrelet Recovery Plan. Future environmental documents pertaining to the DFMP should contain a marbled murrelet management plan. Without this, potential impacts to marbled murrelets from implementation of the proposed DFMP would not be fully mitigated.

Appendixes

Appendix 7B, Botany

- There appears to be little site-specific data for known sensitive plants (such as location maps, number and phenology of plants, and observation dates). The DEIR should provide, at minimum, the CNDDB field form data such as in a tabular form.

- Appendix 7B-2, Page 2: the Mendocino County USGS 7.5' quadrangles for *Boschniakia hookeri* need to be updated to include Elk (CNDDB 2005)

- Appendix 7B-2, Page 2: please note that the "s" on the species scientific name has been dropped for Thurber's reed grass (*Calamagrostis crassiglumi**s***), and this error has been repeated in the body of the DEIR.

- Appendix 7B-3: should include an analysis of the following three species with recent range extension into Mendocino County:
    1. *Lathyrus palustris* marsh pea
    2. *Oenothera wolfii* Wolf's evening primrose
    3. *Trifolium buckwestiorum* Santa Cruz clover

Appendix 11, Overview of Existing Sediment Studies Relevant to the JDSF EIR

- Appendix 11 Page 19: It's stated that, *"Sediment budgets prepared for Noyo and Big River watershed assessments shows that road-related sediment (both from road surface erosion and road-related landslides) is a dominant source of sediment from current management activities, while in-unit hillslope erosion is a much smaller contributor."* Following this it's stated that, *"The Road Management Plan and the mass wasting avoidance strategy included in the JDSF Management Plan are expected to significantly reduce sediment yield associated with JDSF timber management activities."* The Road Management Plan contains comprehensive components such as a road inventory and improvement and abandonment strategies intended to reduce forest management-related sedimentation. What is not readily available in the DEIR is a discussion of trespass (primarily trail bikes and 4x4s) and the resulting impact on roads (breaking waterbars, etc.) and on stream crossings (eroding approaches, impacting aquatic habitat, etc.) Obviously, this is an ongoing problem for any large, land manager. Specifically, how can CDF, in its unique capacity to provide State law enforcement personnel, improve its past enforcement efforts to patrol the forest, implement disincentives for, and/or educate the public regarding this vehicular-trespassing impact? It's also apparent that, since JDSF's timber harvesting was suspended, road

maintenance has been substantially reduced; apparently, because of a lack of funds. Future harvest reductions and other revenue depleting events (e.g., lumber market fluctuations) are a reality that should be planned and compensated for. Therefore, the EIR should detail how it will address future revenue short falls so that funds, equipment and personnel will be available to maintain, repair and even abandon JDSF roads and stream crossings.

Maps

- Figure L Natural Diversity Database: This appears to be the only map for sensitive plant occurrences on JDSF; however, the map does not distinguish what species are present and only notes "plant occurrences". The EIR should provide a sensitive plant map for JDSF that delineates occurrences by species. In addition, wildlife species should also be noted on this map.

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